Міністерство освіти і науки України

Національний університет «Львівська Політехніка»

Інститут комп'ютерних наук та інформаційних технологій

ЛАБОРАТОРНА РОБОТА №4

З дисципліни **«Прикладне програмування»**

Тема:

«Комплексний проект»

Виконав:

студент групи КН-204
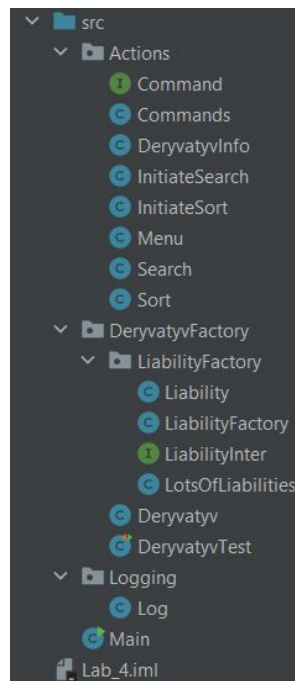
Менжерес Роман

Прийняв:

Вергун В. Р.

Львів 2020

Індивідуальне завдання

Страхування. Визначити ієрархію страхових зобов'язань. Зібрати із зобов'язань дериватив. Здійснити сортування зобов'язань у дериативі на основі зменшення рівня ризику. Знайти зобов'язання у дериативі, що відповідає заданому діапазону параметрів.

Класи та пакети

Тестування класу Deryvatyv

```java
package DeryvatyvFactory;

import org.junit.jupiter.api.Test;

import static org.junit.jupiter.api.Assertions.*;

class DeryvatyvTest {

    @Test
    void estimateWeight() {
        Deryvatyv test = new Deryvatyv(5);
        assertEquals(21, test.estimateCost());
    }
}
```

Логгер

```java
package Logging;
import java.io.File;
import java.io.IOException;
import java.util.logging.FileHandler;
import java.util.logging.Logger;
import java.util.logging.SimpleFormatter;


public class Log {
    private Logger logger;
    private FileHandler handler;

    public Log(String filename) throws SecurityException,IOException {
        File file = new File(filename);
        if(!file.exists()) {
            file.createNewFile();
            logger.setUseParentHandlers(false);
        }
        handler = new FileHandler(filename, true);
        logger = Logger.getLogger("Logger");
        logger.addHandler(handler);
        handler.setFormatter(new SimpleFormatter());
    }

    public Logger getLogger(){ return logger; }
}
```

Головне меню

```java
package Actions;

import java.io.IOException;
import java.util.Scanner;
import DeryvatyvFactory.Deryvatyv;
import Logging.Log;

public class Menu {

    private Log log;
    {
        try{
            log = new Log("logger.txt");
        }catch (IOException a){
            a.printStackTrace();
        }
    }

    public void insuranseOperation () {
        Deryvatyv obj = new Deryvatyv(11);
        Command Info = new DeryvatyvInfo(obj);
```

```java
        Command Sort = new InitiateSort(obj);
        Command Find = new InitiateSearch(obj);
        Commands start = new Commands(Info, Find, Sort);
        Scanner enter = new Scanner(System.in);
        System.out.println("\nOur deryvatyv is completed! Let's do something
with it");
        System.out.println("\nPress: \n1 - Watch deryvatyv info \n2 - Search
insurance liability with parameters \n3 - Sort deryvatyv \n4 - Exit");

        while (true) {
            while (true) {
                int choice = enter.nextInt();
                switch (choice) {
                    case 1 -> start.DeryvatyvInfo();
                    case 2 -> start.Search();
                    case 3 -> start.Sort();
                    case 4 -> System.exit(0);
                    default -> {
                        System.out.println("Finishing");
                        System.exit(1);
                    }
                }
            }
        }
    }

    public void toBegin () {
        this.insuranseOperation();
    }
}
```

Результати виконання програми

```
Setting insurance liability №1

Insurance liability: Car exchange Cost: 12061 Level of risk: 17%

Setting insurance liability №2

Insurance liability: Car insurance Cost: 11790 Level of risk: 5%

Setting insurance liability №3

Insurance liability: Car exchange Cost: 11883 Level of risk: 15%

Setting insurance liability №4

Insurance liability: Funds transfer Cost: 12449 Level of risk: 15%

Setting insurance liability №5

Insurance liability: Furniture sale Cost: 14446 Level of risk: 10%

Setting insurance liability №6

Insurance liability: Car exchange Cost: 11889 Level of risk: 11%

Setting insurance liability №7

Insurance liability: Garage sale Cost: 14502 Level of risk: 25%
```

```
Setting insurance liability №8

Insurance liability: Furniture sale Cost: 13394 Level of risk: 16%

Setting insurance liability №9

Insurance liability: House sale Cost: 13201 Level of risk: 9%

Setting insurance liability №10

Insurance liability: Car sale Cost: 11609 Level of risk: 16%

Setting insurance liability №11

Insurance liability: Car insurance Cost: 13966 Level of risk: 19%

Setting insurance liability №12

Insurance liability: Life insurance Cost: 12208 Level of risk: 28%

Setting insurance liability №13

Insurance liability: House insurance Cost: 12188 Level of risk: 33%

Setting insurance liability №14

Insurance liability: Life insurance Cost: 11753 Level of risk: 13%

Setting insurance liability №15

Insurance liability: Health insurance Cost: 13880 Level of risk: 17%
```

```
Setting insurance liability №16

Insurance liability: Funds transfer Cost: 12978 Level of risk: 10%

Setting insurance liability №17

Insurance liability: Funds exchange Cost: 12990 Level of risk: 12%

Setting insurance liability №18

Insurance liability: Health insurance Cost: 13185 Level of risk: 25%

Setting insurance liability №19

Insurance liability: Furniture sale Cost: 13405 Level of risk: 21%

Setting insurance liability №20

Insurance liability: Furniture sale Cost: 13496 Level of risk: 10%

Setting insurance liability №21

Insurance liability: Garage sale Cost: 12915 Level of risk: 6%

Setting insurance liability №22

Insurance liability: Funds exchange Cost: 14108 Level of risk: 20%
```

```
Setting insurance liability №23

Insurance liability: House insurance Cost: 14439 Level of risk: 31%

Setting insurance liability №24

Insurance liability: House sale Cost: 13015 Level of risk: 31%

Setting insurance liability №25

Insurance liability: Furniture sale Cost: 12665 Level of risk: 27%

Setting insurance liability №26

Insurance liability: Car sale Cost: 14366 Level of risk: 12%

Setting insurance liability №27

Insurance liability: House sale Cost: 11931 Level of risk: 33%

Setting insurance liability №28

Insurance liability: Car sale Cost: 12515 Level of risk: 20%

Setting insurance liability №29

Insurance liability: Funds transfer Cost: 13978 Level of risk: 23%

Setting insurance liability №30

Insurance liability: Health insurance Cost: 14213 Level of risk: 14%
```

```
Set how much insurance liabilities to set into our deryvatyv:
11

Our deryvatyv is completed! Let's do something with it

Press:
1 - Watch deryvatyv info
2 - Search insurance liability with parameters
3 - Sort deryvatyv
4 - Exit
1


Our deryvatyv:

Insurance liability: Garage sale Cost: 14502 Level of risk: 25%

Insurance liability: House sale Cost: 13015 Level of risk: 31%

Insurance liability: Furniture sale Cost: 13394 Level of risk: 16%

Insurance liability: Car exchange Cost: 11883 Level of risk: 15%

Insurance liability: Funds exchange Cost: 12990 Level of risk: 12%

Insurance liability: Furniture sale Cost: 12665 Level of risk: 27%

Insurance liability: Car exchange Cost: 11883 Level of risk: 15%

Insurance liability: Furniture sale Cost: 12665 Level of risk: 27%

Insurance liability: Car sale Cost: 12515 Level of risk: 20%
```

```
Insurance liability: House insurance Cost: 14439 Level of risk: 31%


Our deryvatyv total cost is 129951
2


Set risk % range for insurance liabilities in deryvatyv to look for:
13 26

Insurance liability: Garage sale Cost: 14502 Level of risk: 25%

Insurance liability: Furniture sale Cost: 13394 Level of risk: 16%

Insurance liability: Car exchange Cost: 11883 Level of risk: 15%

Insurance liability: Car exchange Cost: 11883 Level of risk: 15%

Insurance liability: Car sale Cost: 12515 Level of risk: 20%

Insurance liabilities which suit our risk % range ( 13-26 )
3


Let's sort insurance liabilities in our deryvatyv!
```

```
Sorted deryvatyv:

Insurance liability: Funds exchange Cost: 12990 Level of risk: 12%

Insurance liability: Car exchange Cost: 11883 Level of risk: 15%

Insurance liability: Car exchange Cost: 11883 Level of risk: 15%

Insurance liability: Furniture sale Cost: 13394 Level of risk: 16%

Insurance liability: Car sale Cost: 12515 Level of risk: 20%

Insurance liability: Garage sale Cost: 14502 Level of risk: 25%

Insurance liability: Furniture sale Cost: 12665 Level of risk: 27%

Insurance liability: Furniture sale Cost: 12665 Level of risk: 27%

Insurance liability: House sale Cost: 13015 Level of risk: 31%

Insurance liability: House insurance Cost: 14439 Level of risk: 31%
4

Process finished with exit code 0
```