

Experiment 5

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Subject Name: PBLJ

Subject Code: 22CSH-359

5.1

1. Aim:

Create a program to calculate the sum of a list of integers using autoboxing and unboxing.

2. Objective:

Write a Java program to calculate the sum of a list of integers using autoboxing and unboxing, along with methods to parse strings into their respective wrapper classes.

3. Implementation/Code:

```
import java.util.*;

public class exp_5 {

    public static Integer parseStringToInteger(String str) {
        try {
            return Integer.parseInt(str);
        } catch (NumberFormatException e) {
            System.out.println("Invalid number format: " + str);
            return 0;
        }
    }

    public static int calculateSum(List<Integer> numbers) {
        int sum = 0;
        for (Integer num : numbers) {
```

```
        sum += num;
    }
    return sum;
}

public static void main(String[] args) {
    List<Integer> numbers = new ArrayList<>();

    String[] inputs = {"10", "20", "30", "40", "50"};

    for (String input : inputs) {
        numbers.add(parseStringToInteger(input));
    }
    int sum = calculateSum(numbers);
    System.out.println("The sum of the list is: " + sum);
}
}
```

4. Output

```
"C:\Program Files\Java\jdk-20\bin\java.exe"
The sum of the list is: 150

Process finished with exit code 0
```

5.2

1. Aim:

Write a program to serializes and deserializes a Student object.

2. Objective:

Java program that serializes and deserializes a Student object. It saves the Student object to a file and then reads it back, displaying the student details.

3. Code:

```
import java.io.*;

class Student implements Serializable {
    private int id;
    private String name;
    private double gpa;

    public Student(int id, String name, double gpa) {
        this.id = id;
        this.name = name;
        this.gpa = gpa;
    }

    public String toString() {
        return "ID: " + id + ", Name: " + name + ", GPA: " + gpa;
    }
}

public class exp_5_1 {
    public static void main(String[] args) {
        String file = "student.ser";
        try (ObjectOutputStream oos = new ObjectOutputStream(new
        FileOutputStream(file))) {
            oos.writeObject(new Student(1, "John Doe", 3.75));
            System.out.println("Serialized.");
        }
    }
}
```

```
        } catch (IOException e) {  
            System.out.println("IO Error.");  
        }  
        try (ObjectInputStream ois = new ObjectInputStream(new  
FileInputStream(file))) {  
            System.out.println("Deserialized: " + ois.readObject());  
        } catch (IOException | ClassNotFoundException e) {  
            System.out.println("Error.");  
        }  
    }  
}
```

4. Output:

```
"C:\Program Files\Java\jdk-20\bin\java.exe" "-j  
Serialized.  
Deserialized: ID: 1, Name: John Doe, GPA: 3.75  
  
Process finished with exit code 0
```

5.3

1. Aim:

Create a Menu-based Java application that allows you to add employee details, display all employees, and exit.

2. Objective:

Menu-based Java application that allows you to add employee details, display all employees, and exit. The employee details will be stored in a file, and the program will read the file to display the stored employee information.

3. Code:

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

class Employee implements Serializable {
    private int id;
    private String name, designation;
    private double salary;

    public Employee(int id, String name, String designation, double salary) {
        this.id = id;
        this.name = name;
        this.designation = designation;
        this.salary = salary;
    }

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

public class exp_5_2 {
```

```
private static final String FILE_NAME = "employees.ser";

public static void addEmployee() {
    try (ObjectOutputStream oos = new ObjectOutputStream(new
FileOutputStream(FILE_NAME, true))) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter ID: "); int id = sc.nextInt();
        sc.nextLine(); // Consume newline
        System.out.print("Enter Name: "); String name = sc.nextLine();
        System.out.print("Enter Designation: "); String designation =
sc.nextLine();
        System.out.print("Enter Salary: "); double salary = sc.nextDouble();
        oos.writeObject(new Employee(id, name, designation, salary));
        System.out.println("Employee added successfully!");
    } catch (IOException e) {
        System.out.println("IO Error.");
    }
}

public static void displayAllEmployees() {
    try (ObjectInputStream ois = new ObjectInputStream(new
FileInputStream(FILE_NAME))) {
        while (true) {
            System.out.println(ois.readObject());
        }
    } catch (EOFException e) {
        System.out.println("End of employee records.");
    } catch (IOException | ClassNotFoundException e) {
        System.out.println("Error reading employees.");
    }
}

public static void main(String[] args) {
    Scanner sc = new Scanner(System.in);
```

```
while (true) {  
    System.out.println("1. Add Employee\n2. Display All Employees\n3.  
Exit");  
    System.out.print("Choose an option: ");  
    int choice = sc.nextInt();  
    switch (choice) {  
        case 1 -> addEmployee();  
        case 2 -> displayAllEmployees();  
        case 3 -> { return; }  
        default -> System.out.println("Invalid choice.");  
    }  
}
```

4. Output:

```
"C:\Program Files\Java\jdk-20\bin\java.exe" "-javaagent:C:\  
1. Add Employee  
2. Display All Employees  
3. Exit  
Choose an option: 1  
Enter ID: 13752  
Enter Name: saksham  
Enter Designation: ceo  
Enter Salary: 100000  
Employee added successfully!  
1. Add Employee  
2. Display All Employees  
3. Exit  
Choose an option: 2  
ID: 13752, Name: saksham, Designation: ceo, Salary: 1.0E7
```



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