Звіт

Лабораторна работа 8.

Основи введення/виведення Java SE

Мета роботи:

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

1. 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.

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2. ОПИС ПРОГРАМИ

2.1. Засоби ООП: класи, методи класу, domain-об’єкти.

2.2. Ієрархія та структура класів: публічний клас Main, клас-контейнер, та клас Book.

2.3. Важливі фрагменти програми:

```
public static void main(String... str)
{
        List array = new List();
        String[] Authors1 = {"Sposobin I.V."};
        String[] Genre1 = {"Education"};
        Book book1 = new Book(9785811425396L, "Elementari Music Theory", Authors1, "Planet of Music", Genre1, 2018);
        array.AddObject(book1);

        String[] Authors2 = {"Sapkovskii A."};
        String[] Genre2 = {"Romance", "Epic Fantasy"};
        Book book2 = new Book(5792100810L, "Witcher The Last Wish", Authors2, "superNOWA", Genre2, 1993);
        array.AddObject(book2);

        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].Output();
                                System.out.println();
                        }
                        break;

                case 2:
                        System.out.print("Enter ISBN: ");
                        long ISBN = scan.nextInt();
                        scan.nextLine();
                        System.out.print("Enter a name: ");
                        String Name = scan.nextLine();
                        System.out.print("Enter a publisher: ");
                        String Publish = scan.nextLine();
                        System.out.print("Enter a date: ");
                        int Date = scan.nextInt();
                        System.out.print("Enter count of authors: ");
                        int value = scan.nextInt();
```

```
			if(value < 1)
			{
				System.out.println("Error. Wrong list size.");
				break;
			}
			System.out.print("Enter authors name:");
			String[] listA = new String[value];
			scan.nextLine();
			for (int i = 0; i < value; i++) {
				listA[i] = scan.nextLine();
			}
			System.out.print("Enter count of genres: ");
			value = scan.nextInt();
			if(value < 1)
			{
				System.out.println("Error. Wrong list size.");
				break;
			}
			System.out.print("Enter ganres: ");
			String[] listG = new String[value];
			scan.nextLine();
			for (int i = 0; i < value; i++) {
				listG[i] = scan.nextLine();
			}

			System.out.println("\nBook added.\n");

			Book newBook = new Book(ISBN, Name, listA, Publish, listG, Date);
			array.AddObject(newBook);

			break;

		case 3:
			System.out.println();
			for (int i = 0; i < array.GetSize(); i++) {
				System.out.println(i+1 + ") ");
				array.array[i].Output();
				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.DeleteObject(position);
			System.out.println("\nElement deleted.\n");

			break;

		case 4:
			String address = new File("").getAbsolutePath();
			File folder = new File(address);
			File[] arrayFiles = folder.listFiles();
			String filename;
			String currentDirectory = address;
			String highestDir = folder.getName();

			boolean stop2 = false;
			int index = 0;
			int choise2 = 0;
```

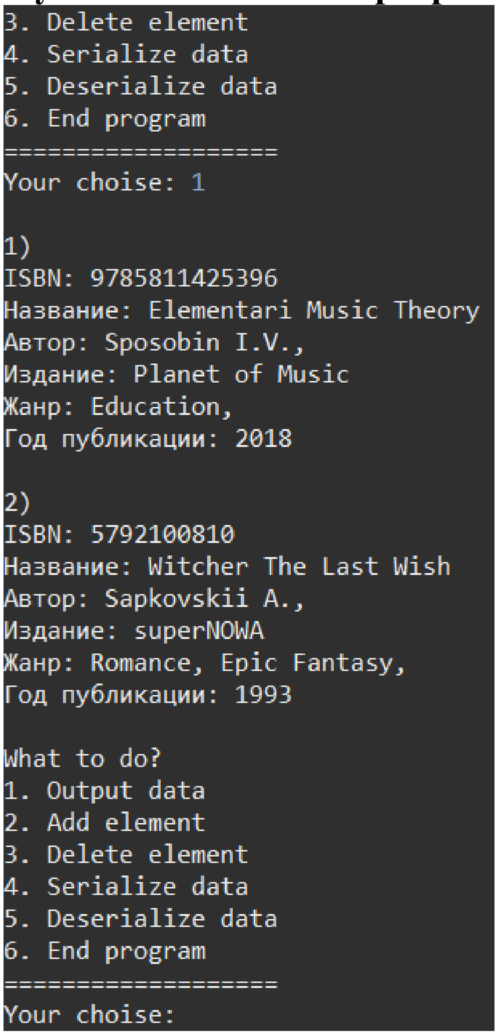
```
					System.out.print("\nEnter XML file name: ");
					scan.nextLine();
					filename = scan.nextLine();

					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();

							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();
                                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();
                folder = new File(address);
                arrayFiles = folder.listFiles();
                currentDirectory = address;
                highestDir = folder.getName();
```

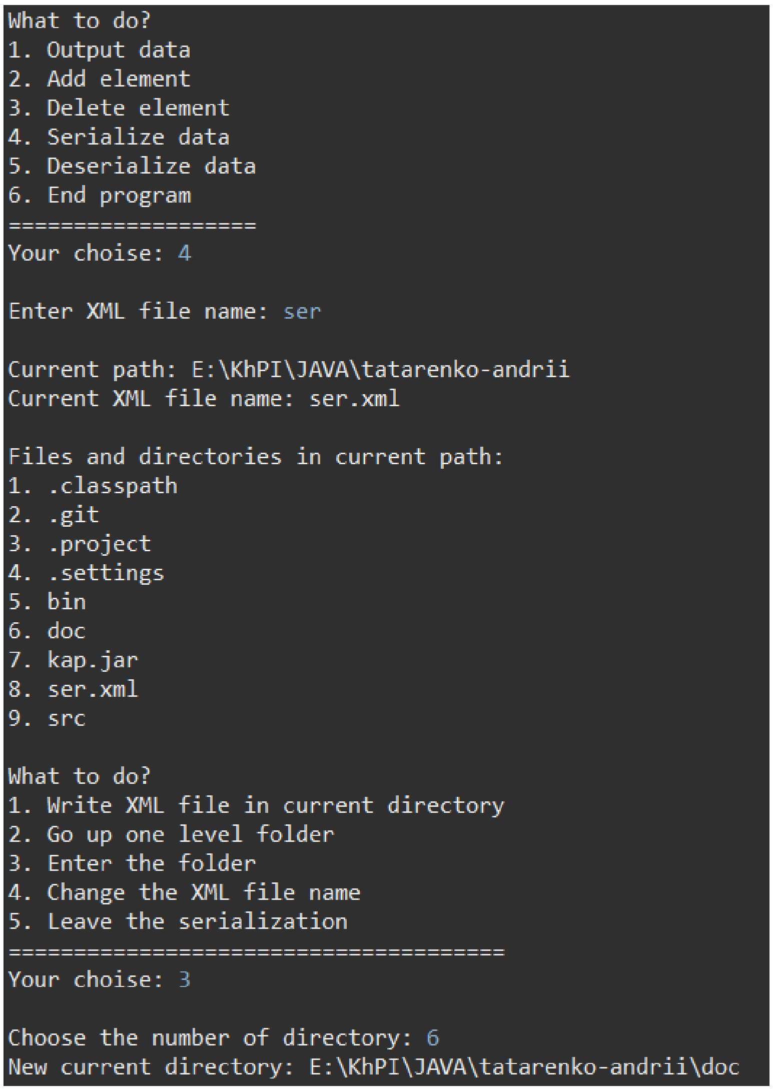
```
					stop2 = false;
					index = 0;
					choise2 = 0;

					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 deserialization");

	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();

							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();
                                                        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 = (Book[])decoder.readObject();
                                      decoder.close();
                                      array.SetSize(array.array.length);
                                } catch (Exception e) {
                                      System.out.println();
                                      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;
                          }

                    }

                    scan.close(); }
```

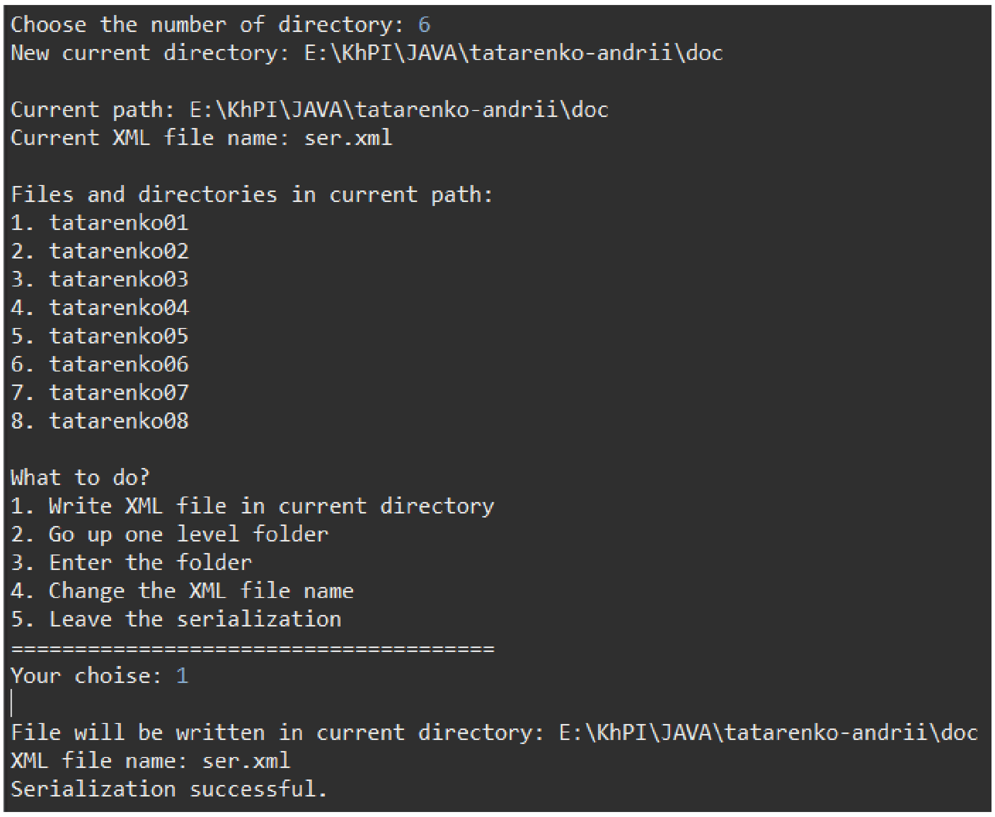
Результат виконання програми



```
3. Delete element
4. Serialize data
5. Deserialize data
6. End program
===================
Your choise: 1

1)
ISBN: 9785811425396
Название: Elementari Music Theory
Автор: Sposobin I.V.,
Издание: Planet of Music
Жанр: Education,
Год публикации: 2018

2)
ISBN: 5792100810
Название: Witcher The Last Wish
Автор: Sapkovskii A.,
Издание: superNOWA
Жанр: Romance, Epic Fantasy,
Год публикации: 1993

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



```
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: ser

Current path: E:\KhPI\JAVA\tatarenko-andrii
Current XML file name: ser.xml

Files and directories in current path:
1. .classpath
2. .git
3. .project
4. .settings
5. bin
6. doc
7. kap.jar
8. ser.xml
9. src

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: 6
New current directory: E:\KhPI\JAVA\tatarenko-andrii\doc
```



```
Choose the number of directory: 6
New current directory: E:\KhPI\JAVA\tatarenko-andrii\doc

Current path: E:\KhPI\JAVA\tatarenko-andrii\doc
Current XML file name: ser.xml

Files and directories in current path:
1. tatarenko01
2. tatarenko02
3. tatarenko03
4. tatarenko04
5. tatarenko05
6. tatarenko06
7. tatarenko07
8. tatarenko08

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: E:\KhPI\JAVA\tatarenko-andrii\doc
XML file name: ser.xml
Serialization successful.
```

Висновки

При виконанні даної лабораторної роботи було набуто навички сереалізації domain-об’єктів. Розробили меню.

Програма протестована, виконується без помилок.