

|          |            |
|----------|------------|
| NAME:    | BIPASHA    |
| UID:     | 23BCS10735 |
| SECTION: | 622-A      |
| SUBJECT: | JAVA       |

### Practice -1

(A)code:

```
import java.util.ArrayList;
```

```
import java.util.Scanner;
```

```
public class java1 {
```

```
    public static void main(String[] args) {
```

```
        Scanner scanner = new Scanner(System.in);
```

```
        ArrayList<Integer> numbers = new ArrayList<>();
```

```
        System.out.println("Enter integers ");
```

```
        while (true) {
```

```
            String input = scanner.nextLine();
```

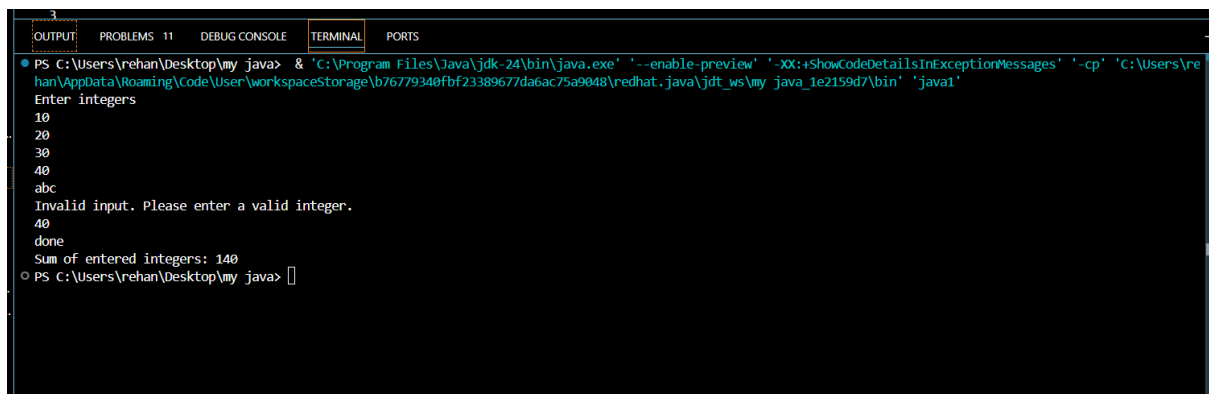
```
            if (input.equalsIgnoreCase("done")) {
```

```
                break;
```

```
            }
```

```
try {  
  
    int num = Integer.parseInt(input);  
  
    numbers.add(num);  
} catch (NumberFormatException e) {  
    System.out.println("Invalid input. Please enter a valid integer.");  
}  
}  
  
int sum = 0;  
for (Integer number : numbers) {  
    sum += number;  
}  
  
System.out.println("Sum of entered integers: " + sum);  
scanner.close();  
}  
}
```

Output:



```
PS C:\Users\rehan\Desktop\my java> & 'C:\Program Files\Java\jdk-24\bin\java.exe' '-enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\rehan\AppData\Roaming\Code\User\workspaceStorage\b76779340fbf23389677da6ac75a9048\redhat.java\jdt_ws\my java_1e2159d7\bin' 'java1'
Enter integers
10
20
30
40
abc
Invalid input. Please enter a valid integer.
40
done
Sum of entered integers: 140
PS C:\Users\rehan\Desktop\my java>
```

(B)

Code:

```
import java.io.*;
```

```
// Student class must implement Serializable
```

```
class Student implements Serializable {
```

```
    private static final long serialVersionUID = 1L;
```

```
    int studentID;
```

```
    String name;
```

```
    double grade;
```

```
    public Student(int studentID, String name, double grade) {
```

```
        this.studentID = studentID;
```

```
        this.name = name;
```

```
        this.grade = grade;
```

```
    }
```

```
@Override
```

```
public String toString() {  
    return "Student ID: " + studentID + ", Name: " + name + ", Grade: " +  
grade;  
}  
}
```

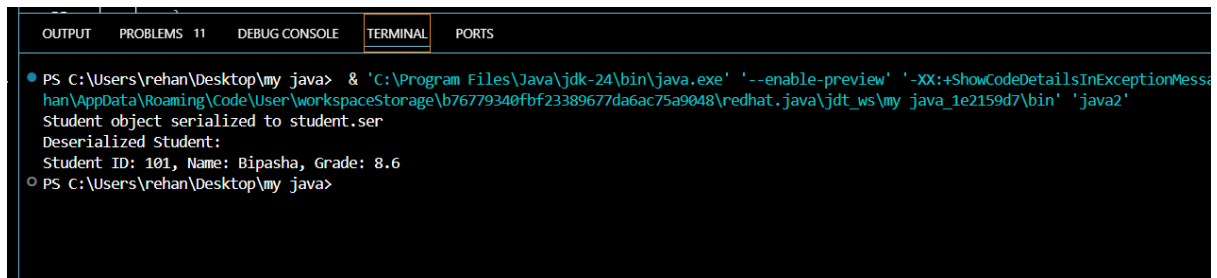
```
public class java2 {  
    public static void main(String[] args) {  
        Student student = new Student(101, "Bipasha", 8.6);  
  
        // Serialization  
        try (ObjectOutputStream oos = new ObjectOutputStream(new  
FileOutputStream("student.ser"))) {  
            oos.writeObject(student);  
            System.out.println("Student object serialized to student.ser");  
        } catch (IOException e) {  
            e.printStackTrace();  
        }  
  
        // Deserialization  
        try (ObjectInputStream ois = new ObjectInputStream(new  
FileInputStream("student.ser"))) {  
            Student deserializedStudent = (Student) ois.readObject();  
            System.out.println("Deserialized Student:");  
            System.out.println(deserializedStudent);  
        } catch (IOException | ClassNotFoundException e) {  
            e.printStackTrace();  
        }  
    }  
}
```

```

    }
}
}

```

Output:



The screenshot shows an IDE terminal window with the following output:

```

PS C:\Users\rehan\Desktop\my java> & 'C:\Program Files\Java\jdk-24\bin\java.exe' '-enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-Duser.dir=C:\Users\rehan\AppData\Roaming\Code\User\workspaceStorage\b76779340fbf23389677da6ac75a9048\redhat.java\jdt_ws\my java_1e2159d7\bin' 'java2'
Student object serialized to student.ser
Deserialized Student:
Student ID: 101, Name: Bipasha, Grade: 8.6
PS C:\Users\rehan\Desktop\my java>

```

(c)

Code:

```
import java.io.*;
```

```
import java.util.Scanner;
```

```
// Non-public Employee class
```

```
class Employee implements Serializable {
```

```
    private static final long serialVersionUID = 1L;
```

```
    int id;
```

```
    String name;
```

```
    String designation;
```

```
    double salary;
```

```
    public Employee(int id, String name, String designation, double salary) {
```

```
        this.id = id;
```

```

        this.name = name;
        this.designation = designation;
        this.salary = salary;
    }

    @Override
    public String toString() {
        return "ID: " + id + ", Name: " + name + ", Designation: " + designation +
            ", Salary: " + salary;
    }
}

```

```

public class EmployeeManagementSystem {
    public static final String FILE_NAME = "employees.dat";
    private static Scanner scanner = new Scanner(System.in);

    public static void main(String[] args) {
        while (true) {
            System.out.println("\nEmployee Management System");
            System.out.println("1. Add Employee");
            System.out.println("2. Display All Employees");
            System.out.println("3. Exit");
            System.out.print("Enter your choice: ");

            int choice = scanner.nextInt();
            scanner.nextLine(); // Consume newline

```

```
switch (choice) {  
    case 1:  
        addEmployee();  
        break;  
    case 2:  
        displayEmployees();  
        break;  
    case 3:  
        System.out.println("Exiting application...");  
        System.exit(0);  
    default:  
        System.out.println("Invalid choice. Try again.");  
}  
}  
}
```

```
private static void addEmployee() {  
    System.out.print("Enter Employee ID: ");  
    int id = scanner.nextInt();  
    scanner.nextLine(); // consume newline  
  
    System.out.print("Enter Employee Name: ");  
    String name = scanner.nextLine();  
  
    System.out.print("Enter Designation: ");
```

```
String designation = scanner.nextLine();
```

```
System.out.print("Enter Salary: ");
```

```
double salary = scanner.nextDouble();
```

```
Employee employee = new Employee(id, name, designation, salary);
```

```
try (ObjectOutputStream oos = new AppendableObjectOutputStream(new  
FileOutputStream(FILE_NAME, true))) {  
    oos.writeObject(employee);  
    System.out.println("Employee added successfully.");  
} catch (IOException e) {  
    e.printStackTrace();  
}  
}
```

```
private static void displayEmployees() {  
    try (ObjectInputStream ois = new ObjectInputStream(new  
FileInputStream(FILE_NAME))) {  
        System.out.println("\nEmployee Records:");  
        while (true) {  
            Employee employee = (Employee) ois.readObject();  
            System.out.println(employee);  
        }  
    } catch (EOFException e) {  
        // End of file reached  
    } catch (FileNotFoundException e) {
```



```

        System.out.println("No employee records found.");
    } catch (IOException | ClassNotFoundException e) {
        e.printStackTrace();
    }
}
}

```

// Helper class to append objects without corrupting the file header

```

class AppendableObjectOutputStream extends ObjectOutputStream {
    public AppendableObjectOutputStream(OutputStream out) throws
IOException {
        super(out);
    }
}

```

```

@Override
protected void writeStreamHeader() throws IOException {
    File file = new File(EmployeeManagementSystem.FILE_NAME);
    if (file.length() == 0) {
        super.writeStreamHeader();
    } else {
        reset();
    }
}
}

```

OUTPUT:

```
PS C:\Users\rehan\Desktop\java1> cd "C:\Users\rehan\Desktop\java1\" ; if ($?) { javac EmployeeManagementSystem.java } ; if ($?) { java EmployeeManagementSystem }
Enter Employee Name: BIPASHA
Enter Designation: CEO
Enter Salary: 20,000,000
Employee added successfully.

Employee Management System
1. Add Employee
2. Display All Employees
3. Exit
Enter your choice: 1
Enter Employee ID: 102
Enter Employee Name: MEHAK
Enter Designation: CO-FOUNDER
Enter Salary: 68,00000
```