



DIPLOMA PROJECT PREPARATION

General information and recommendations

Details of the educational component

Level of higher education	<i>First (Bachelor)</i>
Branch of knowledge	<i>12 Information Technologies</i>
Specialty	<i>121 Software Engineering</i>
Educational program	<i>Software Engineering of Multimedia and Information-Retrieval Systems</i>
Status of the educational component	<i>Normative</i>
Form of education	<i>Full-time</i>
A year of training	<i>4th year</i>
The scope of the educational component	<i>Independent work of student: 180 academic hours</i>
Semester control / control measures	<i>Diploma project defence</i>
Schedule of defences	<i>According to the schedule of the current academic year</i>
Execution language	<i>English</i>
Information about scientific supervisors	<i>DSc, prof. Viktor Legeza, legeza@pzks.fpm.kpi.ua DSc, assoc. prof. Yevgeniya Sulema, sulema@pzks.fpm.kpi.ua PhD, assoc. prof. Tetiana Zabolotnia, zabolotnia@pzks.fpm.kpi.ua PhD, assoc. prof. Lesya Lyushenko, lyushenko@pzks.fpm.kpi.ua PhD, assoc. prof. Oleksandr Neshchadym, neshchadym@pzks.fpm.kpi.ua PhD, assoc. prof. Liubov Oleshchenko, oleshchenko@pzks.fpm.kpi.ua PhD, assoc. prof. Mykola Onai, onai@pzks.fpm.kpi.ua PhD, assoc. prof. Inna Saiapina, saiapina@pzks.fpm.kpi.ua PhD, assoc. prof. Vasyl Yurchyshyn, yurchyshyn@pzks.fpm.kpi.ua PhD Natalia Rybachok, rybachok@pzks.fpm.kpi.ua PhD Olga Sulema, olga.sulema@pzks.fpm.kpi.ua PhD Yana Khitsko, khitsko@pzks.fpm.kpi.ua PhD Oksana Shkurat, shkurat@pzks.fpm.kpi.ua</i>

General Information

Diploma preparation starts with the selection of the subject of the graduation qualification work (diploma project) and appointment of the supervisor and ends with the defence of the diploma project.

*The main recommendations for choosing and formulating the topic of the **diploma project** are as follows.*

- 1. The diploma project must be dedicated to solving a topical applied problem related to the development of an innovative solution in the field of software engineering, in particular software engineering of multimedia and information-retrieval systems.*
- 2. The topic of the diploma project must correspond to the interests of the graduate and the content of the educational program.*
- 3. A typical topic of a diploma project begins with the words "Software of ...".*
- 4. The topic of the diploma project must be approved by the supervisor.*

The result of diploma project preparation must be a developed software product and its documentation.

Schedule of work on the diploma project

<i>Performance period</i>	<i>Work content / Performance result</i>
<i>1 September – 1 October</i>	<i>1) Selection and coordination of the topic with the supervisor; 2) formulation of the task for diploma project.</i>
<i>1 October – 1 December</i>	<i>1) Thorough familiarization with the subject; 2) development of the terms of reference; 3) definition of the structure of the diploma project; 4) preparation of the materials of the first chapter of the explanatory note.</i>
<i>1 December – 1 February</i>	<i>1) Software product development; 2) preparation of the materials of the second chapter of the explanatory note.</i>
<i>1 February – 1 March</i>	<i>1) Software product development; 2) preparation of the materials of the third chapter of the explanatory note; 3) development of the program and methodology of testing.</i>
<i>1 March – 1 April</i>	<i>1) Software product testing; 2) preparation of the materials of the fourth chapter of the explanatory note.</i>
<i>1 April – 1 May</i>	<i>1) Completion of the development and testing of the software product; 2) development of the user manual and (if necessary) other structural elements of the diploma project documentation.</i>
<i>1 May – 1 June</i>	<i>1) Completion of diploma project documentation; 2) preparation of illustrative material.</i>
<i>1 June – 10 June</i>	<i>1) Preparational defence of the diploma project.</i>
<i>10 June – 20 June</i>	<i>1) Defence of the diploma project.</i>

Requirements for documentation of the diploma project

The documentation of the diploma project consists of the following structural elements (given in the order of their location in the completed qualification work):

- 1. Title page*
- 2. Diploma project task*
- 3. Calendar plan*
- 4. Abstract – in English and Ukrainian*
- 5. Inventory of the diploma project documentation*
- 6. Terms of reference (TOR)*
- 7. Explanatory note*
- 8. Program and methodology of testing*
- 9. User manual*
- 10. Programmer's manual - if requested in the TOR*
- 11. Manual of the system programmer - if requested in the TOR*
- 12. Description of the language - if requested in the TOR*
- 13. List of references*
- 14. Annexes.*

The technical task consists of the following sections:

- 1. Name and the field of application*
- 2. Purpose of the development*
- 3. Requirements for the software product*

4. *Requirements for the project documentation*
5. *Design stages*
6. *Development testing procedure.*

The explanatory note (EN) is the main part of the technical documentation of the diploma project. The software includes:

1. *Contents*
2. *List of terms, abbreviations and designations*
3. *Introduction*
4. *Main text*
5. *Conclusions.*

Usually, the main text of the software is drawn up as four sections devoted to the following issues:

- *the first chapter is devoted to the analysis of existing solutions to the given task;*
- *the second chapter contains a general description of the proposed solution, as well as a description of the developed algorithms;*
- *the third chapter contains a description of the architecture of the software product and the implementation of its individual components;*
- *the fourth chapter is devoted to testing, comparing the characteristics of the developed software product with existing analogues, recommendations for using the development.*

Documentation of the diploma project must be drawn up in compliance with the following general rules:

- *the language is English;*
- *sheet format – A4;*
- *font – Times New Roman, 14 points;*
- *line spacing – 1.5 lines;*
- *page parameters: left margin – 3 cm, remaining margins – 2 cm;*
- *page numbering (except the title page) - in the lower right corner.*

Tables must have a number that follows the word "Table" and a title. The reference to the table in the text is made by its number located after the abbreviation "table." For example, "The characteristics of the HRS system are given in the table. 8". If the table cannot be placed on one page, then it is divided into parts, each of which is placed on a separate page and begins with a header line with column names or numbers (if the columns are numbered, then the first part of the table should contain the second row with column numbers). The second part of the table (at the beginning of a new page) is preceded by the entry "Continuation of the table." and continuing table number. Large tables are placed in the appendices.

The drawing must have a sub-drawing inscription, which contains the serial number of the drawing located after the abbreviation "Figure" and the name of the drawing. The inscription is located below the picture and aligned in the center. The reference to the figure in the text is made by its number located after the abbreviation "fig.". For example, "The resulting binary tree T is shown in Fig. 4". Large drawings are placed in the appendices.

Font requirements for formula elements:

- *an ordinary symbol – Times New Roman, 14 points;*
- *a large symbol (for example, a sum sign) – Symbol or Times New Roman, 16 points;*
- *an ordinary index – Times New Roman, 11 points;*
- *a small index – Times New Roman, 9 points.*

All formulas are numbered, the number is indicated in parentheses to the right of the formula. The reference to the formula in the text is made by its number indicated in parentheses. For example, "Consider equation (5).".

Recommendations for preparation to the defence

The following structure of the report is recommended:

- *relevance of the topic;*

- the formulation of the task;
- algorithms developed by a graduate student;
- software architecture;
- implementation features and technologies used;
- test results;
- demonstration of the developed software product.

The presentation should logically complement and illustrate, but not repeat the text of the report. Phrases from the report should not be placed on the slides. Text information on the presentation slides should be concise.

The first slide of the presentation must contain the title of the diploma project (according to the order), the surname and first name of the graduate, the surname, initials, scientific degree, academic title of the scientific supervisor.

On the second slide, a clearly formulated statement of the problem and a list of tasks for diploma design are placed.

The following 1-2 slides provide concise information about the results of the analysis of existing solutions to the given task and the conclusions drawn on the basis of this analysis.

Next, the results of the work are placed on the slides: developed schemes, structures, algorithms.

On the penultimate slides, comparative tables, graphs, charts that prove the quality and competitiveness of the completed development must be provided.

At the end of the presentation, clearly and succinctly formulated conclusions are given based on the results of the diploma project.

The duration of the performance is about 15 minutes. Presentation and report should be well coordinated in time. When preparing for a speech, be sure to speak your speech aloud at least once while running the presentation and check the timing of your speech.

A set of documentation for the defence

A graduate submits the following documents to the Examination Board:

- 1) diploma project prepared as a book;
- 2) CD with the diploma project materials;
- 3) the review result;
- 4) the supervisors's feedback;
- 5) залікова книжка;
- 6) implementation confirmation – if available.

The student should save the files with the diploma project materials to the CD structured in this way:

- 1) TEXT folder contains a file with the text of the diploma project;
- 2) PROGRAM folder contains files of the developed software;
- 3) PRESENTATION folder contains a presentation file.

The names of the files must start with the last name of the student, written in Latin letters. For example, ivanenko_text.docx (the file with the text of Ivanenko's thesis). On the label of the CD, the student writes his/her full name and group number.

Educational materials and resources

1. Diploma Project preparation and defence. Google Classroom. 2023. [Access is given to the registered students]

The recommendations prepared by DSc, assoc. prof. Yevgeniya Sulema.

Adopted by Computer Systems Software Department (protocol № 12 from 26.04.23)

Approved by the Faculty Board of Methodology (protocol № 10 from 26.05.23)