TERM PAPER

IN TRANSLATION STUDIES

SPECIFICITY OF RENDERING IT SPHERE SUBJECT FIELD TERMS

(A STUDY OF TUTORIALS AND REFERENCES OF

https://www.w3school.com WEBSITE)

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МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ

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КУРСОВА РОБОТА

З ПЕРЕКЛАДУ

СПЕЦИФІКА ПЕРЕКЛАДУ ГАЛУЗЕВИХ ТЕРМІНІВ СФЕРИ ІТ

(НА МАТЕРІАЛІ ПІДРУЧНИКІВ І ДОВІДНИКІВ САЙТУ

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Київ – 2023

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"29" вересня 2022 р

ЗАВДАННЯ
на курсову роботу з перекладу з англійської мови
для студентів IV курсу

студентки IV курсу групи ПА 07-19, факультету германської філології та перекладу КНЛУ спеціальності **035 Філологія,** спеціалізації **035.041 Германські мови та літератури (переклад включно), перша – англійська,** освітньо-професійної програми **Англійська мова і друга іноземна мова: усний і письмовий переклад**
Тема роботи Специфіка перекладу галузевих термінів сфери іт (на матеріалі підручників і довідників сайту https://www.w3school.com/)
Науковий керівник Карпенко Юлія Вікторівна
Дата видачі завдання 29 вересня 2022 року

Графік виконання курсової роботи з перекладу

№ п/п	Найменування частин та план курсової роботи	Терміни звіту про виконання	Відмітка про виконання
1.	Аналіз наукових першоджерел і написання **теоретичної частини** курсової роботи (**розділ 1**)	1–5 листопада 2022 р.	
2.	Аналіз дискурсу, який досліджується, на матеріалі фрагмента тексту; проведення перекладацького аналізу матеріалу дослідження і написання **практичної частини** курсової роботи (**розділ 2**)	7–11 лютого 2023 р.	
3.	Написання **вступу і висновків** дослідження, оформлення курсової роботи і подача завершеної курсової роботи науковому керівнику для попереднього перегляду	28–31 березня 2023 р	
4.	**Оцінювання** курсових робіт **науковими керівниками**, підготовка студентами презентацій до захисту курсової роботи	25–30 квітня 2023 р.	
5.	**Захист** курсової роботи (за розкладом деканату)	2-13 травня 2023 р.	

Науковий керівник Карпенко Юлія Вікторівна _____ (підпис)

Студент Тарасюк Оксана Валеріївна _____ (підпис)

РЕЦЕНЗІЯ НА КУРСОВУ РОБОТУ
З ПЕРЕКЛАДУ З АНГЛІЙСЬКОЇ МОВИ

студента(ки) IV курсу групи ПА 07-19 факультету германської філології і перекладу КНЛУ спеціальності **035 Філологія,** спеціалізації **035.041 Германські мови та літератури (переклад включно), перша – англійська,** освітньо-професійної програми **Англійська мова і друга іноземна мова: усний і письмовий переклад**

Тарасюк Оксани Валеріївни

за темою Специфіка перекладу галузевих термінів сфери іт (на матеріалі підручників і довідників сайту https://www.w3school.com/)

	Критерії	**Оцінка в балах**
1.	Наявність основних компонентів структури роботи — *загалом 5 балів* (усі компоненти присутні – **5**, один або декілька компонентів відсутні – **0**)	
2.	Відповідність оформлення роботи, посилань і списку використаних джерел нормативним вимогам до курсової роботи — *загалом 10 балів* (повна відповідність – **10**, незначні помилки в оформленні – **8**, значні помилки в оформленні – **4**, оформлення переважно невірне – **0**)	
3.	Відповідність побудови вступу нормативним вимогам — *загалом 10 балів* (повна відповідність – **10**, відповідність неповна – **8**, відповідність часткова – **4**, не відповідає вимогам – **0**)	
4.	Відповідність огляду наукової літератури нормативним вимогам — *загалом 15 балів* (повна відповідність– **15**, відповідність неповна– **10**, відповідність часткова– **5**, не відповідає вимогам – **0**)	
5.	Відповідність практичної частини дослідження нормативним вимогам — *загалом 20 балів* (повна відповідність – **20**, відповідність неповна – **15**, відповідність часткова – **10**, не відповідає вимогам – **0**)	
6.	Відповідність висновків результатам теоретичної та практичної складових дослідження — *загалом 10 балів* (повна відповідність – **10**, відповідність неповна – **8**, відповідність часткова – **4**, не відповідає вимогам – **0**)	

Усього набрано балів: ___

Оцінка:

"До захисту"

(42-70 балів)   *(підпис керівника)*

"На доопрацювання"

(0-41 балів)   *(підпис керівника)*

”___”_____**2023 р.**

CONTENTS

INTRODUCTION

The study of terminological lexicon in the field of IT is an actual and progressive area of modern linguistics. Progressive processes of computerization require the need for adequate translation of relevant texts from one language to another. Nowadays, the problem of translating English computer terms into Ukrainian is relevant. This is required for the translation of technical documentation, literature, and the interface of software products. IT texts are filled with terminology that carries key information. Inaccuracies and mistakes in the use and translation of terms can cause misunderstandings between specialists. Thus, incorrect translation of terms can negatively affect the technological process, the implementation of various projects, and the development of companies.

The term paper is **focused on** the translation of terminology in the field of information technology.

The presentation of the problem's theoretical background is research works on topics related to the translation of subject field terms of information technologies, which determines the theoretical significance of this study.

The theoretical background of this work is based on linguistics academic works dedicated to the study of terminology, the basics of its term formation, and research methods written by O. Bilous, T. Kiyak, J. Sager, L. Tomilenko, M. Vakulenko, and others. The correct application of translation transformations in the context of computer terms has been extensively researched by A. Kovalenko, I. Kuchman, and S. Maksimov. Their works have played a crucial role in understanding the issue. In addition, the study of discourseology and discourse analysis by Teun A. van Dijk, S. Eliseeva, and A. Samaricheva has also been equally important

The topicality of this research is driven by the increasing need for the translation of computer-related terminology, making it of great practical significance.

The aim of this term paper is to clarify the specifics of translating IT terminology from English to Ukrainian.

To establish the research aim, **the following objectives** are intended:

1)   to define of the concept of "term" as a basic linguistic unit of professional activity;

2)   to describe general aspects of IT terminology;

3)   to describe ways of translating English terms used in the IT field;

4)   to analyze the main characteristics of the IT discourse;

5)   to analyze translation transformations and, based on the analysis, identify trends in the translation of terms.

The investigation subject is specifics of lexical, grammatical, lexical and grammatical transformations in the translation of terms in the field of information technology.

The object of the research is the terms of the field of information technology.

The data sources are a dataset comprising of 50 sentences containing information technology terminology. The second chapter exclusively focuses on the material from textbooks and reference books sourced from https://www.w3schools.com/. Additionally, an analysis of the utilization of translation transformations is conducted through the use of https://w3schoolsua.github.io/index.html

To achieve the purpose and set objectives, **the following methods** were used in the research: 1) the general scientific method of information analysis and synthesis to clarify the principles of classification of the terminology of the IT field, for theoretical generalization and formulation of conclusions; 2) the method of observation and comparison to find the necessary material for the analysis of the features of translation transformations of IT terminology; 3) the method of linguistic description to identify linguistic stylistic means in IT discourse.

The theoretical significance of the research lies in the establishment of a theoretical foundation for further studies on translating terminology within the IT field.

The practical significance of the research consists of the possibility of applying the research results as recommendations for the translation of the terminology of

information technologies and as educational material for studying the discipline of translation studies.

Also, the results obtained in the study are certain contributions to the general theory of translation, comparative linguistics, comparative lexicology, and theoretical grammar of the English and Ukrainian languages.

The structure of the research is determined by the aim and main objectives.

The work comprises the introduction, the two chapters with conclusions for each, the general conclusions stating the results of the conducted study and outlining possible prospects for further research, the bibliography, the list of reference sources, the list of data sources, the annex of 50 English sentences with the investigated phenomenon according to the research questions and their translation into Ukrainian, and the resume that emphasizes the main idea and practical significance of the study.

CHARTER 1

IT SPHERE SUBJECT FIELD TERMS AS A LANGUAGE PHENOMENON AND TRANSLATION CHALLENGE

1.1 Subject field terms as a language phenomenon

The major breakthrough in the progress of science and technology is the result of the fact that the fundamental level of all new words that appear in different languages daily is specialized vocabulary. In fact, it has been formed in response to a rising need to facilitate specialized communication, translation, and knowledge transfer between text users from various language communities and with similar levels of knowledge. The science related to this is called terminology.

The famous terminologists E. Wüsterath and H. Felber are considered the founders of terminology as an independent linguistic discipline [20].

One of their basic assertions is that due to the monosemic reference between terms and concepts, terms in specialized languages essentially differ from words in general languages. In general, according to Sager [24: 152], the main statement is that a term or specialized language unit can be recognized from a general language word by its single-meaning relationship with the specialized concept it signifies and by the consistency of the relationship between form and content in texts relating to this concept.

A significant number of the theoretical concepts in this field are practice-based and concentrate on the creation of glossaries, specialized dictionaries, and terminological and translation materials. "As a subject field with explicit premises, terminology emerges from the need of technicians and scientists to unify the concepts and terms of their subject fields in order to facilitate professional communication and the transfer of knowledge" [19: 36].

The multifaceted views of scientists on the issue of defining the term is due mainly to approaches to assessing the ability of such a word to denote different concepts. Furthermore, scientists are trying to find some profound features of terms that allow them to be separated from other language units and distinguish the whole set

of terms. For example, A. Dyakov [7: 5] considers a term to be "... a word or subordinate phrase that has a special meaning that expresses and forms a professional concept and applies in the process of learning and mastering scientific and technical objects and relationships between them".

According to the linguistic approach [3: 18], the concept of "term" can be interpreted as: "a unit of lexical level (a word or a collocation) that denominates some concept of respective domain of human endeavor and forms functional thematic class of the field vocabulary and is a natural element of the terminology fund".

Bilous characterizes a term as a word or phrase with a specialized, clear meaning in a particular field of science and technology. Each term has an exact concept, and the term itself strives for unambiguity [2: 35].

Danylenko implies under the term a word (or phrase) of a special field of use, which is the name of a special concept and which requires a definition [6: 15].

In addition, S. Shelov [26] describes the nature of the term in the following way:

• It is a concept denoted by a lexical item (word or word combination) that makes this item a term;

• The "termness" of an item (=quality of being a term) is determined by all items necessary for the identification of its concept within the whole system of definitions (explanations) of these items, belonging to the domain under consideration;

• The greater the amount of information required in a definition (explanation) to identify a concept, denoted by a certain item, the higher the degree of "termness" of this item.

Therefore, considering the term from a linguistic point of view, it should be noted that a number of scientists recognize as terms only language units that have a definition. This is one of the main features used to separate specialized vocabulary from commonly used words.

Also, the terminological lexicon is part of the general vocabulary of the language, so it produces the effect of all the laws of the language as well, including word formation. Available methods of word formation, lexical resources of the national

language, vocabulary of other languages are used to name new concepts and expand the vocabulary of a certain subject field.

Kostras and Mantzari [23] divide all the mechanisms of term formation into three groups: "creating new forms", "using existing forms" and "interlingual borrowing".

"Creating new forms" lists the following methods:

1) Derivation (e. g. *an amendment, amending);*

2) Compounding (e. g. *information+entertainment – infotainment*);

3) Abbreviated forms (e. g. *influenza – flu*).

New terms can be also formed from already "existing forms" by several methods:

1) Conversion (e. g. *a cable – to cable*);

2) Terminologisation (e. g. *sound (generic word) – sound (specialized term in physics);*

3) Transdisciplinary borrowing (e. g. *virus (medical term) – virus (IT term*).

"Interlingual borrowing" is described as the method of introducing terms from one language into another language by borrowing, by means of a 1) direct loan (e. g. *чат - chat; е-мейл - e-mail*) or a 2) loan translation (e. g. *світогляд - worldview).*

Tomilenko, a researcher of terminological vocabulary, noted: "The important feature of the word-formation of the subject field lexicon is that the functions of word-forming morphemes in terminology are somewhat wider than in general literary language. Since such morpheme transformations are aimed at expressing certain meanings in certain term systems, they perform a classification function in terminology"[18: 26].

Classification of terminological lexicon helps in exploring different subject fields by organizing and categorizing technical terms and specialized vocabulary used in a particular field, making it easier to understand and navigate the subject matter. Thus, Eduard Skorokhodko [16: 62-65] distinguishes between types of terms based on a subject field characteristic that function within the limits of one language:

1) Intrasubject field terms

These are special terms of the relevant subject field: artificial intelligence,

aerospace technologies, etc. (e. g. *deep learning, centralized semantic tagging, hyperparameter, validation data, image analysis; aerodynamic heating, airglow, calibration*).

2) Extrasubject field terms

These are special terms of related fields (e. g. mathematics - *linear analysis, matrix*, statics - *correlation, regression analysis*, linguistics - *context, grammatical error*, etc.).

3) General scientific terms (e. g. engineering, equation, mitigation).

Thus, it can be concluded that the specifics of the term is the presence of a special concept and belonging to the relevant subject field, although there are terms of a general scientific nature.

Pchelintseva holds a similar opinion that a term is a lingual sign expressing special scientific concept and reflecting its position in an appropriate scientific notions system, in the system of lore. Scientific terminology is a system of terms that always corresponds to a system of concepts being implemented in their definitions. It is system and concept character that distinguishes a term from a non-term and grants special vocabulary the status of scientific terminology [14: 18].

Scientific terminology includes many subject field terminologies, and computer terminology is one of the most modern and constantly updated.

In particular, computer terminology is part of a special (computer) language. Jaleniauskiene and Čičelytė [21: 122] call this language "computer language", defining it as "a special language formed in the subject area, which is technologically related to the production of personal computers and their software".

Accordingly, the terminological lexicon of the computer language is called "IT terminology".

Based on the analysis of the lexical content of computer terminology, A. Sydor [15] classified the subject field IT terms into the following types of lexical units:

1) Terms related to common words.

Common words that are widely used in IT are terminologicalized, acquiring the

meaning and signs of terms, codified, and their definitions are fixed in glossaries. An example is the computer term *"file"*, which has a meaning that was formed on the basis of a corresponding common word with the meaning *"collection of arranged papers"*.

2) General scientific and general technical terms

Their function is not only within the computer terminology system but also in other fields of science and technology. So, for example, the term *"driver"* in the computer context means *"program"* that controls the input and output of information, and in other fields of science and technology it has more than ten meanings: in one context, the word *"driver"* means *"a way of behavior that loses within a few seconds"*, in the other – *"the type of employee, determined by his behavior, attitude to the task and thinking"*.

3) Highly specialized terms

These terms are characteristic only of the computer field of knowledge, for example, the terms *"widgets", "bug tracker", "refactoring"*.

4) Ambiguous terms

They have two or more meanings in the computer industry. So, for example, the term *"server"* is the name of a device that performs service tasks without human intervention, as well as a program that provides services to clients.

It is abundantly clear that there are no "closed boundaries" between these groups, which implies that words frequently "migrate" between groups and new words are created regularly inside each sector. The information technology revolution has sped this process and made it nearly difficult to record all newly formed terms; even the best-specialized dictionaries are behind by at least one or two years.

Computer vocabulary begins to be used not only by professionals, but also by people who have absolutely nothing to do with the professional information field, as this phenomenon is quickly absorbed into the life of modern society. The process of acquiring a new vocabulary, most of which are locally adapted English words, first created the method of borrowing, and then the terms of a new subculture [5: 8].

Thus, subject field terminology forms the perception of the specificity of this

vocabulary as a set of concepts that reflects the scientific worldview, creates and classifies a number of special names of various fields of knowledge, that is, the term is a carrier of special information and a tool for learning about the surrounding world, has a certain scope of use; its meaning is revealed in the definition.

At the current stage of the development of society and scientific knowledge, terms arise by reinterpreting commonly used words (terminologizing), with the help of morphological derivation, abbreviations, and borrowing ready-made lexemes from other languages. Since the IT field is quite new to study it from the point of view of terminology, because terms are actively created, borrowed and acquire the meaning of a common word. The rapid development of computer and information technologies determines the renewal of not only its lexical component of IT terminology but also contributes to the replenishment of the vocabulary, linguistic and scientific research of new terms and the constant work of translators, which directs the development of technologies around the world. The problem of translation of English computer terms is extremely relevant, voluminous and requires further research.

1.2 Theoretical background of translating subject field terms in IT sphere

One of the biggest challenges in translation is terminology because it requires accurate and proper reproduction. Terms translation in various subject fields requires the translator to have a high level of professionalism and frequently even specialized knowledge in the subject field being translated.

The value of scientific and technical translation depends on the term accuracy and its translation into another language [9].

The main requirement for the translation of English terms is the complete preservation of their semantic content. The Ukrainian equivalent variant, functioning in a certain specialized language, is also a term, therefore it must meet the main characteristics of the term. T. Kyiak [10: 13-15] defined the main characteristics of the translated term:

- lack of synonymy in one subject field;
- disambiguation restriction;

- accuracy and completeness of the term;

- lack of expressiveness;

- euphony;

- optimal level of internationalization.

Adhering to such characteristics, the translated term will be able to convey the meaning/content of the word, group of words, sentence or passage from the original language, and will be classified in a certain subject field.

Two phases of the term translation process are described by A. Kovalenko:

1) clarification of the meaning of the term in the context;

2) translation of the meaning in the native language [11: 257].

Many lexical elements take on several terminological meanings when used in the context of various human activity sectors or subject fields due to the increased specialization of all spheres of human existence as a result of technological and scientific advancement. These problems of polysemy in the terminological sphere frequently occur during the translation process but each time when translator faces this phenomenon the only way is to define the best variant through the context.

For example, the Oxford English Dictionary [30] shows that the word *"benchmark"* has a potentially open set of terminological meanings depending on the subject field:

1) an investment performance attribution (business);

2) a computer program that measures the quality and speed of computer programs, internet services, etc (computing);

3) a point of known elevation marked for the purpose of surveying (surveying);

4) an activity involving finding benchmarks (geolocating);

5) a best-performing, or gold standard test (medicine and statistics).

Thus, polysemy is an important indicator that the translator must take into account in order to create an authentic translation. The interpreter must keep as many words from the subject field as possible that are pertinent to the topic of the interpretation in his "operational memory", constantly keep track of new terms,

compile personal glossaries, and request glossaries from clients (especially those that contain professional jargon).

In characterizing IT terminology, it is necessary to note its dynamic emergence and intensive enrichment with new lexical units. The rapid development of computer technologies and the expansion of the worldwide Internet caused the activation of nominative processes, as a result of which a large number of lexical units of a terminological nature were formed and continue to be formed [4]. This may result in the formation of new words that have not yet been properly explored by linguists or listed in dictionaries and it is definitely a contributing factor to the translation process' complexity.

Furthermore, the complexity of translating IT terminology lies in the fact that many IT terms belong to non-equivalent vocabulary, but this does not mean that it is impossible to translate them. The translator must be able to find an equivalent in the target language and thus create an adequate perception. However, during work on the translation of computer terminology, translators are often faced with the lack of a variant in the target language, so they use special methods of translation.

S. Maksimov [13: 154-155] singled out several types that are inherent in the rendering of modern terms in another language:

1) Transcription.

Each sound of the original word is replaced by the corresponding sound in the Ukrainian language, taking into account phonetic laws. Such words seem foreign when pronounced and written because they correspond to all the norms of the English language. The example to highlight some features of such borrowing: The sound of the source language is replaced by the same sound of the target language: *"login"* – *"логін"; "browser"* – *"браузер"*.

2) Transliteration.

The translator converts character-by-character of the original lexical unit using the alphabet of the target language. For example: *"hacker"* – *"хакер"; "processor"* – *"процесор"*.

3) Rendering based upon finding analogies.

The translator finds a Ukrainian definition similar in meaning to the English term. For example, *"network" – "мереж", "key-board" – "клавіатура", "data" – "дані"*.

4) Finding Ukrainian correspondents built by adding a transcoded or loan element to the Ukrainian element.

The fourth method is based on morpheme or lexical calque. Compound terms are translated by replacing parts of the original lexical unit with lexical equivalents in the Ukrainian language: *"disk storage" – "дискова пам'ять", "application server"- "сервер додатків"*.

5) Combined method of rendering with the use of Latin, Cyrillic letters, and digits.

Abbreviation and transcoding are usually used: *"USB-port"- "USB-порт"; "X-modem" – "Х-модем"*.

6) Incrustation (leaving the lexeme in the SL, usually Latin letters).

Names of companies and software products, and technological standards are usually not translated. For example, the world-famous company Apple is only called *"apple"* as a fruit in computer jargon, in Ukrainian – *"компанія Apple"*. Bluetooth is a method of wireless communication is translated into Ukrainian as *"технологія Bluetooth"*.

7) Descriptive translation (explication).

The descriptive translation consists in the replacement of a word with a phrase, this can also be attributed to explication. Examples of using this method: *"audio" – "звуковий файл", "backfill" – "виконувати зворотну засипку"*.

8) Coining of Ukrainian equivalents on the foreign language basis.

This is the transfer of the oral or written form of the SL term into the TL terminology. Small modifications related to the assimilation of a foreign word form for the target language are allowed, for example, *"smiley" – "смайлик"*.

In the course of the research on the translation of the computer terminological

system, Kuchman [12] focuses attention on the features of certain translation transformations.

The researcher noticed that transcoding occurs in the translation in those cases when the translation language lacks a corresponding concept and a corresponding translation equivalent, and the translator cannot choose a word or words in the translation language that adequately convey the meaning of the concept and meet the requirements for term formation. Transcoding is divided into several subtypes:

● Transliteration (e. g. *commutator - комутатор; processor - процесор; buffer – буфер; multimedia – мультимедія*).

The specifics in the translation transformations of these transliterated words-terms are 1) the doubling of consonants between vowels is not transmitted, as, for example, in the word *"комутатор"*; 2) the letter "r" at the end is usually transmitted, regardless of whether it is pronounced in the source word, such as *"processor"*.

● Transcription (e. g. *browser - браузер; provider – provider; site – сайт; display – дисплей; cartridge – картридж*).

This method of translation is characterized by such a feature in Ukrainian translation as the transfer of the letter *"r"* in any case, for example, *"provider – провайдер"*.

● Mixed transcoding (e. g. *online - онлайн; interface - інтерфейс; device - девайс; chat - чат*).

● Practical transcription (e. g. *module - модуль; matrix - матриця; domain - домен; viewer - в'ювер*).

This method of translation transformations consists of the following features: 1) the use in the Ukrainian language of palatalization at the end of the word, which is absent in the English word, for example, *"модуль"*; 2) the presence of a genitive ending in the target language, for example, *"матриця"*; 3) doubling of consonants between vowels is not transmitted in the Ukrainian language *"pallet – палета"*.

As for calque, in certain cases, the use of the transformation is accompanied by a change in the sequence of calqued elements. Frequently in the process of translation,

transcription and calque are used simultaneously (e. g. *data warehouse - інформаційне сховище; artificial neural network - штучна нейтронна мережа; error checking - контроль помилок; network neighborhood - мережеве оточення*).

Regarding the application of descriptive translation, it is fundamental to make sure that there is no equivalent of a foreign word in the language of translation and it is necessary to have a profound knowledge of the subject field of the translated text in order to correctly reveal the meaning of the concept indicated by the term (e. g. *freeware - безкоштовне програмне забезпечення; wizard - інтерактивний інструмент для покрокового виконання різноманітних процедур).*

It can be concluded that IT terminology is a new object of study by linguists. Thus, in order to achieve appropriateness in the translation of English IT terms, it is necessary to know the main ways of translating terms, as well as to know the Ukrainian terminology of this subject field, which allows finding the Ukrainian equivalent version of the corresponding English term. In addition, it is necessary to be able to correctly choose and use the most suitable way of creating a new concordant word for the translation of a term that does not have a Ukrainian equivalent or reflects a specific phenomenon that is absent in our reality. It is also necessary to recognize the terms' semantic characteristics, which set them apart from non-special vocabulary, in order to correctly understand and translate them.

1.3 Specifics of IT discourse text analysis

Information technology is a process that uses a set of means and methods of data collection, processing and transmission (primary information) to obtain new quality information about the state of an object, process, or phenomenon (information product). Usually, the description of this process is transferred to the text in the form of technical documentation. The denomination of this text can be IT discourse or computer discourse.

In terms of texts, this discourse is represented by general-purpose texts: software texts, technical documentation, as well as articles and educational literature.

Studying the specifics and difficulties of IT translation, S. Eliseeva identified the

following types of IT discourse texts:

1) technical documentation and service manual for computer, network and telecommunication equipment;

2) documentation and instructions for installation, hardware and software configuration, operation and maintenance of complex IT systems and solutions (server systems, data storage systems, computing centers, supercomputers);

3) conceptual projects for the implementation of EPR solutions, guidelines for users and administrators;

4) manuals for operating hardware and software;

5) articles on information technologies (articles for IT specialists that contain examples of software code or command scripts);

6) press releases dedicated to the latest IT innovations;

7) text (or language) elements of computer games (game menu, interface, dialogues of characters) [8: 32-33].

Thus, Samaricheva [25: 281] explains the term "computer discourse" as "entire set of texts with a common theme related to modern information technologies", i. e. texts about computers, and analyzes different types of texts on computer topics.

Linguists from the University of Reading [22] distinguish IT discourse by parameters such as informativeness logic and consistency; active use of abbreviation; special terminology; neologisms, and jargonisms. Linguistic aspects of IT discourse include high selectivity of linguistic means, precision of wording, logic, clarity, and consistency of presentation. In addition, it is worth noting that the texts of the IT discourse are devoid of linguistic means of expressiveness. Among the grammatical features, it is possible to single out frequent use of passive and gerundial inflections, as well as modal, impersonal constructions.

According to the goals of these texts, the genres of discourse are primarily imperative and informative. In software, the cultural affiliation of the text plays a significant role. It can refer to the culture of its creators and language, or to the global, international culture. This feature practically does not apply to technical

documentation, since it belongs to the scientific-technical or production-technical styles, and it is dominated by such features as brevity, ambiguity and clarity, and lacks expressiveness. Both the technical documentation and the text of the software contain professional vocabulary, but in the technical documentation, it will mostly be represented by terminology.

Another important feature is the widespread use of non-verbal elements in computer discourse. Thus, with the help of non-verbal components, Van Dijk exposes [27: 116] the ideological nature of discourse, that is, its type and purpose, he justified it as follows: "ideologies are most often expressed and reproduced in discourse and communication, including non-verbal semiotic messages such as images, photographs, and videos".

On the one hand, the reason for this is the emergence of a large number of non-professional users. In this case, the use of illustrations, different typefaces, graphic symbols, and attention-grabbing callouts with important information can greatly facilitate the perception of complex information for an unprepared person. On the other hand, non-verbal means are characteristic of appellative texts (advertising of computer and related products), which currently occupies a significant place not only in periodicals but also in serious educational and reference publications.

In general, after analyzing the main characteristics of IT discourse, it is possible to draw up an approximate model of the text as a thematic, stylistic and semantically organized, logically structured and complete textual unity, which is characterized by the wide use of special terminological vocabulary and the complexity of the grammatical and syntactic structure and which may belong to the scientific and technical style and highlight scientific activity, scientific and technical progress, or have an educational purpose related to the IT field.

To verify the correctness of this summation, it is worth analyzing a fragment from the IT discourse. An example is an excerpt from a beginner's developer textbook headlined "C++ Primer Plus" by Stephen Prata (PP: 139):

```
{
    using namespace std;
    cout.setf(ios_base::fixed, ios_base::floatfield);
    float tree = 3;      // int converted to float
    int guess(3.9832);   // double converted to int
    int debt = 7.2E12;   // result not defined in C++
    cout << "tree = " << tree << endl;
    cout << "guess = " << guess << endl;
    cout << "debt = " << debt << endl;
    return 0;
}
```

Here is the output from the program in Listing 3.13 for one system:

```
tree = 3.000000
guess = 3
debt = 1634811904
```

In this case, `tree` is assigned the floating-point value 3.0. Assigning 3.9832 to the `int` variable `guess` causes the value to be truncated to 3; C++ uses truncation (discarding the fractional part) and not rounding (finding the closest integer value) when converting floating-point types to integer types. Finally, note that the `int` variable `debt` is unable to hold the value 7.2E12. This creates a situation in which C++ doesn't define the result. On this system, `debt` ends up with the value 1634811904, or about 1.6E09. Well, that's a novel way to reduce massive indebtedness!

Some compilers issue warnings of possible data loss for those statements that initialize integer variables to floating-point values. Also the value displayed for `debt` varies from compiler to compiler. For example, running the same program from Listing 3.13 on a second system produced a value of 2147483647.

The author of the book, Stephen Prata, is an American computer scientist and author. He is best known for his books on programming, including C++ Primer and The Art of Assembly Language.

This fragment of the text shows the extralinguistic factor in the form of a scheme (schematic code). It can be assumed that the text has a technical character according to the scheme (code) in the image. It is also clear that the scheme shown is an example for analysis and study, that is, this text belongs to educational and technical literature.

Although the main indicator of the type of discourse is the text itself. This text aims to inform and educate its audience about a particular topic related to learning the C++ programming language with the purpose of up-skill or raising a reader's level of knowledge about a subject.

In the given example, it is possible to identify the features of technical language. Firstly, the text is explicit and objective, that is, denotative in nature. It is written in 3rd

person and conjugated verbs in indicative mode. The text type is artefact, because it first reflects and then changes the real world. Secondly, passive voice constructions are widely used, for example, *"tree is assigned"*.

This technical text is noteworthy for the absence of figurative language devices, such as similes, personification, or metaphors, that is, it does not cause any emotions or impressions in the reader. The most important factor is that technical language refers to the specific terminology, jargon and neologisms employed in a particular field or discipline. According to the fragment, the IT terminology prevails in the text, for example:

● *tree* (an algorithm for placing and locating files called records or keys in a database);

● *int* (stores integers (whole numbers), without decimals);

● *floating-point value* (a method of encoding real numbers within the limits of finite precision available on computers);

● *truncation* ("cutting" something, or removing parts of it to make it shorter);

● *rounding* (the arrangement of choosing all elements in a group equally in some rational order);

● *compilers* (a special program that translates a programming language's source code into machine code, bytecode or another programming language);

● *data* (information that has been translated into a form that is efficient for movement or processing);

● *running the same program* (loaded into the main/primary memory of the computer called RAM);

● *C++* (a cross-platform language that can be used to create high-performance applications) [29].

Thus, we can conclude that IT discourse is a subtype of technical discourse, based on the use of numerous subject field terms.

In the course of the research, it was found that the IT discourse is a type of scientific and technical discourse. IT discourse covers a wide range of areas of human

activity, including IT and computer technologies.

It was determined that due to the discourse stylistic analysis of this fragment, it is possible to come to the conclusion that IT discourse has its own specific language features, such as general scientific and special terminology, a high frequency of using a limited number of aspectual-temporal forms of verbal vocabulary, the elimination of personal features of speech, the presence of non-verbal elements, possible features of the educational context.

On the basis of this research, it becomes clear that discourse stylistic analysis is an important tool for translators, as it helps them understand the linguistic and cultural context of the source text, and use this information to make informed decisions about how best to translate the text into the target language.

IT translation of subject field texts is the source of the emergence of computer terms, that is, IT translation is one of the important factors in the formation of professional language in the field of information technologies. Therefore, it is necessary to analyze the specifics of the application of various types of translation transformations in the process of translation of IT discourse terms, which will be considered in the second chapter.

CHAPTER 2

IT DISCOURSE SUBJECT FIELD TERMS: TRANSLATION OPTIONS

2.1 Lexical transformations in the translation of IT terms

The proliferation of numerous terms in the field of information technology, particularly those in the English language, which have permeated and become established in various languages, necessitates the specialized translation of these terms to facilitate international integration, globalization, and the advancement of information technology. Translating texts, particularly in the field of information technology, poses a challenge due to the non-equivalent vocabulary of numerous computer terms that lack regular correspondences in the Ukrainian language.

Consequently, rendering special field terminology proves troublesome since most of it is not present in dictionaries. The word-for-word translation of a foreign technical text may, therefore, appear inadequate in the target language. To avoid such an outcome, lexical and grammatical translation transformations should be employed. Translation transformations alter the lexical or grammatical form of linguistic units in the original text while preserving their communicative and pragmatic function. In the preceding chapter, it was identified the key attributes of IT discourse translation, which include the provision of clear and simplified information, the incorporation of illustrations, the avoidance of emotional and expressive language, and the effective handling of neologisms. The translator is cognizant of the communicative and pragmatic objectives of the text and aims to produce an equally accessible and comprehensible rendition by implementing transformations.

The utilization of lexical transformations facilitates the precise representation of a foreign language term's form, thereby rendering it comprehensible to the reader of the translated text. This method enables the translator to maintain the original meaning of the term while providing a grammatically and syntactically correct translation. These are formal transformations at the lexical level, which aim to convey the sound, graphic or semantic content of a foreign language term as accurately as possible. Lexical

transformations used in the reproduction of the English terminology of IT discourse include transcoding and calque.

Transcoding is a type of translation that aims to replicate the orthographic and sound structures of a source language unit in the target language. This method is predominantly employed when translating computer terms at the word level, and it encompasses four sub-types: transliteration, transcription, practical transcribing and zero transcoding.

Transliteration involves, first of all, preserving the letter structure of the term. That is, the lexeme is reproduced using the alphabet of the target language. For example, the term *"webserver"* was transliterated as *"вебсервер"*. The advantage of this type of translation is compactness and economy of language resources.

(28) *Send data to a <u>webserver</u> in the background* (W3En, URL) - *Надсилання даних на <u>вебсервер</u> у фоновому режимі* (W3Uk, URL).

Transliteration is a demanded method in translation, but it can also lead to misunderstandings in certain cases. For instance, it may not always be possible to discern the meaning of a term from the context, especially for those who are not familiar with the new concept. In such situations, adding a descriptive translation can be a helpful solution.

For example, the term *"breakpoint"* in computer programming refers to a point in code where program execution is interrupted. Transliterating this term into another language may not convey its meaning to those who do not have knowledge of the concept. Therefore, adding a descriptive translation such as *"точка переходу"* alongside the transliterated term can help clarify its meaning.

(5) *Add a <u>Breakpoint</u>* (W3En, URL) - *Додати <u>брекпоінт</u> <u>(точку переходу)</u>* (W3Uk, URL).

Transliteration involves the transfer of the graphic form of a terminological unit, but it can also include modifications, in particular, the omission of double consonants, for example, as in "*cro<u>ss</u>-platform*" [krɔːsˈplætfɔːm] "*кро<u>с</u>платформа*".

(14) *Developing cross-platform for enterprise applications* (W3En, URL) - *Розробка кросплатформи корпоративних програм* (W3Uk, URL).

It can also be noticed that the use of transliteration often involves a change in the sequence of transliterated elements, resulting in an additional transformation known as transposition.

(39) *CSS Attribute Selectors* (W3En, URL) - *CSS Селектори атрибутів* (W3Uk, URL).

Transcription is used to record the terms of one language in a form that makes it easy to reproduce the sound to a person who does not know it, then the sounds of one language are written with the symbols of another language. This translation transformation is especially important in the IT discourse due to the rapid emergence of new terms in this field. Over time, IT terminology is increasingly filled with new meanings, which almost always do not have an equivalent in Ukrainian or are too complex to be translated using a descriptive method. The simplest example of transcription is the transfer of the sound form of the term with slight adaptation to the norms of phonetics of the Ukrainian language, as in the word *"file"*.

(8) *Python is an interpreted programming language, this means that as a developer you write Python (.py) file in a text editor and then put this file into the python interpreter to be executed* (W3En, URL) - *Python - це інтерпретована мова програмування, це означає, що як розробник ви пишете файл Python (.py) у текстовому редакторі, а потім поміщаєте цей файл в інтерпретатор Python для виконання* (W3Uk, URL).

Applying transcription, the replacement of sounds may also occur for a more pleasant sound, for example, the replacement of the sound [ɪ] with [и] and [ð] with [т] in the word *"algorithm"* [ˈæl.gə.rɪ.ðəm]:

(11) *KNN is a simple, supervised machine learning algorithm that can be used for classification or regression tasks - and is also frequently used in missing value imputation* (W3En, URL) - *Метод k-найближчих сусідів - це простий алгоритм машинного навчання, який можна використовувати для завдань класифікації*

або регресії, а також часто використовується для імпутації відсутнього значення (W3Uk, URL).

Practical transcribing is a separate subtype of transcoding, which involves a partial change of the morphological form of the word, while preserving the identical meaning of the original unit. When applying practical transcribing, suffixes and endings of terminological units may be adapted, for example, *"formatting"* – *"форматування"*.

(31) *HTML was NEVER intended to contain tags for <u>formatting</u> a web page!* (W3En, URL) - *HTML НІКОЛИ не повинен містити теги для <u>форматування</u> веб-сторінки* (W3Uk, URL).

Among the following analyzed units, the presence of a genitive ending in the target language was noticeably provided by the translation transcribing.

(22) *<u>A polyline</u> is a line that is drawn through a series of coordinates in an ordered sequence* (W3En, URL) - *<u>Полілінія</u> – це лінія, яка проходить через низку координат у впорядкованій послідовності* (W3Uk, URL).

It is worth noting that in Ukrainian, certain computer processes that end in *"tion"* are translated using a feminine term. This is evident because the ending *"ція"* is added to the word.

(46) *CSS <u>Pagination</u> Examples* (W3En, URL) - *Приклади CSS <u>пагінації</u> вебсторінок* (W3Uk, URL).

(16) *<u>Compilation</u> time refers to translating the code into an executable program* (W3En, URL) - *Час <u>компіляції</u> стосується перекладу коду у виконувану програму* (W3Uk, URL).

Calque is a common way of translating IT industry terminology. This method of lexical translation transformations involves a literal, element-by-element translation of a terminological unit and is used mainly when reproducing multi-component terms.

(1) *Artificial neurons that are conceptually modeled after biological neurons compose <u>artificial neural networks</u>* (W3En, URL) - *Штучні нейрони, концептуально*

змодельовані за біологічними нейронами, утворюють штучні нейронні мережі (W3Uk, URL).

Calque is frequently used in conjunction with other methods of translation, particularly when dealing with abbreviations that are common in professional language.

(48) *Many PCs and Macs will have Python already installed* (W3En, URL) - *На багатьох ПК та Mac вже встановлено Python* (W3Uk, URL).

In this case, each element of the word combination in the original language corresponds to one element of the word combination in the target language, allowing for the principle of the linguistic economy to be implemented. As a result, the term *"BCS"*, which stands for *"Basic Catalog Structure"*, would be translated into Ukrainian as *"Базова Структура Каталогу",* while still retaining the abbreviated form.

(40) *How to build a BCS to hold a website and all its components, including images, data, and jQuery scripts* (W3En, URL) - *Як побудувати БСК для веб-сайту та всіх його компонентів, включаючи зображення, дані та сценарії jQuery* (W3Uk, URL).

Programming languages are often characterized by terms that require a combination of transliteration and semi-calque for accurate translation. For instance, when translating terms that include the affix *"cyber-",* the transliteration *"кібер-"* is usually used, combined with a loan translation for the second part of the word. As an example, the term *"cybersecurity"* in Ukrainian combines the transliteration *"кібер-"* with the calque translation *"безпеки".*

(32) *It is essential for cybersecurity professionals to have a solid understanding of how computers communicate* (W3En, URL) - *Професіоналам із кібербезпеки важливо чітко розуміти, як комп'ютери комунікують* (W3Uk, URL).

Another equally important combination of translation transformations is calque and addition. The method of addition is an auxiliary transformation in the translation of the term *"Controls"*. The translation states that *"Controls"* is a special function in

programming for monitoring processes, consisting of certain parts, that is elements. Thus, the word *"елементи"* was added for a reliable translation into Ukrainian:

(24) *Google Maps - Turn On All <u>Controls</u>* (W3En, URL) - *Google Мапи Увімкнути всі <u>елементи керування</u>* (W3Uk, URL).

Calque can be a considered decision made by a technical translator, but it can also occur unconsciously. Frequently, the calquing of a new term is a result of improvisation. Thus, it can be concluded that calque is an essential transformation in technical translation. It is a productive approach that results in the creation of new terms in languages that do not have specialized IT terminology, and it also helps to maintain the original imagery of computer terms.

In the twenty-first century, translation by **zero transcoding** has gained particular popularity. This method involves reproducing lexemes in the original Latin form in the target language. The first category of IT terms to be affected by this way of rendering are the names of newly created operating systems and programming languages.

For example, the term *"Go"*, also known as *Golang*, was formed after the combination of the name of the world-famous company *Google* and the contraction of the word "*language*". When translated into Ukrainian, the term kept its original Latin spelling. The main reason for this is that it is short and convenient to use.

(15) <u>*Go works on different platforms (Windows, Mac, Linux, Raspberry Pi, etc.)*</u> (W3En, URL) - <u>*Go працює на різних платформах (Windows, Mac, Linux, Raspberry Pi тощо)*</u> (W3Uk, URL).

Also, in the example, the zero transcoding transformation was used with the terms of operating systems, namely *Windows, Mac, Linux, Raspberry Pi.*

The names of modern developments also belong to the category of untranslatability. For example, the term *"Canvas"* is unique, so in order to facilitate the search for the necessary information about this platform, the method of zero transcoding was chosen. Also, the main reason for this is the effort to create a sense of modernity and relevance.

(20) *Canvas has several methods for drawing paths, boxes, circles, text, and adding images* (W3En, URL) - *Canvas має кілька методів малювання контурів, прямокутників, кіл, тексту та додавання зображень* (W3Uk, URL).

The technique of zero transcoding is used to transfer terminological abbreviations that belong to the programming language.

(34) *Colors are specified using predefined color names, or RGB, HEX, HSL, RGBA, HSLA values* (W3En, URL) - *Кольори вказуються з використанням передвизначених назв кольорів або значень RGB, HEX, HSL, RGBA, HSLA* (W3Uk, URL).

(33) *SciPY is a scientific computation library that uses NumPy underneath* (W3En, URL) - *SciPY - це наукова бібліотека обчислень, яка використовує NumPy* (W3Uk, URL).

The use of the zero transcoding type of translation is only justified when the specific sound or writing of the neologism makes it impossible to transfer it by other means of translation. For instance, the word combination *"CSS The !important Rule"* can be considered a visual term, as it not only conveys a new concept but also represents a novelty of writing in the target language. This approach ensures that the term retains its intended meaning and avoids potential confusion or misunderstanding.

(43) *CSS The !important Rule* (W3En, URL) - *CSS Правило !important* (W3Uk, URL).

IT terms are unique and highly specific, so it is not surprising that among the proposed translation techniques, approximately 10% of terms were reproduced using the most specific method of "zero transcoding". This method is not a matter of translation but rather the reproduction of terminology by means of incorporating it into another language, while preserving the original spelling of the linguistic unit.

Thus, among the studied units, 13% of the terms were reproduced by loan translation. Since the vast majority of terms are represented by word combinations and abbreviations, in the process of translation of which, calque provides a concise presentation of the content and an unambiguous correlation with the original words.

Transliteration was used specifically to convey the graphic form of 6% of terminological units, and the method of translating 4% of IT terms by reproducing their sound forms using the letters of the target language was transcription. The 7% of analyzed units has acquired in the target language an adapted morphological and sounding form, which is only similar to that of English language by using practical transcribing.

Thus, the use of lexical translation transformations is appropriate when conveying IT terms that have a semantically transparent structure and can be understood taking into account their sound / graphic form or by understanding the meaning of their components.

Lexical and semantic transformations represent a method of translating units that involves using units from the target language in the translation process whose meaning does not coincide with the meaning of the source units but can be inferred with the aid of certain logical transformations. Thus, lexical and semantic transformations are used when translations are unable to be produced using dictionary equivalents of words in the original language due to inconsistencies in terms of meaning and context. The lexical and semantic transformations used in the rendering of the English language terminology of the IT discourse include generalization, differentiation of the meaning, concretization, and modulation.

Generalization involves expanding the meaning of a terminological unit or its component and replacing a specific concept with a more general one.

For instance, the term *"tooltip"* includes the element *"tip"*, which is translated as *"підказка"* in Ukrainian. An important feature is that the term was created with the help of compounding, that is, two bases were combined, and each of them has its own meaning. However, within the IT discourse's terminology, this term is represented by a broader term (word *"tip")* in order to avoid a complex semantic load and because a comprehensive explanation of the word follows later in the sentence:

(44) *Create a <u>tooltip</u> that appears when the user moves the mouse over an element* (W3En, URL) - *Створіть <u>підказку</u>, яка з'являється, коли користувач наводить вказівник миші на елемент* (W3Uk, URL).

Another reason for generalization, in this case, is that the particular meaning expressed by the source language compound word is not irrelevant to the translation receptor. Since translating *"tool + tip"* together will only confuse the receptor and be incomprehensible.

Concretization is the opposite of generalization, as it is a translation method that focuses on narrowing the meaning of a lexical unit during translation, that is, substituting the general concept with a specific one.

(12) *Link networks, as the name implies, consist of protocols designed to send <u>packets</u> through the actual links (physical connections) that network nodes are connected to* (W3En, URL) - *Мережі зв'язків, як випливає з назви, складаються з протоколів, розроблених для надсилання <u>пакетів даних</u> через фактичні зв'язки (фізичні з'єднання), до яких під'єднані вузли мережі* (W3Uk, URL).

In this example, the term *"packets"* used for designating computer technologies is accurately translated using the concretization transformation. This means that the term is translated more precisely as *"пакети даних"* in Ukrainian, clarifying that it belongs to the field of IT.

Concretization is an essential component of translating technical terminology. For instance, the word *"resolution"* is utilized in various field specific terminologies, such as law, science, and computing, with a wide range of technical meanings, but the translation of the word depends on the context, and in this case a narrow-profile term *"роздільна здатність"* is appropriate.

(29) *SVG images can be printed with high quality at any <u>resolution</u>* (W3En, URL) - *Зображення SVG можна друкувати з високою якістю за будь-якої <u>роздільної здатності</u>* (W3Uk, URL).

Differentiation of the meaning is the case when a word with wide semantic meaning in the source language has no corresponding target language words with the

same semantic expressiveness. English IT terminology has numerous words with wide-ranging meanings that often lack full correspondence in Ukrainian language. For example, the Ukrainian word *"шаблон"* – *"template"* in English can also be translated as *"pattern",* it means that they can mean one and the same object represented in different forms *(шаблон та зразок).* Only with the help of context and the communication situation can the differences in meaning between the source and target language be neutralized:

(25) *We have created some responsive W3.CSS website <u>templates</u> for you to use* (W3En, URL) - *Ми створили для вас кілька адаптивних <u>шаблонів</u> веб-сайтів* W3.CSS (W3Uk, URL).

Modulation is a lexical and semantic transformation of the logical development of meanings, which consists in replacing one component of cause-and-effect relations with others logically related to it while preserving the invariant.

(9) *SQL is a standard language for storing, <u>manipulating</u> and retrieving data in databases* (W3En, URL) - *SQL - це стандартна мова для зберігання, <u>обробки</u> та отримання даних в базах даних* (W3Uk, URL).

In this example, the process is transformed into a result.

Accordingly, there can be such a type of modulation as replacing an effect with its cause:

(30) *CSS is used to define styles for your web pages, including the design, layout and variations in <u>display</u> for different devices and screen sizes* (W3En, URL) - *CSS використовується для визначення стилів ваших вебсторінок, включаючи дизайн, макет та варіанти <u>відображення</u> для різних пристроїв та розмірів екрану* (W3Uk, URL).

In the above example, modulation is applied by moving from the consequence, which is *"display"*, to its corresponding process, which is the main function of *"demonstration"*.

Logical development can be traced in the translation of the narrow-profile term *"strings"*, in which a string means "a sequence of characters used to represent text."

Since the term has a technical connotation in the English language, the vocabulary was selected for the translation of *"рядки"* that corresponded to the contextual and stylistic features of the source language unit of IT terminology.

(50) <u>*Strings*</u> *in Python are surrounded by either single quotation marks, or double quotation marks* (W3En, URL) - <u>*Рядки*</u> *в Python оточені або одинарними, або подвійними лапками* (W3Uk, URL).

The term *"navigation bar"* contains the component *"bar"*, however, the noun *"панель"* was used in the translation, which clarifies the specifics of this definition in technical terminology, namely a tool for navigation:

(42) <u>*A navigation bar*</u> *contains a list of links to help visitors navigating through your website* (W3En, URL) - <u>*Панель*</u> *навігації містить список посилань, що допомагають відвідувачам переміщуватись по вашому сайту* (W3Uk, URL).

Therefore, the application of lexical and semantic translation transformations is suitable for translating terms with ambiguous components or imprecise boundaries of their counterparts during translation. It is noteworthy that these translation methods rely entirely on the context in which a given word is used. Among the analyzed methods of reproducing the semantics of words, the study identified 1 instance of employing generalization, 2 instances of concretization, a single case of differentiation of the meaning, and 4 instances of modulation of the 50 examples. Based on quantitative calculations, the utilization rates for various translation techniques are as follows: modulation accounts for 8%, concretization for 4%, generalization for 2%, and differentiation of the meaning also for 2%.

2.2 Grammatical transformations in the translation of IT terms

Grammatical translation transformations refer to the changes made at the grammatical level of a terminological unit due to grammatical differences or differences in word usage between the original language and the translated language. According to Maksimov's classification of translation transformations, which was discussed in the previous chapter, grammatical transformations can be categorized as transposition, grammatical substitution, addition, and omission.

Transposition is used to adapt the original term to the grammatical and syntactic structure of the target language, by rearranging the order of the components in the phrase, the target language version can sound more natural and be more easily understood by native speakers. Therefore, transposition is especially useful when translating multi-component terms from languages with different syntax structures, such as English and Ukrainian. In the following example, *"terminal window"* is reproduced as *"вікно терміналу"*, that is, the *"вікно"* component is moved to another part of the terminological phrase:

(18) *Open up <u>a terminal window</u> and type* (W3En, URL) - *Відкрийте <u>вікно терміналу</u> та введіть текст* (W3Uk, URL).

Similar principle of transposition is used in the following example:

(19) *A Go file consists of <u>the package declaration</u>* (W3En, URL) - *Файл Go складається з <u>оголошення пакета</u>* (W3Uk, URL).

Transposition refers to the rearrangement of linguistic elements such as words, phrases, clauses, and sentences. This change in order is mostly done to maintain what is known as "functional sentence perspective," which divides a sentence into two main parts for effective communication: the "theme" or "known" and the "rheme" or "new." In Ukrainian, this division is usually indicated by the placement of the theme at the beginning of the sentence and the rheme at the end. The theme is typically something the receptor already knows or assumes to know from the preceding context, while the rheme is new information that forms the most significant part of the message.

English follows the same order for the most part, but in some cases, the theme can be placed at the end of the sentence while the rheme can be placed at the beginning. This occurs because the rheme is marked differently by the use of the indefinite article (or zero article with plural or uncountable nouns) with the subject of the sentence. Thus, in such cases, the structure of sentences in the Ukrainian language requires the word order to be reversed, with the rheme, which is the sentence subject, being placed at the end.

(17) <u>*An IDE (Integrated Development Environment) is used to <u>edit AND compile</u>*</u>

the code (W3En, URL) - *Для редагування та компіляції коду використовується IDE (інтегроване середовище розробки)* (W3Uk, URL).

In the given example, transposition is used, that is, the word order changes. In the original text, the first place is the rheme *"An IDE (Integrated Development Environment)"*, and the second place is the theme *"to edit AND compile the code"*, and in the translated fragment it is the opposite, the first place is the theme *"Для редагування та компіляції коду"*, and the second place is *"IDE (інтегроване середовище розробки) An IDE (Integrated Development Environment)* is used as the rheme in the original sentence, because it has a function of the subject in the sentence, and the indefinite article *"an"* shows that this term is new in the context.

In the process of translating English IT discourse terminology into Ukrainian, transformation **grammatical substitution** is employed and can be categorized into two groups: morphological and syntactic substitutions.

Morphological substitutions involve replacing a terminological unit's part of speech. For instance, this may include replacing a noun with an adjective since noun+noun phrases are less common in Ukrainian than in English.

(10) *Machine learning is making the computer learn from studying data and statistics* (W3En, URL) - *Машинне навчання змушує комп'ютер навчатися, вивчаючи дані та статистику* (W3Uk, URL).

In this example, the linguistic units denoting the computer terminology *"machine learning"* in the original text are expressed in the form of two nouns, and in the translated text the linguistic units denoting computer technologies are expressed in the form of the adjective *"машинне"* and the noun *"навчання"*.

In certain cases, the use of grammatical substitution may be necessary for translation in combination with other transformation techniques such as addition, to ensure the faithful rendering of the term. For instance, the term *"booleans"* may need to be translated into Ukrainian as two separate units.

(49) *Booleans represent one of two values: True or False* (W3En, URL) - *Булеві значення представляють одне з двох значень: True або False* (W3Uk, URL).

A frequent case of translation where morphological substitution is used is the replacement of gerund, which is a phenomenon absent in the Ukrainian language, with a Ukrainian noun. Therefore, the terms *"resizing"* and *"scaling"*, which are impersonal forms of the verb, i.e., the gerund, were transformed into the nouns *"зміна розміру"* та *"масштабування"* in order to create a comprehensible and precise translation for the recipient:

(7) *Background images can also respond to <u>resizing</u> and <u>scaling</u>* (W3En, URL) - *Фонові зображення також можуть реагувати на <u>зміну розміру</u> і <u>масштабування</u>* (W3Uk, URL).

Syntactic replacements include replacements at the grammatical and syntactic level of a sentence, in particular, the substitution of an asyndetical connection between the clauses of a complex conditional sentence by a syndetic one:

(6) <u>*Were* a user *to input*</u> *invalid data, the system <u>would display</u> an error message* (W3En, URL) - <u>*Якщо б*</u> *користувач <u>вводив</u> неправильні дані, <u>тільки</u> тоді система <u>показала б</u> повідомлення про помилку* (W3Uk, URL).

In this translation, the English sentence's asyndetic connection is substituted with a syndetic connection in Ukrainian. The conditional conjunction "*якщо б*" and the restrictive particle *"тільки"* are added, and the word order is changed so that the subject precedes the predicate. The translated sentence explicitly states that the system will display an error message only when the user inputs invalid data, accurately representing the original meaning.

During the translation of IT texts, the **addition** was found to be the most productive type of grammatical transformation. This method is frequently employed while translating sentences that contain particular types of abbreviations, especially those that are borrowed from the English language and use the Latin alphabet. In numerous instances, such Latin abbreviations are accompanied by additional explanations in the translation. For example:

(2) *CSS - a language that is responsible for the visual presentation of information and the design of a web page* (W3En, URL) - *CSS <u>(каскадні таблиці стилів)</u> - мова,*

яка відповідає за візуальне представлення інформації та оформлення вебсторінки (W3Uk, URL).

The transformation of addition a complete concept to the Latin abbreviation provides the most complete reproduction of the content component of the original text and facilitates a better understanding of the presented material.

The addition of new vocabulary is not restricted to cases where abbreviations are borrowed, it is applied whenever the target text requires clarification, specification, and highlighting of implicit information. For instance, to clarify the information in the translation, two components *"іконку/піктограм"* are added precisely to explain to the reader that this "*image"* is an element of the graphic interface.

(21) *The example below specifies an image to use instead of the default marker* (W3En, URL) - *Наведений нижче приклад визначає зображення (іконку/піктограму), яке слід використовувати замість стандартного маркера* (W3Uk, URL).

In the following example, addition is used due to the impossibility of expressing the same information using the same number of words as in the original text, providing an adequate and concise translation that reflects the unique characteristics and nuances of the Ukrainian language:

(36) *Create a dropdown box that appears when the user moves the mouse over an element* (W3En, URL) - *Створіть випадаючий список, який з'являється, коли користувач наводить вказівник миші на елемент* (W3Uk, URL).

It is important to note that scientific and technical texts belong to the IT discourse, and often serve the pragmatic function of teaching and explaining information to the reader. Addition is one of the most effective transformations for achieving this function. Thus, the additional components *"header"*, *"nav"*, *"основного та додаткового"*, *"footer"* were in parentheses for the purpose of providing further explanation and facilitating navigation when working with foreign counterparts:

(41) *A website is often divided into headers, menus, content and a footer* (W3En, URL) - *Веб-сторінка зазвичай складається із заголовка (header), навігаційного*

меню (nav), контенту (основного та додаткового) і нижнього колонтитулу (footer) (W3Uk, URL).

The addition frequently functions in tandem with other translation techniques. This is exemplified in the subsequent case, wherein the term "overlays" undergoes translation via practical transcription and then addition. The primary characteristic of the initial transformation pertains to the alteration of the ending in the translated, transcribed term *"оверлеї"*. Meanwhile, the secondary role of the addition transformation involves providing an elucidative element, signifying that *"overlay"* refers to an approach for successively superimposing (накладання) one record atop its previous.

(26) *Google Maps – Overlays* (W3En, URL) - *Google Мапи. Оверлеї (накладення)* (W3Uk, URL).

The omission is used to simplify the perception of the term during translation or in cases where a component translation may become redundant from a semantic point of view. A part of the word can serve as such a component, as in the case of the term *"vector-based"*, when translating into Ukrainian the suffix *-based* is unnecessary:

(27) *SVG defines vector-based graphics in XML format* (W3En, URL) - *SVG визначає векторну графіку у форматі XML* (W3Uk, URL).

This transformation is also used to eliminate whole words or expressions.

(13) *The algorithm to compress text data involves identifying patterns and redundancies in the text and encoding them using shorter codes or symbols* (W3En, URL) - *Стиснення текстових даних передбачає виявлення шаблонів і надмірностей та їх кодування за допомогою коротших кодів або символів* (W3Uk, URL).

In the Ukrainian version of the English sentence, the translator used the method of omission to avoid repeated information, so the English expression *"in the text"* was omitted. Also, in the given example, the expression *"the algorithm"* was omitted during the translation, because *"to compress text data"* already means the algorithmization process. With the help of this transformation, tautology was avoided, and the original

meaning of the sentence remained.

The omission helps to make the translation more laconic and easier to conceive for the target audience.

Linguistic transformation techniques are used in translation to achieve maximum equivalence and communicative effect. Grammatical transformation is a commonly used technique that involves changing the grammatical structure of the sentence, either completely or partially, to adjust for differences in the grammatical aspects of the two languages. To ensure a faithful and accurate translation, it is important for translators to have a comprehensive understanding of the grammatical structure of both the original and target languages. Proficiency in these intricacies gives translators an advantage in producing an relevant and effective translation.

Among the analyzed units of IT discourse, it was found that the most productive and demanded grammatical transformations were addition, and grammatical substitution. Therefore, out of 50 instances, 4 cases of grammatical replacement were identified, which constitutes 8%, 3 cases of transposition amounting to 6%, 5 cases of addition representing 10%, and 2 instances of omission contributing to 4%.

Thus, these transformations are necessary due to the grammatical differences between English and Ukrainian are implemented to ensure that the translated term is easily understood by the reader.

2.3 Lexical and grammatical transformations in the translation of IT terms

Translation of IT discourse terms is a challenging task due to the technical and specialized nature of the vocabulary used. In order to accurately convey the meaning of these terms in the target language, translators often need to employ a variety of translation techniques, including both lexical and grammatical transformations simultaneously, such combinations of different translation transformations were used in the previous chapters. These methods allow for the appropriate adaptation of the source text to the target language's grammar and syntax, as well as the use of appropriate terminology and phrasing.

The third type of transformations is lexical and grammatical transformations.

These are substitutions at the morpheme, grammatical, morphological levels, omission of redundant elements and, on the contrary, descriptive translation. This type of transformation includes compensation, descriptive translation, antonymic translation and total reorganization.

In essence, the fundamental principle underlying lexical and grammatical transformations can be described as follows: the translator's objective is not merely to identify alternative labels for a word, but rather to discover a novel nomination within the source language that enables the transition to the target language at a formal, semiotic level. Consequently, when a translator encounters an idiomatic expression whose meaning is absent from the target language's lexicon, considerable effort must be expended to identify a semantically equivalent phrase that will be comprehensible to the average native speaker of the target language. In such scenarios, compensation is frequently employed.

Compensation is considered a method of translation in which the lexical units of the original are transmitted in the translated language by some other means. It is used when we have to restore ("compensate for") semantic loss, caused by the fact, that some unit remains untranslated fully or partially and translator renders the same information in another way, searching a word or expression with an equivalent meaning. For instance, *"pitfalls"* was replaced by the set phrase *"підводне каміння",* which in Ukrainian has a similar meaning as a hidden danger:

(23) *In these code changes, we could encounter different <u>pitfalls</u> such as compilation errors and static analyzer warnings* (W3En, URL) - *У цих змінах коду можна зіштовхнутись з різними <u>підводними каменями</u>, такими як помилка компіляції та попередження статичного аналізатора* (W3Uk, URL).

Compensation clearly illustrates one of the basic statements of the translation theory: the adequacy of translation is gained not in separate elements of a text, but in a text as a whole.

Explication is used in the case when the word combination consists of terms that are not yet in common use in a certain field of science or technology and require

interpretation.

Descriptive translation or explication is a lexical-grammatical transformation in which a lexical unit of the original language is replaced by a word combination that gives an explanation or definition of this unit. Explication is an extremely productive way of translating computer terms, since the rapid development of the field of information technology requires finding understandable equivalents for terms in a timely manner and establishing them in the translation language. With the help of explication, both multi-component terminological phrases and single-word complex terms are translated.

In order to correctly apply this method of translation, it is necessary to know the subject area of the translated text well in order to correctly reveal the meaning of the concept indicated by the term. That is why, in the following example, the term *"bandwidth"* was translated as *"пропускна здатність (transmission capacity)",* as only a narrowly specialized translator with knowledge of the IT field could select the best alternative, considering that this term refers to the transmission capacity of the maximum amount of data:

(38) *Using image sprites will reduce the number of server requests and save bandwidth* (W3En, URL) - *Використання спрайтів зображень зменшить кількість запитів до сервера та зекономить пропускну здатність* (W3Uk, URL).

The application of descriptive translation requires careful consideration to ensure that there is no existing translation equivalent in the target language. It is possible that a translation equivalent may not yet be recorded in translation dictionaries, but it could already exist in translated literature. Creating terminological doublets in the target language should be avoided, and therefore, it is important to conduct thorough research and analysis before resorting to descriptive translation.

(47) *Python is used for software development* (W3En, URL) - *Python використовується розробки програмного забезпечення* (W3Uk, URL).

In this case, using a combination of explication, *"програмне забезпечення"* conveys the meaning of *"software"* as a set of programs, instructions, and data that

make a computer or other electronic device perform specific tasks.

The descriptive translation of some terms leads to a significant increase in the amount of text, because simple English words are substituted with more complex Ukrainian phrases. In the case of computer terminology, literal translations are not always possible, and it is crucial to consider the context in which the term is used. Therefore, the meaning of the term can be conveyed by providing an explication that slightly increases its length. For instance, the term *"thumbnail"* refers to a small preview image, not an actual human thumbnail. The term is a play on words that describes the size of the image, which is comparable to the size of a fingernail, so the most suitable Ukrainian translation for this term is "*miniature image - мініатюрне зображення"*.

(45) *Thumbnail* (W3En, URL) - *Мініатюрне зображення* (W3Uk, URL).

Descriptive translation is a useful approach to use when there is no equivalent word or phrase in the target language. Additionally, it can be applied when the semantic functions of the original language and the translated language do not align. Therefore, the phrase *"on hover"* should be translated in its entirety, because only in the combination of the noun *"hover"* and the preposition *"on"* is it possible to transform the function of the object of the sentence in the Ukrainian version:

(37) *It is hidden by default, and will be displayed <u>on hover</u>* (W3En, URL) - *За замовчуванням він прихований і буде відображатися <u>при наведенні миші</u>* (W3Uk, URL).

(3) *Boost your <u>cloud skills</u>* (W3En, URL) - *Розвивайте свої <u>навички роботи з хмарним сховищем</u>* (W3Uk, URL).

In this particular case, the phrase *"cloud skills"* is used, which translates to *"навички роботи з хмарним сховищем"* in Ukrainian, indicating that skills are specifically related to knowledge of the data warehouse. The translator expands upon the original expression and opts for a descriptive translation rather than a literal one. This approach allows for the preservation of the semantic meaning of the original statement, albeit at the cost of losing the conciseness of the English text, since the

Ukrainian translation is more verbose.

It can be concluded that the advantage of a descriptive translation is the ability to fully reveal the essence of the described phenomenon. That is why this approach is also called an explication translation, but its drawback is its certain cumbersome nature. As a rule, such constructions have complex complements and expanded definitions of terms.

Antonymic translation involves replacing an affirmative form in the original language with a negative form in the translated language or vice versa. This type of translation allows for the use of not only the exact opposite word or phrase in the translated language but also other words or phrases that express an opposing viewpoint. Antonymic translation is not a mandatory technique, and its use depends on the translator's preference. However, there are situations where antonymic translation is necessary to create a more natural-sounding translation.

In scientific and technical texts, especially IT discourse, the antonymic translation is used as rarely as possible, because this transformation can only be used to compare two terms or substitute one with another.

(35) *On the other hand, in <u>functional</u> programming, the value of "a" is <u>not</u> automatically updated* (W3En, URL) - *Проте, в <u>реактивному</u> програмуванні значення "a" буде автоматично оновлено* (W3Uk, URL).

Using antonymic translation, one IT definition has been substituted for another to clarify the difference between these types of programming or to avoid repetition. The content of the translated unit remains basically the same and the reader has the opportunity to analyze two opposite terms in the text.

Total reorganization changes the internal form of a text segment, that is, with the help of a total reorganization, the form of a sentence or any linguistic unit in it is completely changed.

(4) *<u>The cloud migration</u> should be seamless and efficient* (W3En, URL) - *<u>Перенесення даних у сховище</u> повинно пройти плавно та швидко* (W3Uk, URL).

In this example, the English sentence contains the IT terms *"cloud "* which means

"a service that stores data on remote servers" and *"migration"* which means *"the process of moving data or applications from one location to another"*. Using the total reorganization translation transformation, the Ukrainian translation becomes *"Перенесення даних у сховище повинно пройти плавно та швидко,"* which means *"The transfer of data to the cloud storage should be smoothly and quickly."* This translation captures the meaning of the original sentence without directly reflecting the IT terms *"cloud"* and *"migration"* in a literal way, as *"migration"* is translated as *"перенесення даних"* (transfer of data), and *"cloud "* is translated as *"сховище"* (cloud storage). The broader context of the sentence is considered, focusing on the smooth and efficient transfer of data to cloud storage, rather than literally translating the terms *"cloud"* and *"migration."*

Based on the analysis of prior examples, it can be inferred that lexical and grammatical transformations employed in the translation of computational language sentences not only alter the form and substance of the translated text but primarily modify the cognitive framework through which specific information is conveyed.

During the course of the study, five instances of explication, constituting 10% of the total 50 examples, were identified, along with one instance each of compensation, antonymic translation, and total reorganization, with each accounting for only 2%.

In the process of translating computer terminology used in IT discourse, the main task is the appropriate use of various translation transformations to achieve the adequacy and reliability of the translation. In addition, the translator must take into account the extralinguistic factors of the emergence of terms, since the translation must preserve not only the meaning, but also the stylistic and pragmatic features of the linguistic units.

Quantitative information on the application of translation transformations during the rendering of terminology in the field of information technology from English into Ukrainian is presented in Figure 2.1.

Figure 2.1
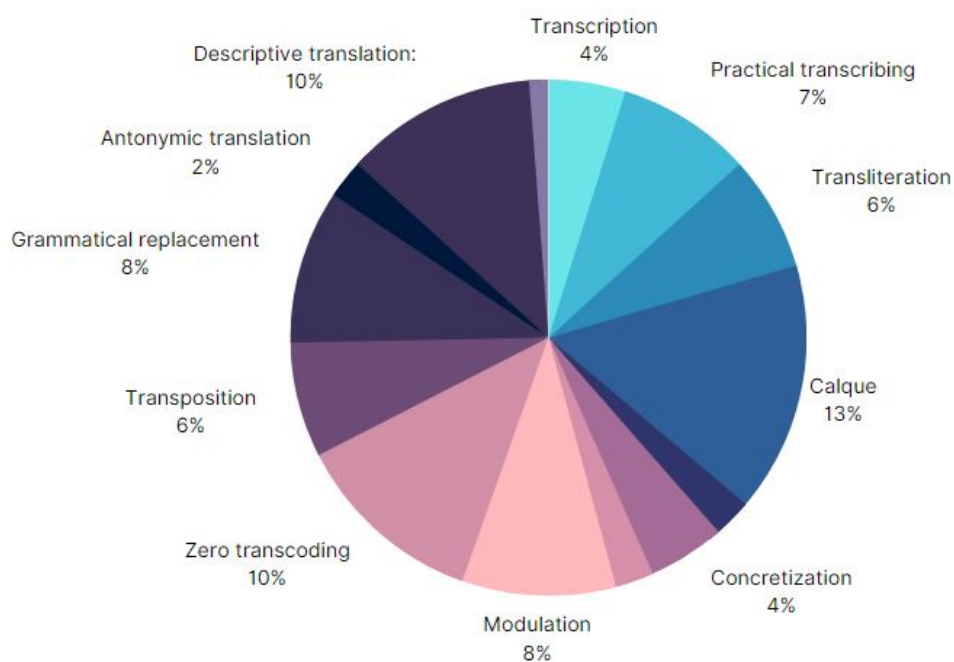
Therefore, based on the analyzed factual material, it can be stated that loan translation (calque) at 13% is the most commonly used approach for translating terminology in the field of information technology. The specifics of this method lie in its combination with grammatical transformations, as literal translation between analytical and synthetic languages inevitably requires grammatical substitutions, transpositions of words, and addition or omission of lexical items.

The other frequent lexical transformation is transcoding, which includes transliteration (6%), transcription (4%), zero transcoding (10%) and practical transcribing (7%). The advantage of this method is the transfer of the novelty of the form of a foreign lexeme. Lexical and semantic transformations also include modulation, which was used in the translation of 8% of the studied terms. Additionally, the second most used method of translating English-language terminology was the "zero transcoding" method, which was used to transfer 10% of the 50 selected computer terms.

Among the lexical-grammatical transformations used in the translation of computer terms, 10% were descriptive translations, 2% were total reorganizations, 2% are antonymic translations and 2% were compensations. These are examples of cross-

level types of translation since their processes of vocabulary rendering simultaneously involve changes at the lexical and grammatical levels of the language. In addition, descriptive translation and total reorganization require the replacement of lexical elements of the source language with word combinations or phrases in the target language to adequately convey the content of the new concept. On the other hand, translation compensation reproduces non-equivalent elements of the source language, using analogical counterparts in the target language.

The main specifics of translating English terms in the field of information technology is the use of several different transformations for the full transfer of content and the implementation of innovative vocabulary in various ways. This includes combinations of calque and transposition, calque with transliteration or transcribing, and descriptive translation with transliteration, in order to create a translation that is easy for the recipients to understand. According to the quantitative calculations of the frequency of use of translation methods, loan translation holds the first place (13%), while antonymic translation, total reorganization, compensation, generalization, differentiation occupy the last places (2%).

CONCLUSIONS

In the course of the research, it was determined that in contemporary linguistics a term is defined as a nominative, specialized lexical entity (either a word or a phrase) belonging to a particular language, designated for the precise naming of specialized concepts. Terms denote well-defined concepts, objects, and phenomena, often embodying unambiguous words devoid of synonyms, while simultaneously constituting components of the international lexicon. The notion of the polysemous nature of certain terms and the fact that terms function as translation units in specialized texts appear to be of significance.

Information technology (IT) terms exhibit a range of characteristics essential for intercultural communication. In the theoretical segment of this study, the research of scholars exploring the challenges of translation of specific fields was examined. Drawing upon these academic works, the concept of a term was determined, and several classifications of terms were identified, taking into account various criteria and ways of creating terms.

Throughout the examination of the selected subject topic, characteristics of IT discourse were identified, specifically the succinctness of style, the concrete and logically substantiated delivery of information, and the abundant use of specialized terminology. Although texts concerning scientific and technical topics lack emotional undertones, jargon, and idiomatic expressions, the disparities in the phonetic, lexical, and syntactic structures of the English and Ukrainian languages render literal translation virtually unfeasible. Consequently, to attain equivalence and adequacy in translation, the implementation of translation transformations becomes a necessity.

The translation of computer vocabulary involves two important stages. The first stage is the understanding of the meaning of the linguistic unit, the analysis of linguistic and extralinguistic factors of its formation, as well as the sphere of functioning of the term. The second important stage is the choice of tactics for its translation. In order to achieve a high-quality and reliable translation of the term, various lexical and grammatical transformations are used. Thus, within the studied discourse, computer

vocabulary was reproduced using such transformations of translation as lexical transformations (transcription, transliteration, zero transcoding, practical transcription and calque), lexical and semantic transformations (generalization, differentiation of a meaning, concretization, modulation), grammatical (addition, omission, transposition), lexical-grammatical transformations (descriptive translation, compensation, antonymic translation, total reorganization) and combinations of these transformations.

The following transformations are the most used: loan translation and zero transcoding, when using which the meaning and structure of the word remain unchanged, descriptive translation, which helps to explain a term without its counterpart in the Ukrainian language, grammatical replacement, which is caused by the difference in the grammatical structures of a pair of translation languages, and others.

The material of the study was modern IT discourse, represented by excerpts of source and target language for comparison of translated examples from the https://www.w3school.com/ website.

The prospects or ideas of further research in the area of translating IT terms are the analysis of computer terminology and the further development of strategies and tactics for reproducing the English terminology of the IT discourse in Ukrainian translations.

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W3Uk — W3SchoolsUA.українською URL:

https://w3schoolsua.github.io/index.html

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ANNEX

№	Examples of using IT terms in English sentences	Translation of the sentences into the Ukrainian language
1.	*Artificial neurons that are conceptually modeled after biological neurons compose <u>artificial neural networks</u>* (W3En, URL).	*Штучні нейрони, концептуально змодельовані за біологічними нейронами, утворюють <u>штучні нейронні мережі</u>* (W3Uk, URL).
2.	*CSS - a language that is responsible for the visual presentation of information and the design of a web page* (W3En, URL).	*CSS <u>(каскадні таблиці стилів)</u> - мова, яка відповідає за візуальне представлення інформації та оформлення вебсторінки* (W3Uk, URL).
3.	*Boost your <u>cloud skills</u>* (W3En, URL).	*Розвивайте свої <u>навички роботи з хмарним сховищем</u>* (W3Uk, URL).
4.	*<u>The cloud migration</u> should be seamless and efficient* (W3En, URL).	*<u>Перенесення даних у сховище</u> повинно пройти плавно та швидко* (W3Uk, URL).
5.	*Add a <u>Breakpoint</u>* (W3En, URL).	*Додати <u>брекпоінт (точку переходу)</u>* (W3Uk, URL).
6.	*<u>Were</u> a user <u>to input</u> invalid data, the system <u>would display</u> an error message* (W3En, URL).	*<u>Якщо б</u> користувач <u>вводив</u> неправильні дані, <u>тільки тоді</u> система <u>показала б</u> повідомлення про помилку* (W3Uk, URL).
7.	*Background images can also respond to <u>resizing</u> and <u>scaling</u>* (W3En, URL).	*Фонові зображення також можуть реагувати на <u>зміну розміру</u> і <u>масштабування</u>* (W3Uk, URL).
8.	*Python is an interpreted programming language, this means that as a*	*Python - це інтерпретована мова програмування, це означає, що як*

	developer you write Python (.py) file in a text editor and then put this file into the python interpreter to be executed (W3En, URL).	*розробник ви пишете файл Python (.py) у текстовому редакторі, а потім поміщаєте цей файл в інтерпретатор Python для виконання* (W3Uk, URL).
9.	*SQL is a standard language for storing, manipulating and retrieving data in databases* (W3En, URL).	*SQL - це стандартна мова для зберігання, обробки та отримання даних в базах даних* (W3Uk, URL).
10.	*Machine learning is making the computer learn from studying data and statistics* (W3En, URL).	*Машинне навчання змушує комп'ютер навчатися, вивчаючи дані та статистику* (W3Uk, URL).
11.	*KNN is a simple, supervised machine learning algorithm that can be used for classification or regression tasks - and is also frequently used in missing value imputation* (W3En, URL).	*Метод k-найближчих сусідів - це простий алгоритм машинного навчання, який можна використовувати для завдань класифікації або регресії, а також часто використовується для імпутації відсутнього значення* (W3Uk, URL).
12.	*Link networks, as the name implies, consist of protocols designed to send packets through the actual links (physical connections) that network nodes are connected to* (W3En, URL).	*Мережі зв'язків, як випливає з назви, складаються з протоколів, розроблених для надсилання пакетів даних через фактичні зв'язки (фізичні з'єднання), до яких під'єднані вузли мережі* (W3Uk, URL).
13.	*The algorithm to compress text data*	*Стиснення текстових даних*

	involves identifying patterns and redundancies <u>in the text</u> and encoding them using shorter codes or symbols (W3En, URL).	*передбачає виявлення шаблонів і надмірностей та їх кодування за допомогою коротших кодів або символів* (W3Uk, URL).
14.	*Developing <u>cross-platform</u> for enterprise applications* (W3En, URL).	*Розробка <u>кросплатформи</u> корпоративних програм* (W3Uk, URL).
15.	<u>*Go works on different platforms (Windows, Mac, Linux, Raspberry Pi, etc.)*</u> (W3En, URL).	<u>*Go працює на різних платформах (Windows, Mac, Linux, Raspberry Pi тощо)*</u> (W3Uk, URL).
16.	<u>*Compilation*</u> *time refers to translating the code into an executable program* (W3En, URL).	*Час <u>компіляції</u> стосується перекладу коду у виконувану програму* (W3Uk, URL).
17.	An IDE (Integrated Development Environment) is used to edit AND compile the code (W3En, URL).	Для редагування та компіляції коду використовується IDE (інтегроване середовище розробки) (W3Uk, URL).
18.	*Open up <u>a terminal window</u> and type* (W3En, URL).	*Відкрийте <u>вікно терміналу</u> та введіть текст* (W3Uk, URL).
19.	*A Go file consists of <u>the package declaration</u>* (W3En, URL).	*Файл Go складається з <u>оголошення пакета</u>* (W3Uk, URL).
20.	<u>*Canvas*</u> *has several methods for drawing paths, boxes, circles, text, and adding images* (W3En, URL).	<u>*Canvas*</u> *має кілька методів малювання контурів, прямокутників, кіл, тексту та додавання зображень* (W3Uk, URL).
21.	*The example below specifies an image to use instead of the default marker* (W3En, URL).	*Наведений нижче приклад визначає зображення <u>(іконку/піктограму)</u>, яке слід*

		використовувати замість стандартного маркера (W3Uk, URL).
22.	<u>*A polyline*</u> *is a line that is drawn through a series of coordinates in an ordered sequence* (W3En, URL).	<u>Полілінія</u> – це лінія, яка проходить через низку координат у впорядкованій послідовності (W3Uk, URL).
23.	*In these code changes, we could encounter different* <u>*pitfalls*</u> *such as compilation errors and static analyzer warnings* (W3En, URL).	*У цих змінах коду можна зіштовхнутись з різними* <u>*підводними каменями*</u>*, такими як помилка компіляції та попередження статичного аналізатора* (W3Uk, URL).
24.	*Google Maps - Turn On All* <u>*Controls*</u> (W3En, URL).	*Google Мапи Увімкнути всі* <u>*елементи керування*</u> (W3Uk, URL).
25.	*We have created some responsive W3.CSS website* <u>*templates*</u> *for you to use* (W3En, URL).	*Ми створили для вас кілька адаптивних* <u>*шаблонів*</u> *веб-сайтів* W3.CSS (W3Uk, URL).
26.	*Google Maps – Overlays* (W3En, URL).	*Google Мапи.* <u>*Оверлеї (накладення)*</u> (W3Uk, URL).
27.	*SVG defines vector-based graphics in XML format* (W3En, URL).	*SVG визначає векторну графіку у форматі XML* (W3Uk, URL).
28.	*Send data to a* <u>*webserver*</u> *in the background* (W3En, URL).	*Надсилання даних на* <u>*вебсервер*</u> *у фоновому режимі* (W3Uk, URL).
29.	*SVG images can be printed with high quality at any* <u>*resolution*</u> (W3En, URL).	*Зображення SVG можна друкувати з високою якістю за будь-якої* <u>*роздільної здатності*</u> (W3Uk, URL).
30.	*CSS is used to define styles for your web*	*CSS використовується для*

	pages, including the design, layout and variations in <u>display</u> for different devices and screen sizes (W3En, URL).	*визначення стилів ваших вебсторінок, включаючи дизайн, макет та варіанти <u>відображення</u> для різних пристроїв та розмірів екрану* (W3Uk, URL).
31.	*HTML was NEVER intended to contain tags for <u>formatting</u> a web page!* (W3En, URL).	*HTML НІКОЛИ не повинен містити теги для <u>форматування</u> веб-сторінки* (W3Uk, URL). *HTML НІКОЛИ не повинен містити теги для <u>форматування</u> веб-сторінки* (W3Uk, URL).
32.	*It is essential for <u>cybersecurity</u> professionals to have a solid understanding of how computers communicate* (W3En, URL).	*Професіоналам із <u>кібербезпеки</u> важливо чітко розуміти, як комп'ютери комунікують* (W3Uk, URL).
33.	*<u>SciPY</u> is a scientific computation library that uses <u>NumPy</u> underneath* (W3En, URL).	*<u>SciPY</u> - це наукова бібліотека обчислень, яка використовує <u>NumPy</u> (W3Uk, URL).*
34.	*Colors are specified using predefined color names, or <u>RGB, HEX, HSL, RGBA, HSLA</u> values* (W3En, URL).	*Кольори вказуються з використанням передвизначених назв кольорів або значень <u>RGB, HEX, HSL, RGBA, HSLA</u> (W3Uk, URL).*
35.	*On the other hand, in <u>functional</u> programming, the value of "a" is <u>not</u> automatically updated* (W3En, URL).	*Проте, в <u>реактивному</u> програмуванні значення "a" буде автоматично оновлено* (W3Uk, URL).
36.	*Create a dropdown box that appears*	*Створіть випадаючий список, який*

	when the user moves the mouse over an element (W3En, URL).	*з'являється, коли користувач наводить <u>вказівник миші</u> на елемент* (W3Uk, URL).
37.	*It is hidden by default, and will be displayed <u>on hover</u>* (W3En, URL).	*За замовчуванням він прихований і буде відображатися <u>при наведенні миші</u>* (W3Uk, URL).
38.	*Using image sprites will reduce the number of server requests and save <u>bandwidth</u>* (W3En, URL).	*Використання спрайтів зображень зменшить кількість запитів до сервера та зекономить <u>пропускну здатність</u>* (W3Uk, URL).
39.	*CSS <u>Attribute Selectors</u>* (W3En, URL).	*CSS <u>Селектори атрибутів</u>* (W3Uk, URL).
40.	*How to build a <u>BCS</u> to hold a website and all its components, including images, data, and jQuery scripts* (W3En, URL).	*Як побудувати <u>БСК</u> для веб-сайту та всіх його компонентів, включаючи зображення, дані та сценарії jQuery* (W3Uk, URL).
41.	*A website is often divided into headers, menus, content and a footer* (W3En, URL).	*Веб-сторінка зазвичай складається із заголовка <u>(header)</u>, навігаційного меню <u>(nav)</u>, контенту <u>(основного та додаткового)</u> і нижнього колонтитулу <u>(footer)</u>* (W3Uk, URL).
42.	*<u>A navigation bar</u> contains a list of links to help visitors navigating through your website* (W3En, URL).	*<u>Панель</u> навігації містить список посилань, що допомагають відвідувачам переміщуватись по вашому сайту* (W3Uk, URL).
43.	*CSS <u>The !important</u> Rule* (W3En,	*CSS Правило <u>!important</u>* (W3Uk,

	URL).	URL).
44.	*Create a <u>tooltip</u> that appears when the user moves the mouse over an element* (W3En, URL).	*Створіть <u>підказку</u>, яка з'являється, коли користувач наводить вказівник миші на елемент* (W3Uk, URL).
45.	*<u>Thumbnail</u>* (W3En, URL).	*<u>Мініатюрне зображення</u>* (W3Uk, URL).
46.	*CSS <u>Pagination</u> Examples* (W3En, URL).	*Приклади CSS <u>пагінації</u> вебсторінок* (W3Uk, URL).
47.	*Python is used for <u>software development</u>* (W3En, URL).	*Python використовується розробки <u>програмного забезпечення</u>* (W3Uk, URL).
48.	*Many <u>PCs</u> and Macs will have Python already installed* (W3En, URL).	*На багатьох <u>ПК</u> та Mac вже встановлено Python* (W3Uk, URL).
49.	*<u>Booleans</u> represent one of two values: True or False* (W3En, URL),	*<u>Булеві значення</u> представляють одне з двох значень: True або False* (W3Uk, URL).
50.	*<u>Strings</u> in Python are surrounded by either single quotation marks, or double quotation marks* (W3En, URL).	*<u>Рядки</u> в Python оточені або одинарними, або подвійними лапками* (W3Uk, URL).

РЕЗЮМЕ

Курсову роботу присвячено дослідженню специфіці перекладу галузевої термінології в сфері ІТ. У ході роботи продемонстровано основні етапи наукової думки в сфері галузевої термінології та термінології інформаційних технологій, описано наявні способи перекладу термінів у ІТ дискурсі, проаналізовано зразок тексту ІТ дискурсу і здійснено перекладацький аналіз фактичного матеріалу дослідження (термінів ІТ дискурсу, усього 50 одиниць). Крім того, у курсовій роботі включено додаток у вигляді таблиці, що містить приклади можливих способів перекладу ІТ термінології.

Ключові слова: переклад, перекладацький аналіз, термін, термінологія, ІТ термін, ІТ дискурс.