Звіт

Лабораторна работа 8. Основи введення/виведення Java SE

Мета роботи: Оволодіння навичками управління введенням / виведенням даних з використанням класів платформи Java SE.

ВИМОГИ

1. Забезпечити можливість збереження і відновлення масива об'єктів рішення завдання лабораторної роботи №7.
2. Забороняється використання стандартного протокола серіалізації.
3. Продемонструвати використання моделі Long Term Persistence.
4. Забезпечити діалог з користувачем у вигляді простого текстового меню.
5. При збереженні та відновленні даних забезпечити діалоговий режим вибору директорії з відображенням вмісту і можливістю переміщення по підкаталогах.

1.1. Розробник: Момот Роман Євгенійович, КІТ119-а, варіант №14.

2. ОПИС ПРОГРАМИ

2.1. Засоби ООП: клас, метод класу, поле класу.

2.2. Ієрархія та структура класів: один публічний клас Main, публічний клас Event, у полях якого є час початку події, тривалість, адреса події, імена людей, опис події, гетери, сетери, конструктор класу та метод виведення даних класу. Також є клас EventList, у полях якого є масив елементів класу Event, розмір масиву, гетери та сетери поля розміру, методи додавання та видалення елементів.

2.3. Важливі фрагменти програми:

```
public class EventList {

	private int size = 0;

	Event[] array = new Event[size];




	public int getSize() {

		return size;

	}
```

```
public void setSize(int size) {
        this.size = size;
}

public void addEl(Event event)
{
        Event[] newArray = new Event[size+1];
        for (int i = 0; i < size; i++) {
                newArray[i] = array[i];
        }

        newArray[size] = event;
        size++;
        array = newArray;
}
public void deleteEl(int position)
{
        if(size != 0)
        {
                Event[] newArray = new Event[size-1];
                for (int i = 0; i < position-1; i++) {
                        newArray[i] = array[i];
                }
                for (int i = position-1, j = position; j < size; i++, j++) {
                        newArray[i] = array[j];
                }

                size--;
                array = newArray;
        }
        else
        {
            System.out.println("Array is empty");
        }
    }
}

public class Main {
    public static void main(String[] args) {
        EventList array = new EventList();
        String[] listOfPeople = {"Дмитрий Иванов", "Александр Гекторов", "Иван Романов"};
        GregorianCalendar date1 = new GregorianCalendar(2017, 5, 28);
        date1.set(Calendar.HOUR_OF_DAY, 18);
        date1.set(Calendar.MINUTE, 0);
        date1.set(Calendar.SECOND, 10);
        Event event1 = new Event(date1,180,"Проспект Льва Ландау 87",listOfPeople, "Halloween");
        array.addEl(event1);

        String[] listOfPeople2 = {"Махатма Ганди", "Иисак Ньютон", "Джордж Буш Младший"};
        date1 = new GregorianCalendar(2002, 1, 1);
        date1.set(Calendar.HOUR_OF_DAY, 9);
        date1.set(Calendar.MINUTE, 30);
        date1.set(Calendar.SECOND, 00);
        event1 = new Event(date1,45,"Площадь Конституции",listOfPeople2, "A lot of drunk people");
        array.addEl(event1);
```

```
boolean stop = false;
Scanner scan = new Scanner(System.in);
int choise;

while(!stop)
{
        System.out.println("What to do?");
        System.out.println("1. Output data");
        System.out.println("2. Add element");
        System.out.println("3. Delete element");
        System.out.println("4. Serialize data");
        System.out.println("5. Deserialize data");
        System.out.println("6. End program");
        System.out.println("===================");
        System.out.print("Your choise: ");

        choise = scan.nextInt();

        switch (choise) {
        case 1:
                System.out.println();
                for (int i = 0; i < array.getSize(); i++) {
                        System.out.println(i+1 + ") ");
                        array.array[i].outputData();
                        System.out.println();
                }
                break;
```

```
case 2:
    System.out.print("\nEnter number of participants: ");
    int value = scan.nextInt();
    if(value < 1)
    {
        System.out.println("Error. Wrong list size.");
        break;
    }

    String[] list = new String[value];
    System.out.println("Enter list of names:");
    scan.nextLine();
    for (int i = 0; i < value; i++) {
        System.out.print(i+1 + ". ");
        list[i] = scan.nextLine();
    }

    GregorianCalendar date = new GregorianCalendar();
    System.out.print("Enter event year: ");
    value = scan.nextInt();
    date.set(Calendar.YEAR, value);
    System.out.print("Enter event month: ");
    value = scan.nextInt();
    date.set(Calendar.MONTH, value);
    System.out.print("Enter event day: ");
    value = scan.nextInt();
    date.set(Calendar.DAY_OF_MONTH, value);
    System.out.print("Enter event hour: ");
    value = scan.nextInt();
				date.set(Calendar.HOUR_OF_DAY, value);
				System.out.print("Enter event minute: ");
				value = scan.nextInt();
				date.set(Calendar.MINUTE, value);

				System.out.print("Enter event address: ");
				scan.nextLine();
				String temp = scan.nextLine();
				System.out.print("Enter event description: ");
				String description = scan.nextLine();
				System.out.print("Enter event length: ");
				value = scan.nextInt();
				System.out.println("\nEvent added.\n");

				Event newEvent = new
Event(date,value,temp,list,description);
				array.addEl(newEvent);

				break;

			case 3:
				System.out.println();
				for (int i = 0; i < array.getSize(); i++) {
					System.out.println(i+1 + ") ");
					array.array[i].outputData();
					System.out.println();
				}

				System.out.print("Enter the number of element: ");
```

```
                int position = scan.nextInt();
                if(position > array.getSize() || position < 1)
                {
                    System.out.println("Error.Wrong ID.");
                    break;
                }
                array.deleteEl(position);
                System.out.println("\nElement deleted.\n");

                break;

            case 4:
                String address = new File("").getAbsolutePath();   //адрес начальной директории
                File folder = new File(address);                  //создание файла
                File[] arrayFiles = folder.listFiles();    //список файлов в текущений директории
                String filename;            //название файла для записи
                String currentDirectory = address;              //адрес текущей директории
                String highestDir = folder.getName();         //название максимально допустимой высокой аудитории

                boolean stop2 = false;     //выход из цикла выбора директории
                int index = 0;
                int choise2 = 0;

                System.out.print("\nEnter XML file name: ");
                scan.nextLine();
                filename = scan.nextLine();

                if (filename.indexOf(".xml") == -1) {
                    filename += ".xml";
                }

                while(!stop2)
                {
                    index = 0;

                    System.out.println("\nCurrent path: " +
currentDirectory);
                    System.out.println("Current XML file name: " +
filename);
                    System.out.println("\nFiles and directories in
current path:");
                    for (index = 0; index < arrayFiles.length; index++)
{
                        System.out.println(index+1 + ". " +
arrayFiles[index].toString().substring(currentDirectory.length()+1));
                    }

                    System.out.println();
                    System.out.println("What to do?");
                    System.out.println("1. Write XML file in current
directory");
                    System.out.println("2. Go up one level folder");
                    System.out.println("3. Enter the folder");
                    System.out.println("4. Change the XML file
name");
```

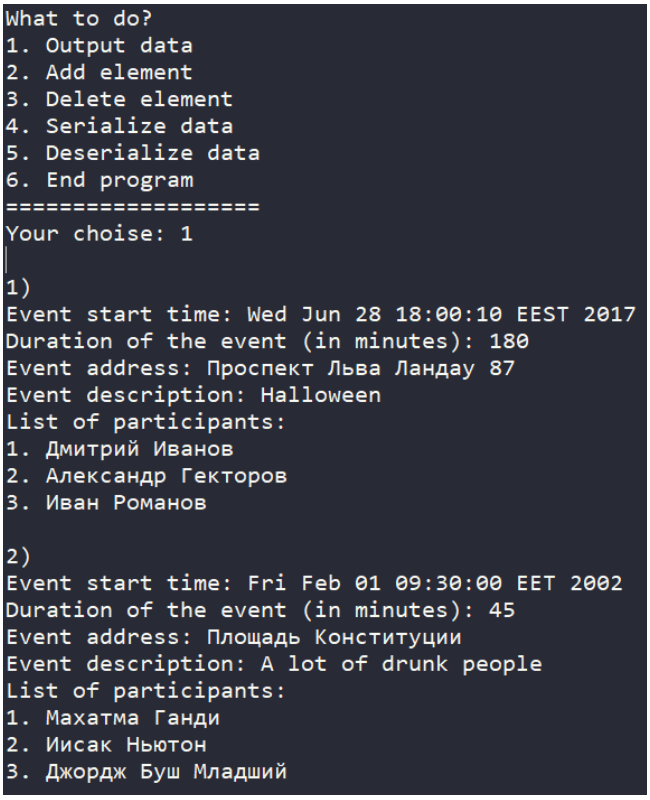
```
                    System.out.println("5. Leave the serialization");

    System.out.println("====================================");
                    System.out.print("Your choise: ");
                    choise2 = scan.nextInt();

                    switch(choise2)
                    {
                    case 1:
                        stop2 = true;
                        break;

                    case 2:
                        if(folder.getName().equals(highestDir))
                        {
                            System.out.print("\nYou can't go up one level folder.");
                            break;
                        }
                        currentDirectory = currentDirectory.substring(0, currentDirectory.indexOf(folder.getName())-1);
                        folder = new File(currentDirectory);
                        arrayFiles = folder.listFiles();   //список файлов в текущений директории

                        break;

                    case 3:
                        boolean choise3 = false;
                        while(!choise3)
                        {
                            System.out.print("\nChoose the
number of directory: ");
                            index = scan.nextInt();
                            if(index < 1 || index > arrayFiles.length
|| !arrayFiles[index-1].isDirectory())
                            {
                                System.out.println("That's not a
directory. Try another.");
                            }
                            else
                            {
                                currentDirectory =
arrayFiles[index-1].toString();
                                System.out.println("New current
directory: " + currentDirectory);
                                folder = new
File(currentDirectory);
                                arrayFiles = folder.listFiles();
    //список файлов в текущений директории
                                choise3 = true;
                            }
                        }
                        break;

                    case 4:
                        System.out.print("\nEnter XML file name:
");
                        scan.nextLine();
                        filename = scan.nextLine();
                        if (filename.indexOf(".xml") == -1) {
                            filename += ".xml";
                        }
                        break;

                    case 5:
                        System.out.println("Leaving the serialization
section");
                        break;

                    default:
                        System.out.println("Error. The wrong
command. Try again");
                        break;

                    }

                }
                address = currentDirectory;
                System.out.println("\nFile will be written in current
directory: " + address);
                System.out.println("XML file name: " + filename);
                folder = new File(address);
                File realFile = new File(folder,filename);
                try {
                    XMLEncoder encoder = new XMLEncoder(new
BufferedOutputStream(new FileOutputStream(realFile)));
                    encoder.writeObject(array.array);
                    encoder.close();
                } catch (Exception e) {
                    System.out.println(e);
                    break;
                }
                System.out.println("Serialization successful.\n");

                break;

            case 5:
                address = new File("").getAbsolutePath();   //адрес
начальной директории
                folder = new File(address);
    //создание файла
                arrayFiles = folder.listFiles();                    //список
файлов в текущений директории
                currentDirectory = address;
    //адрес текущей директории
                highestDir = folder.getName();
    //название максимально допустимой высокой аудитории

                stop2 = false;        //выход из цикла выбора
директории
                index = 0;
                choise2 = 0;

                while(!stop2)
                {
                    index = 0;

                    System.out.println("\nCurrent path: " +
currentDirectory);
```

```
                    System.out.println("Files and directories in current
path:");
                    for (index = 0; index < arrayFiles.length; index++)
{
                        System.out.println(index+1 + ". " +
arrayFiles[index].toString().substring(currentDirectory.length()+1));
                    }

                    System.out.println();
                    System.out.println("What to do?");
                    System.out.println("1. Read XML file in current
directory");
                    System.out.println("2. Go up one level folder");
                    System.out.println("3. Enter the folder");
                    System.out.println("4. Leave the serialization");

    System.out.println("========================================");
                    System.out.print("Your choise: ");
                    choise2 = scan.nextInt();

                    switch(choise2)
                    {
                    case 1:
                        System.out.print("\nEnter the id of file: ");
                        index = scan.nextInt();
                        if(arrayFiles[index-
1].getName().indexOf(".xml")==-1 || arrayFiles[index-1].isDirectory())
                        {
                            System.out.println("That's not an
.XML file.");
                            break;
                        }

                        stop2 = true;
                        break;

                    case 2:
                        if(folder.getName().equals(highestDir))
                        {
                            System.out.println("You can't go up
one level folder.");
                            break;
                        }
                        currentDirectory =
currentDirectory.substring(0, currentDirectory.indexOf(folder.getName())-1);
                        folder = new File(currentDirectory);
                        arrayFiles = folder.listFiles();    //список
файлов в текущений директории

                        break;

                    case 3:
                        boolean choise3 = false;

                        while(!choise3)
                        {
                            System.out.print("\nChoose the
number of directory: ");
                            index = scan.nextInt();
                            if(index < 1 || index > arrayFiles.length
|| !arrayFiles[index-1].isDirectory())
```

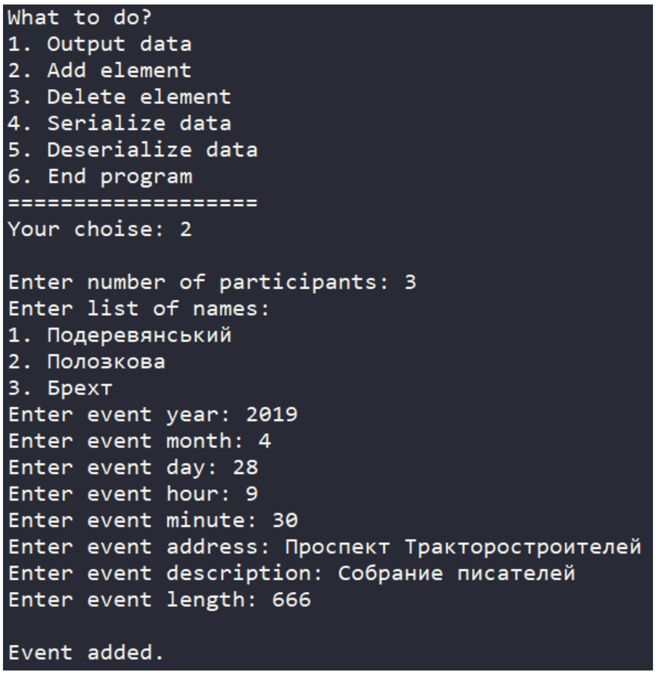
```
                            {
                                System.out.println("That's not a
directory. Try another.");
                            }
                            else
                            {
                                currentDirectory =
arrayFiles[index-1].toString();
                                System.out.println("New current
directory: " + currentDirectory);
                                folder = new
File(currentDirectory);
                                arrayFiles = folder.listFiles();
    //список файлов в текущений директории
                                choise3 = true;
                            }
                        }
                        break;

                    case 4:
                        System.out.println("Leaving the serialization
section");
                        stop2 = true;
                        break;

                    default:
                        System.out.println("Error. The wrong
command. Try again");
                        break;

                }
                }
                address = currentDirectory;
                System.out.println("XML file address: " + address + "\\" + arrayFiles[index-1].getName());
                address = address + "\\" + arrayFiles[index-1].getName();
                folder = new File(address);
                try {
                    XMLDecoder decoder = new XMLDecoder(new BufferedInputStream(new FileInputStream(folder)));
                    array.array = (Event[])decoder.readObject();
                    decoder.close();
                    array.setSize(array.array.length);
                } catch (Exception e) {
                    System.out.println(e);
                    break;
                }
                System.out.println("Deserialization successful.\n");

                break;

            case 6:
                System.out.println("\nTerminating the program");
                stop = true;
                break;

            default:
                System.out.println("Error. Wrong command. Try again.");
                break;
```

```
                        }
                   }
              }


         }
```

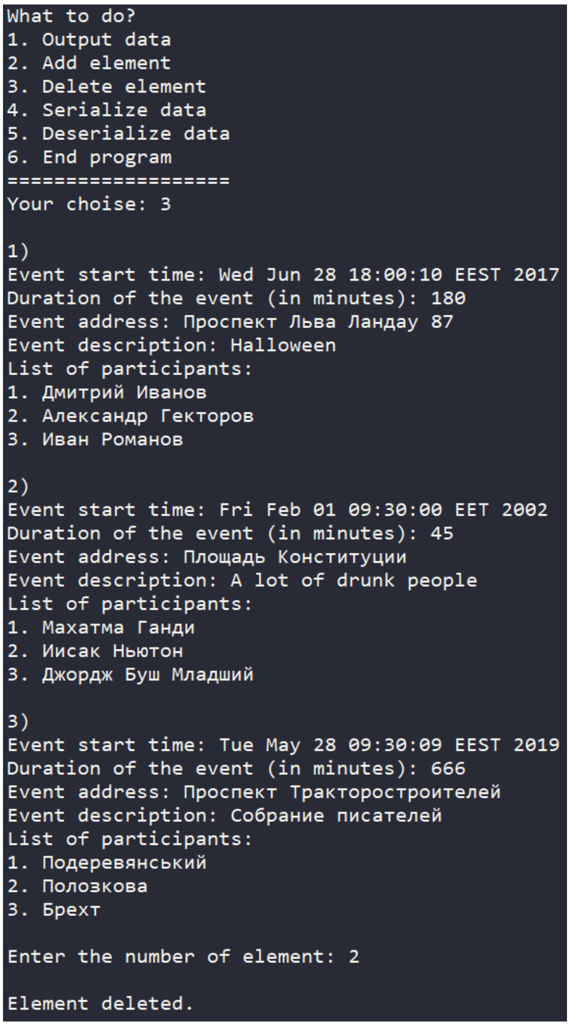
Результат роботи програми



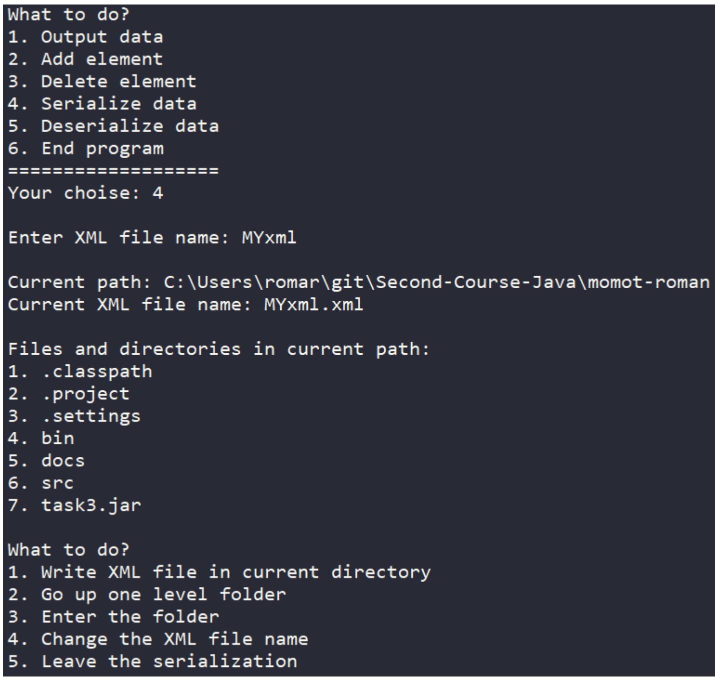
```
What to do?
1. Output data
2. Add element
3. Delete element
4. Serialize data
5. Deserialize data
6. End program
===================
Your choise: 1

1)
Event start time: Wed Jun 28 18:00:10 EEST 2017
Duration of the event (in minutes): 180
Event address: Проспект Льва Ландау 87
Event description: Halloween
List of participants:
1. Дмитрий Иванов
2. Александр Гекторов
3. Иван Романов

2)
Event start time: Fri Feb 01 09:30:00 EET 2002
Duration of the event (in minutes): 45
Event address: Площадь Конституции
Event description: A lot of drunk people
List of participants:
1. Махатма Ганди
2. Иисак Ньютон
3. Джордж Буш Младший
```



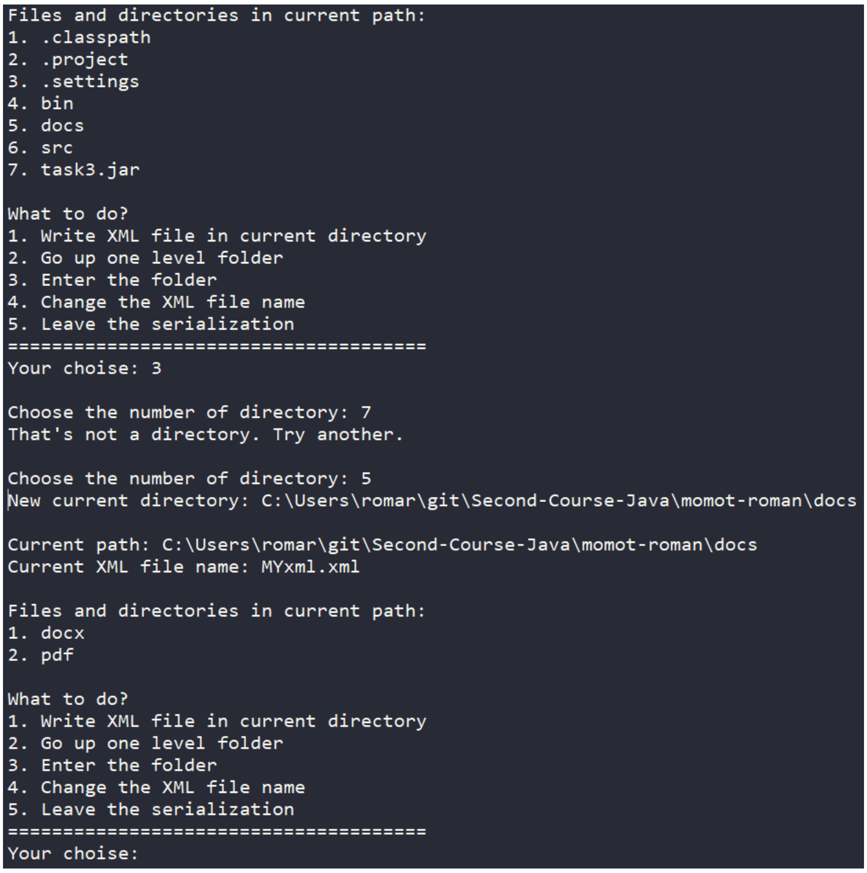
```
What to do?
1. Output data
2. Add element
3. Delete element
4. Serialize data
5. Deserialize data
6. End program
===================
Your choise: 2

Enter number of participants: 3
Enter list of names:
1. Подеревянський
2. Полозкова
3. Брехт
Enter event year: 2019
Enter event month: 4
Enter event day: 28
Enter event hour: 9
Enter event minute: 30
Enter event address: Проспект Тракторостроителей
Enter event description: Собрание писателей
Enter event length: 666

Event added.
```



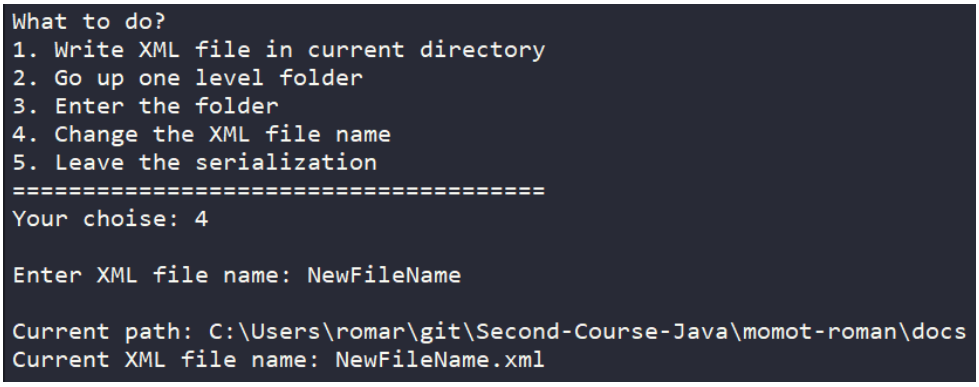
```
What to do?
1. Output data
2. Add element
3. Delete element
4. Serialize data
5. Deserialize data
6. End program
===================
Your choise: 3

1)
Event start time: Wed Jun 28 18:00:10 EEST 2017
Duration of the event (in minutes): 180
Event address: Проспект Льва Ландау 87
Event description: Halloween
List of participants:
1. Дмитрий Иванов
2. Александр Гекторов
3. Иван Романов

2)
Event start time: Fri Feb 01 09:30:00 EET 2002
Duration of the event (in minutes): 45
Event address: Площадь Конституции
Event description: A lot of drunk people
List of participants:
1. Махатма Ганди
2. Иисак Ньютон
3. Джордж Буш Младший

3)
Event start time: Tue May 28 09:30:09 EEST 2019
Duration of the event (in minutes): 666
Event address: Проспект Тракторостроителей
Event description: Собрание писателей
List of participants:
1. Подеревянський
2. Полозкова
3. Брехт

Enter the number of element: 2

Element deleted.
```



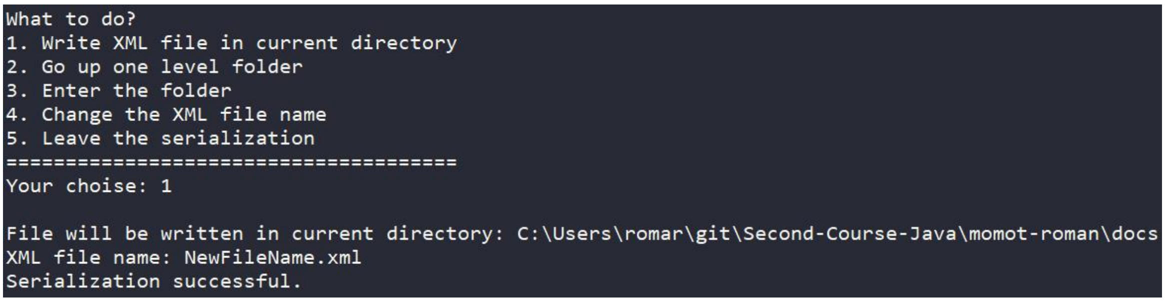
```
What to do?
1. Output data
2. Add element
3. Delete element
4. Serialize data
5. Deserialize data
6. End program
===================
Your choise: 4

Enter XML file name: MYxml

Current path: C:\Users\romar\git\Second-Course-Java\momot-roman
Current XML file name: MYxml.xml

Files and directories in current path:
1. .classpath
2. .project
3. .settings
4. bin
5. docs
6. src
7. task3.jar

What to do?
1. Write XML file in current directory
2. Go up one level folder
3. Enter the folder
4. Change the XML file name
5. Leave the serialization
```



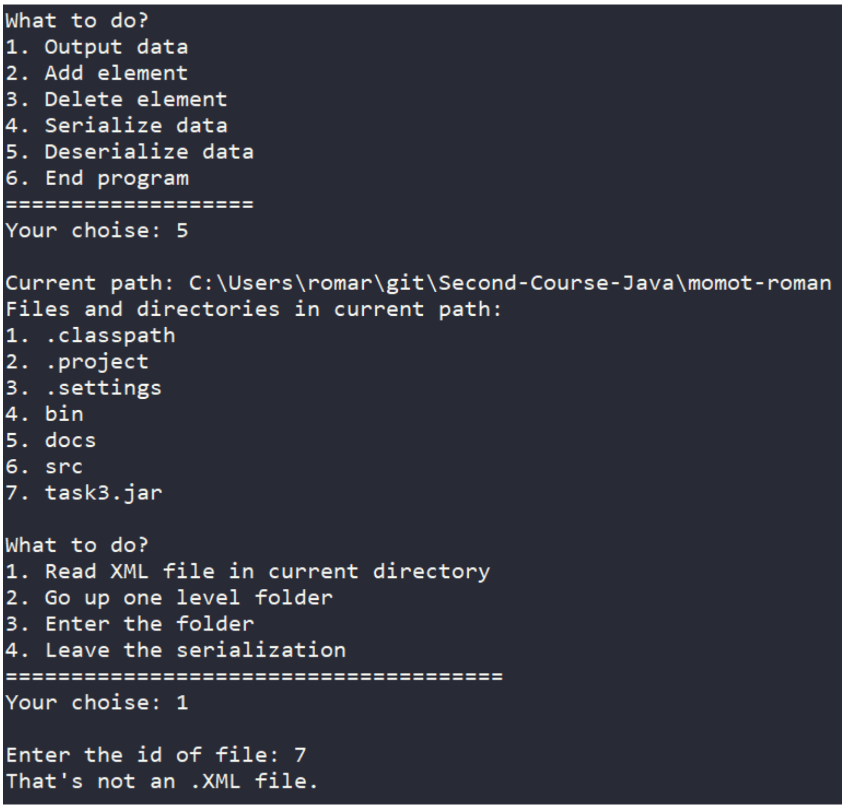
```
Files and directories in current path:
1. .classpath
2. .project
3. .settings
4. bin
5. docs
6. src
7. task3.jar

What to do?
1. Write XML file in current directory
2. Go up one level folder
3. Enter the folder
4. Change the XML file name
5. Leave the serialization
=====================================
Your choise: 3

Choose the number of directory: 7
That's not a directory. Try another.

Choose the number of directory: 5
New current directory: C:\Users\romar\git\Second-Course-Java\momot-roman\docs

Current path: C:\Users\romar\git\Second-Course-Java\momot-roman\docs
Current XML file name: MYxml.xml

Files and directories in current path:
1. docx
2. pdf

What to do?
1. Write XML file in current directory
2. Go up one level folder
3. Enter the folder
4. Change the XML file name
5. Leave the serialization
=====================================
Your choise:
```



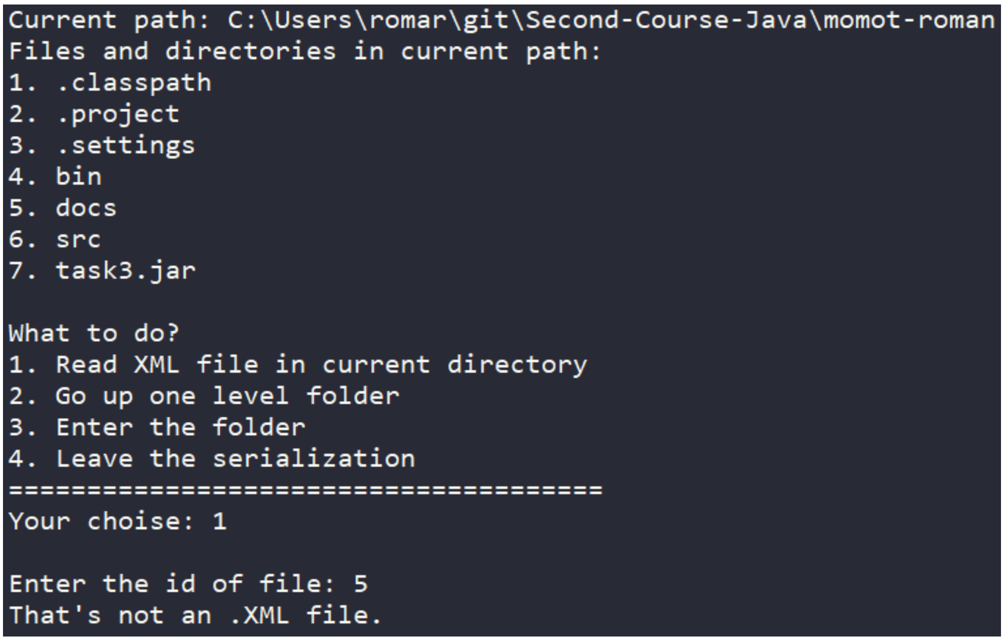
```
What to do?
1. Write XML file in current directory
2. Go up one level folder
3. Enter the folder
4. Change the XML file name
5. Leave the serialization
======================================
Your choise: 4

Enter XML file name: NewFileName

Current path: C:\Users\romar\git\Second-Course-Java\momot-roman\docs
Current XML file name: NewFileName.xml
```



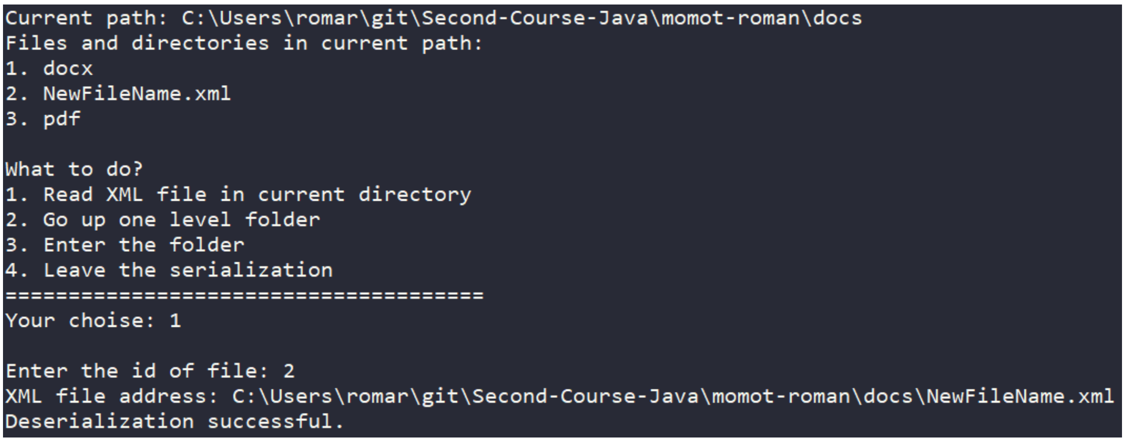
```
What to do?
1. Write XML file in current directory
2. Go up one level folder
3. Enter the folder
4. Change the XML file name
5. Leave the serialization
======================================
Your choise: 1

File will be written in current directory: C:\Users\romar\git\Second-Course-Java\momot-roman\docs
XML file name: NewFileName.xml
Serialization successful.
```



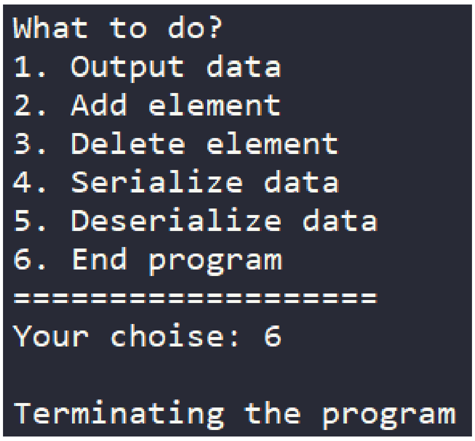
```
What to do?
1. Output data
2. Add element
3. Delete element
4. Serialize data
5. Deserialize data
6. End program
===================
Your choise: 5

Current path: C:\Users\romar\git\Second-Course-Java\momot-roman
Files and directories in current path:
1. .classpath
2. .project
3. .settings
4. bin
5. docs
6. src
7. task3.jar

What to do?
1. Read XML file in current directory
2. Go up one level folder
3. Enter the folder
4. Leave the serialization
======================================
Your choise: 1

Enter the id of file: 7
That's not an .XML file.
```



```
Current path: C:\Users\romar\git\Second-Course-Java\momot-roman
Files and directories in current path:
1. .classpath
2. .project
3. .settings
4. bin
5. docs
6. src
7. task3.jar

What to do?
1. Read XML file in current directory
2. Go up one level folder
3. Enter the folder
4. Leave the serialization
======================================
Your choise: 1

Enter the id of file: 5
That's not an .XML file.
```



```
Current path: C:\Users\romar\git\Second-Course-Java\momot-roman\docs
Files and directories in current path:
1. docx
2. NewFileName.xml
3. pdf

What to do?
1. Read XML file in current directory
2. Go up one level folder
3. Enter the folder
4. Leave the serialization
======================================
Your choise: 1

Enter the id of file: 2
XML file address: C:\Users\romar\git\Second-Course-Java\momot-roman\docs\NewFileName.xml
Deserialization successful.
```



```
What to do?
1. Output data
2. Add element
3. Delete element
4. Serialize data
5. Deserialize data
6. End program
===================
Your choise: 6

Terminating the program
```

Висновки

При виконанні даної лабораторної роботи було набуто практичного досвіду роботи з Java SE.

Програма протестована, виконується без помилок.