

**DEPARTMENT OF EDUCATION AND SCIENCE OF UKRAINE
NATIONAL TECHNICAL UNIVERSITY OF UKRAINE
«KYIV POLYTECHNIC INSTITUTE THE NAME OF IGOR SIKORSKY»
FACULTY OF INFORMATICS AND COMPUTING ENGINEERING
DEPARTMENT OF THE COMPUTING ENGINEERING**

SOFTWARE ENGINEERING.

Methodical instructions for the course work implementation

**For students of the training direction
"Computer Engineering"
of the Computing engineering department
for All Forms of Education**

*Approved by the Methodical Commission of the faculty
(Protocol No. 10 dated 09.06.2022)
as a study guide for bachelor's degree applicants
in the educational program "Computer systems and networks"
specialty 123 "Computer engineering"*

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Methodical instructions are intended for students in the training direction of 6.050102 "Computer Engineering" of the Computer engineering department for all education forms. The manual contains the requirements for the course work design, options for the assignment, a list of references.

Compilers:

A. I. Antoniuk, PhD, Associate Professor

A. O. Boldak, PhD, Associate Professor

Edited by the compilers

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1. GENERAL PROVISIONS

1.1. Purpose and assignment of course work

Course work is carried out on the basis of the knowledge gained during the study of the course "Fundamentals of software design" and general education disciplines.

The aim of the course work is to consolidate the theoretical knowledge and practical skills of students in the design, modeling, development and testing of software.

The content of the course work is the development of a software application with a graphical user interface.

1.2. Organization of course work

The assignment for the coursework is given to the student by the head. The student draws up a list of tasks, which contains the topic of the course work, the date of issue, due date and days off given - in accordance with the topic and number of the option. The assignment sheet is signed by the head of the course work.

When issuing an assignment for a coursework, the head sets a schedule for the work (see Appendix A).

The main form of coursework is the student's independent work under the guidance of a teacher. Coursework must be completed within the timeframes specified in the assignment sheet and submitted to the supervisor for review. Assessment for the implementation of coursework is set by a commission appointed by the head of the department. If the grade is unsatisfactory, the course work is returned for correction or addition, or the student is given a new assignment.

2. COMPOSITION OF COURSE WORK AND REQUIREMENTS FOR PREPARATION

Course work includes a printed explanatory note and a disk with files. The disk must contain the project files (in a separate directory) and a file of MS Word type with an explanatory note.

2.1. Structure of the explanatory note

Title page

Annotation

Content

Introduction

1. Technical task
2. Software application design
3. Software application development
4. Software application testing

Conclusion

List of sources used

Annexes

2.2. Requirements for structural elements of an explanatory note

The "title page" (a sample is given in Appendix B) is the first page of the explanatory note and serves as the main source of bibliographic information necessary for processing and searching documents.

"Abstract" is intended to familiarize with the work. It should be short, informative and contain information that allows you to present the essence of the work. The abstract must contain:

- information about the volume of the note, the number of illustrations, tables, annexes, the number of sources according to the list of references;
- abstract text;
- list of keywords.

The text of the abstract should reflect the information presented in the explanatory note and in a certain sequence:

- object of development or research;
- goal of the work;
- research methods;
- results and their novelty;
- significance of the work and conclusions.

The abstract should be no more than 500 words and should be placed on one A4 page.

Key words that are essential for disclosing the essence of the note are formed on the basis of the text of the abstract and placed before the text of the abstract. The list of keywords includes from 5 to 15 words (phrases), printed in capital letters in the nominative case in a line separated by commas.

"Content" (example - in Appendix B. 4) is placed immediately after the abstract, starting on a new page. Content includes:

- introduction;
- sequentially listed names of all sections, appendices, clauses and subclauses (if any);
- conclusion;
- перечень ссылок;
- application name.

The section "Introduction" gives a short assessment of the current state of the problem and outlines the existing problems of cognition in this area; the purpose of the work and the need to use computer tools for solving such problems are justified. The introduction is located on a separate page.

The section "Terms of Reference" contains the verbal and mathematical formulation of the assignment for software development.

"Conclusion" contains general conclusions on the implementation of the course work.

All editions used in the course work and their authors should be listed in the "List of sources used".

The Appendices contain: source codes of the classes of the software application, printouts of the results obtained as a result of the program; illustrative material that complements the text of the explanatory note, but is too large for inclusion directly into the PP (takes a whole page or more).

2.3. Requirements for the execution of an explanatory note

An explanatory note is drawn up on A4 sheets in a text editor WORD. The text of the explanatory note should be typed in 14 font and have the following margins: left - 25 mm, right - 10 mm, top - 20 mm, bottom - 20 mm, paragraph - 15 mm.

Each section of the explanatory note should start on a new page. Section titles are numbered in Arabic numerals and separated from the main text. The page numbering is continuous, starting from the title page. On the title page, the page number is not put; on the subsequent pages, the numbers are indicated in Arabic numerals in the upper right corner.

The explanatory note is submitted to the defense in stitched and electronic form.

More detailed requirements for registration are set out in the "Requirements for the registration of bachelor's and diploma theses", approved by the Department of the computing engineering.

3. TASK FOR COURSE WORK

1. File manager
2. Image manager
3. An online store that sells a variety of products such as auto parts, books, flowers, computers, theater tickets, food, and more.
4. Various libraries, such as books, movies, music, and more.
5. Encyclopedias of various subjects.
6. The system of accounting for the composition of various goods.
7. The system of accounting for various property in the institution.
8. The work of the hospital registry.
9. The work of the personnel accounting department.
10. Analysis of the success of students of the educational institution.
11. Dining room work. Orders for the purchase of food by pre-order dinners by dining room visitors.
12. Stock chart editor.
13. Radar chart editor.
14. Bar chart editor.
15. Scatter plot editor with labels.
16. Text editor.

4. LIST OF RECOMMENDED LITERATURE

1. Э. Гамма, Р. Хелм, Р. Джонсон, Дж. Влиссидес. Приемы объектно-ориентированного проектирования. Паттерны проектирования = Design Patterns: Elements of Reusable Object-Oriented Software. — СПб: «Питер», 2007. — С. 366. — [ISBN 978-5-469-01136-1](#) (также [ISBN 5-272-00355-1](#))
2. Erich Gamma, Richard Helm, Ralph Johnson, John Vlissides. Design Patterns: Elements of Reusable Object-Oriented Software. - Addison-Wesley Professional Computing Series. – P. 568.
3. Герберт Шилдт. Библиотека SWING для Java: руководство для начинающих - Вильямс , 2007 — С. 704 - ISBN 978-5-8459-1162-9, 0-07-226314-8;
4. Марк Гранд. Шаблоны проектирования в JAVA. Каталог популярных шаблонов проектирования, проиллюстрированных при помощи UML = Patterns in Java, Volume 1. A Catalog of Reusable Design Patterns Illustrated with UML. — М.: «Новое знание», 2004. — С. 560. — [ISBN 5-94735-047-5](#)
5. Mark Grand. Patterns in Java. Volume 1. A catalog of reusable design patterns illustrated with UML. Second edition. - Wiley Publishing, Inc. – 2002. – P.559.
6. Шаблоны проектирования программного обеспечения – [http://uk.wikipedia.org/wiki/Шаблоны проектирования программного обеспечения](http://uk.wikipedia.org/wiki/Шаблоны_проектирования_программного_обеспечения)
7. [Обзор паттернов проектирования](http://citforum.ru/SE/project/pattern/) – <http://citforum.ru/SE/project/pattern/>
8. [Объектно-ориентированное проектирование, паттерны проектирования \(Шаблоны\)](http://www.javenue.info/themes/ood/) – <http://www.javenue.info/themes/ood/>
9. [David Gallardo. Шаблоны проектирования Java](http://khpri-iip.mipk.kharkiv.edu/library/extent/prog/jdp101/index.html) - <http://khpri-iip.mipk.kharkiv.edu/library/extent/prog/jdp101/index.html>

5. ANNEXES

Appendix A. Schedule of course work

No. in order	Types of work (titles of sections)	Deadline (week of semester)	Completion mark
1	Introduction. Technical task	1-2	
2	Software Design	3-6	
3	Software Development	7-10	
4	Software Testing	11-12	
5	Execution of an explanatory note	13-15	
6	Defense of course work	16-17	

Appendix B. Example of a Title Page

Department of education and science of Ukraine
National technical university of Ukraine
«Kyiv polytechnic institute the name of Igor Sikorsky»
Faculty of informatics and computing engineering
Department of the computing engineering

COURSE WORK

Discipline: «Software Engineering - 2»
Software design fundamentals

EXECUTED:

Student of second course

FICE group _____

Student name

Number of Student book _____

CHECKED:

associate professor of

Department of the computing engineering

Ph.D., S.R.

Antonuk A. I.

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