

МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ  
НАЦІОНАЛЬНИЙ УНІВЕРСИТЕТ «ЛЬВІВСЬКА  
ПОЛІТЕХНІКА»

ІНСТИТУТ КОМП'ЮТЕРНИХ НАУК ТА  
ІНФОРМАЦІЙНИХ ТЕХНОЛОГІЙ

ЗВІТ

про виконання лабораторної роботи №9

з дисципліни

«Спеціалізовані мови програмування»

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Львів-2023

**Мета.** Розробка програмно-інформаційного продукту засобами Python.

**Умова завдань:**

Завдання 1. Створити скрипт запуску лабораторних робіт 1-8 (Runner) з єдиним меню для управління додатками використовуючи патерн FACADE <https://refactoring.guru/uk/design-patterns/facade>.

Завдання 2. Зробити рефакторинг додатків, які були зроблені в лб 1-8, для підтримки можливості запуску через Runner.

Завдання 3. Зробити рефакторинг додатків, які були зроблені в лб 1-8, використовуючи багаторівневу архітектуру додатків (див. приклад нижче) та принципи об'єктно-орієнтованого підходу.

Завдання 4. Створити бібліотеку класів, які повторно використовуються у всіх лабораторних роботах та зробити рефакторинг додатків для підтримки цієї бібліотеки. Таких класів в бібліотеці має бути як найменш 5.

Завдання 5. Додати логуювання функцій в класи бібліотеки програмного продукту використовуючи <https://docs.python.org/uk/3/howto/logging.html>.

Завдання 6. Додати коментарі до програмного коду та сформуванати документацію програмного продукту засобами roudoc. Документація має бути представлена у вигляді сторінок тексту на консолі, подана у веб-браузері та збережена у файлах HTML.

Завдання 7. Документація та код програмного продукту має бути розміщено в GIT-репозиторій.

Завдання 8. Проведіть статичний аналіз коду продукту засобами PYLINT <https://pylint.readthedocs.io/en/stable/> та виправте помилки, які були ідентифіковані. Первинний репорт з помилками додайте до звіту лабораторної роботи.

Завдання 9. Підготуйте звіт до лабораторної роботи.

**Хід виконання:**

Початкові зауваження бібліотеки Pylint.

```
apple@apple's-laptop lab7 % pylint src
```

```
***** Module ui.menu_builder
```

```
src/ui/menu_builder.py:36:8: W0107: Unnecessary pass statement (unnecessary-pass)
```

```
src/ui/menu_builder.py:21:0: R0903: Too few public methods (1/2) (too-few-public-methods)
```

```
***** Module ui.menu.menu_facade
```

```
src/ui/menu/menu_facade.py:1:0: C0114: Missing module docstring (missing-module-docstring)
```

```
src/ui/menu/menu_facade.py:65:16: R1723: Unnecessary "elif" after "break", remove the leading "el" from "elif" (no-else-break)
```

```
***** Module ui.menu.docs_menu
```

```
src/ui/menu/docs_menu.py:9:0: W0611: Unused import os (unused-import)
```

```
***** Module ui.menu.lab7.user_menu
```

```
src/ui/menu/lab7/user_menu.py:118:31: W0718: Catching too general exception Exception (broad-exception-caught)
```

```
src/ui/menu/lab7/user_menu.py:31:4: R0915: Too many statements (73/50) (too-many-statements)
```

```
src/ui/menu/lab7/user_menu.py:28:0: R0903: Too few public methods (1/2) (too-few-public-methods)
```

```
***** Module ui.menu.lab5.figures
```

```
src/ui/menu/lab5/figures.py:16:0: R0903: Too few public methods (1/2) (too-few-public-methods)
```

```
***** Module ui.menu.lab3.ascii_art_generator_menu
```

```
src/ui/menu/lab3/ascii_art_generator_menu.py:18:0: R0903: Too few public methods (1/2)
```

(too-few-public-methods)

\*\*\*\*\* Module ui.menu.lab4.own\_ascii\_art\_generator

src/ui/menu/lab4/own\_ascii\_art\_generator.py:14:0: R0903: Too few public methods (1/2) (too-few-public-methods)

\*\*\*\*\* Module config.paths\_config

src/config/paths\_config.py:1:0: C0114: Missing module docstring (missing-module-docstring)

\*\*\*\*\* Module config.logger\_config

src/config/logger\_config.py:6:0: C0304: Final newline missing (missing-final-newline)

src/config/logger\_config.py:1:0: C0114: Missing module docstring (missing-module-docstring)

\*\*\*\*\* Module config.credentials\_config

src/config/credentials\_config.py:4:0: C0304: Final newline missing (missing-final-newline)

src/config/credentials\_config.py:1:0: C0114: Missing module docstring (missing-module-docstring)

\*\*\*\*\* Module config.urls\_config

src/config/urls\_config.py:2:0: C0304: Final newline missing (missing-final-newline)

src/config/urls\_config.py:1:0: C0114: Missing module docstring (missing-module-docstring)

\*\*\*\*\* Module entity.user

src/entity/user.py:33:0: R0902: Too many instance attributes (9/7) (too-many-instance-attributes)

\*\*\*\*\* Module source.conf

src/source/conf.py:1:0: C0114: Missing module docstring (missing-module-docstring)

src/source/conf.py:10:0: W0622: Redefining built-in 'copyright' (redefined-builtin)

src/source/conf.py:9:0: C0103: Constant name "project" doesn't conform to UPPER\_CASE naming style (invalid-name)

src/source/conf.py:10:0: C0103: Constant name "copyright" doesn't conform to UPPER\_CASE naming style (invalid-name)

src/source/conf.py:11:0: C0103: Constant name "author" doesn't conform to UPPER\_CASE naming style (invalid-name)

src/source/conf.py:12:0: C0103: Constant name "release" doesn't conform to UPPER\_CASE naming style (invalid-name)

src/source/conf.py:27:0: C0103: Constant name "html\_theme" doesn't conform to UPPER\_CASE naming style (invalid-name)

\*\*\*\*\* Module shared.data\_processor

src/shared/data\_processor.py:24:0: E0401: Unable to import 'dateutil.relativedelta' (import-error)

src/shared/data\_processor.py:67:12: W1203: Use lazy % formatting in logging functions (logging-fstring-interpolation)

src/shared/data\_processor.py:89:12: W1203: Use lazy % formatting in logging functions (logging-fstring-interpolation)

\*\*\*\*\* Module shared.json\_processor

src/shared/json\_processor.py:28:0: E0401: Unable to import 'colorama' (import-error)

\*\*\*\*\* Module shared.html\_processor

src/shared/html\_processor.py:20:0: E0401: Unable to import 'html2text' (import-error)

src/shared/html\_processor.py:102:15: W0718: Catching too general exception Exception (broad-exception-caught)

src/shared/html\_processor.py:104:12: E1205: Too many arguments for logging format string (logging-too-many-args)

src/shared/html\_processor.py:117:8: R1705: Unnecessary "else" after "return", remove the "else" and de-indent the code inside it (no-else-return)

src/shared/html\_processor.py:118:12: W0612: Unused variable 'file\_name' (unused-variable)

src/shared/html\_processor.py:21:0: C0411: standard import "import os" should be placed before "import html2text" (wrong-import-order)

\*\*\*\*\* Module shared.file\_processors

src/shared/file\_processors.py:12:0: E0401: Unable to import 'pandas' (import-error)

src/shared/file\_processors.py:37:12: W1203: Use lazy % formatting in logging functions (logging-fstring-interpolation)

src/shared/file\_processors.py:52:12: W1203: Use lazy % formatting in logging functions (logging-fstring-interpolation)

src/shared/file\_processors.py:68:12: W1203: Use lazy % formatting in logging functions (logging-fstring-interpolation)

src/shared/file\_processors.py:84:12: W1203: Use lazy % formatting in logging functions (logging-fstring-interpolation)

src/shared/file\_processors.py:87:12: W1203: Use lazy % formatting in logging functions (logging-fstring-interpolation)

src/shared/file\_processors.py:94:12: W1203: Use lazy % formatting in logging functions (logging-fstring-interpolation)

src/shared/file\_processors.py:112:12: W1203: Use lazy % formatting in logging functions (logging-fstring-interpolation)

src/shared/file\_processors.py:98:0: R0903: Too few public methods (1/2) (too-few-public-methods)

\*\*\*\*\* Module shared.color\_processor

src/shared/color\_processor.py:17:0: E0401: Unable to import 'colorama' (import-error)

src/shared/color\_processor.py:18:0: E0401: Unable to import 'pyfiglet' (import-error)

src/shared/color\_processor.py:19:0: E0401: Unable to import 'colorama' (import-error)

src/shared/color\_processor.py:28:0: R0903: Too few public methods (1/2) (too-few-public-methods)

src/shared/color\_processor.py:45:0: R0903: Too few public methods (1/2) (too-few-public-methods)

\*\*\*\*\* Module docs.conf

src/docs/conf.py:43:0: C0304: Final newline missing (missing-final-newline)

src/docs/conf.py:43:0: C0301: Line too long (107/100) (line-too-long)

src/docs/conf.py:1:0: C0114: Missing module docstring (missing-module-docstring)

src/docs/conf.py:15:0: W0622: Redefining built-in 'copyright' (redefined-builtin)

src/docs/conf.py:14:0: C0103: Constant name "project" doesn't conform to UPPER\_CASE naming style (invalid-name)

src/docs/conf.py:15:0: C0103: Constant name "copyright" doesn't conform to UPPER\_CASE naming style (invalid-name)

src/docs/conf.py:16:0: C0103: Constant name "author" doesn't conform to UPPER\_CASE naming style (invalid-name)

src/docs/conf.py:17:0: C0103: Constant name "release" doesn't conform to UPPER\_CASE naming style (invalid-name)

src/docs/conf.py:30:0: C0103: Constant name "html\_theme" doesn't conform to UPPER\_CASE naming style (invalid-name)

src/docs/conf.py:34:0: C0116: Missing function or method docstring (missing-function-docstring)

src/docs/conf.py:34:0: R0913: Too many arguments (6/5) (too-many-arguments)

src/docs/conf.py:34:16: W0613: Unused argument 'app' (unused-argument)

src/docs/conf.py:34:21: W0613: Unused argument 'what' (unused-argument)

src/docs/conf.py:34:33: W0613: Unused argument 'obj' (unused-argument)

src/docs/conf.py:34:38: W0613: Unused argument 'skip' (unused-argument)

src/docs/conf.py:34:44: W0613: Unused argument 'options' (unused-argument)

src/docs/conf.py:39:0: C0116: Missing function or method docstring (missing-function-docstring)

\*\*\*\*\* Module service.docs\_service

src/service/docs\_service.py:30:0: C0115: Missing class docstring (missing-class-docstring)

\*\*\*\*\* Module service.lab8.diagrams\_service

src/service/lab8/diagrams\_service.py:30:0: E0401: Unable to import 'matplotlib' (import-error)

src/service/lab8/diagrams\_service.py:39:0: R0903: Too few public methods (0/2) (too-few-public-methods)

\*\*\*\*\* Module service.lab7.user\_service

src/service/lab7/user\_service.py:30:0: E0401: Unable to import 'prettytable' (import-error)

src/service/lab7/user\_service.py:31:0: E0401: Unable to import 'regex' (import-error)

\*\*\*\*\* Module service.lab5.figures\_service

src/service/lab5/figures\_service.py:125:0: C0301: Line too long (101/100) (line-too-long)

src/service/lab5/figures\_service.py:43:0: E0401: Unable to import 'colorama' (import-error)

src/service/lab5/figures\_service.py:153:19: R1714: Consider merging these comparisons with 'in' by using 'row in (0, self.\_\_length - 1)'. Use a set instead if elements are hashable. (consider-using-in)

src/service/lab5/figures\_service.py:155:21: R1714: Consider merging these comparisons with 'in' by using 'col in (0, self.\_\_length - 1)'. Use a set instead if elements are hashable. (consider-using-in)

src/service/lab5/figures\_service.py:193:20: R0916: Too many boolean expressions in if statement (7/5) (too-many-boolean-expressions)

src/service/lab5/figures\_service.py:193:21: R1714: Consider merging these comparisons with 'in' by using 'row in (0, modified\_length - 1)'. Use a set instead if elements are hashable. (consider-using-in)

src/service/lab5/figures\_service.py:194:24: R1714: Consider merging these comparisons with 'in' by using 'col in (0, modified\_length - 1)'. Use a set instead if elements are hashable. (consider-using-in)

src/service/lab5/figures\_service.py:163:4: R0912: Too many branches (14/12) (too-many-branches)

\*\*\*\*\* Module service.lab3.ascii\_art\_generator\_service

src/service/lab3/ascii\_art\_generator\_service.py:27:0: E0401: Unable to import 'pyfiglet' (import-error)

src/service/lab3/ascii\_art\_generator\_service.py:28:0: E0401: Unable to import 'colorama'

(import-error)

src/service/lab3/ascii\_art\_generator\_service.py:36:0: R0903: Too few public methods (1/2) (too-few-public-methods)

\*\*\*\*\* Module service.lab4.data\_processors

src/service/lab4/data\_processors.py:7:0: E0401: Unable to import 'colorama' (import-error)

src/service/lab4/data\_processors.py:12:0: R0903: Too few public methods (1/2) (too-few-public-methods)

src/service/lab4/data\_processors.py:50:4: R0912: Too many branches (13/12) (too-many-branches)

src/service/lab4/data\_processors.py:122:8: C0200: Consider using enumerate instead of iterating with range and len (consider-using-enumerate)

src/service/lab4/data\_processors.py:143:8: C0206: Consider iterating with .items() (consider-using-dict-items)

src/service/lab4/data\_processors.py:147:16: C0200: Consider using enumerate instead of iterating with range and len (consider-using-enumerate)

src/service/lab4/data\_processors.py:95:4: R0912: Too many branches (13/12) (too-many-branches)

src/service/lab4/data\_processors.py:34:0: R0903: Too few public methods (1/2) (too-few-public-methods)

-----  
Your code has been rated at 8.39/10 (previous run: 9.14/10, -0.75)

Виконання команди “pylint” після виправлень зображено на рис.1

```
*edyk_vitalii@vitaliis-Laptop spl % pylint src
***** Module ui.menu.lab7.user_menu
src/ui/menu/lab7/user_menu.py:118:31: W0718: Catching too general exception Exception (broad-exception-caught)
src/ui/menu/lab7/user_menu.py:31:4: R0915: Too many statements (73/50) (too-many-statements)
***** Module entity.user
src/entity/user.py:33:0: R0902: Too many instance attributes (9/7) (too-many-instance-attributes)
***** Module shared.html_processor
src/shared/html_processor.py:101:15: W0718: Catching too general exception Exception (broad-exception-caught)
src/shared/html_processor.py:103:12: E1205: Too many arguments for logging format string (logging-too-many-args)
***** Module service.lab5.figures_service
src/service/lab5/figures_service.py:154:19: R1714: Consider merging these comparisons with 'in' by using 'row in (0, self.__length - 1)'. Use a set instead if elements are hashable. (consider-using-in)
src/service/lab5/figures_service.py:156:21: R1714: Consider merging these comparisons with 'in' by using 'col in (0, self.__length - 1)'. Use a set instead if elements are hashable. (consider-using-in)
src/service/lab5/figures_service.py:194:20: R0916: Too many boolean expressions in if statement (7/5) (too-many-boolean-expressions)
src/service/lab5/figures_service.py:194:21: R1714: Consider merging these comparisons with 'in' by using 'row in (0, modified_length - 1)'. Use a set instead if elements are hashable. (consider-using-in)
src/service/lab5/figures_service.py:195:24: R1714: Consider merging these comparisons with 'in' by using 'col in (0, modified_length - 1)'. Use a set instead if elements are hashable. (consider-using-in)
src/service/lab5/figures_service.py:164:4: R0912: Too many branches (14/12) (too-many-branches)
***** Module service.lab4.data_processors
src/service/lab4/data_processors.py:50:4: R0912: Too many branches (13/12) (too-many-branches)
src/service/lab4/data_processors.py:122:8: C0200: Consider using enumerate instead of iterating with range and len (consider-using-enumerate)
src/service/lab4/data_processors.py:143:8: C0206: Consider iterating with .items() (consider-using-dict-items)
src/service/lab4/data_processors.py:147:16: C0200: Consider using enumerate instead of iterating with range and len (consider-using-enumerate)
src/service/lab4/data_processors.py:95:4: R0912: Too many branches (13/12) (too-many-branches)
-----
Your code has been rated at 9.78/10 (previous run: 9.77/10, +0.01)
```

Посилання на GitHub-репозиторій із кодом: <https://github.com/VasylNyul/python-labs/>

**Висновки:** Я розробив програмно-інформаційний продукт засобами Python.