



RIPHAH
INTERNATIONAL UNIVERSITY

SUBMITTED TO: *ibraheem*

SAP ID: *42896*

SUBJECT: *Advance Computer Programming*

SECTION: *BSCS-5*

LAB : *11*

Question: 1 Code:

```

import java.io.*;
class User implements Serializable {
    String username;
    String email;
    int age;

    User(String username, String email, int age)
    {
        this.username = username;
        this.email = email;
        this.age = age;
    }
    public String toString() {
        return username + " | " + email + " | " + age;
    }
}

public class Main {
    public static void main(String[] args) throws Exception {
        User original = new User("Ali", "ali@gmail.com", 22);

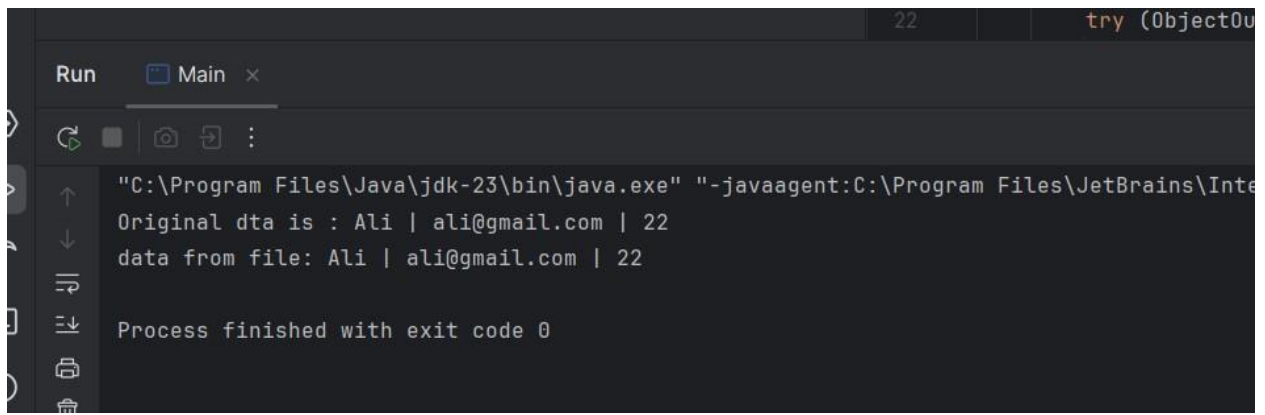
        try (ObjectOutputStream out = new
        ObjectOutputStream(new FileOutputStream("user.data"))) {
            out.writeObject(original);
        }

        User copy;
        try (ObjectInputStream in = new ObjectInputStream(new
        FileInputStream("user.data"))) {
            copy = (User) in.readObject();
        }

        System.out.println("Original data is : " + original);
        System.out.println("data from file: " + copy);
    }
}

```

Output:



Question: 2

Code:

```
import java.io.*;

class Customer implements Serializable {
    String name;
    String email;
    transient String pass;

    Customer(String name, String email, String pass)
    {
        this.name = name;        this.email =
email;        this.pass = pass;
    }
    public String toString() {
        return name + " | " + email + " | password=" + pass;
    }
}

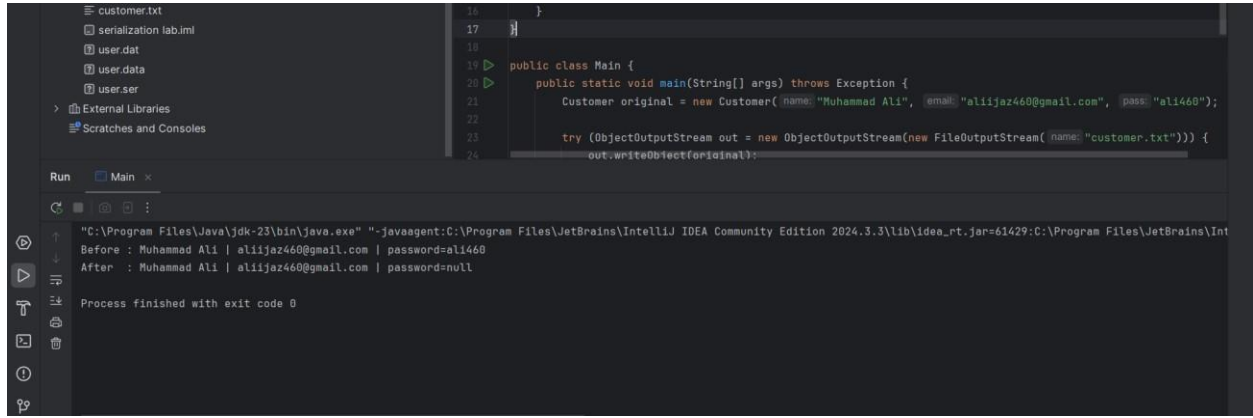
public class Main {
    public static void main(String[] args) throws Exception {
        Customer original = new Customer("Muhammad Ali",
"aliijaz460@gmail.com", "ali460");
        try (ObjectOutputStream out = new
ObjectOutputStream(new FileOutputStream("customer.txt"))) {
            out.writeObject(original);
        }

        Customer copy;
        try (ObjectInputStream in = new ObjectInputStream(new
FileInputStream("customer.txt"))) {
            copy = (Customer) in.readObject();
        }

        System.out.println("Before : " + original);
        System.out.println("After : " + copy);
    }
}
```

```
}  
}
```

Output:



The screenshot shows the IntelliJ IDEA IDE. The top pane displays a Java file named `customer.txt` with the following code:

```
16 }  
17 }  
18  
19 public class Main {  
20     public static void main(String[] args) throws Exception {  
21         Customer original = new Customer( name: "Muhammad Ali", email: "aliijaz460@gmail.com", pass: "ali460");  
22  
23         try (ObjectOutputStream out = new ObjectOutputStream(new FileOutputStream( name: "customer.txt"))) {  
24             out.writeObject(original);  
25         }  
26     }  
27 }
```

The bottom pane shows the Run configuration for `Main`. The output console displays the following text:

```
"C:\Program Files\Java\jdk-23\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2024.3.3\lib\idea_rt.jar=61429:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2024.3.3\bin" -Didea.config.path=C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2024.3.3\conf -Didea.copyright.notification=false -Didea.logger.level=INFO -Didea.log.path=C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2024.3.3\logs -Didea.platform.prefix=JDK -Didea.sandbox.path=C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2024.3.3\bin\idea-rt.jar -Didea.version=2024.3.3  
Before : Muhammad Ali | aliijaz460@gmail.com | password=ali460  
After  : Muhammad Ali | aliijaz460@gmail.com | password=null  
Process finished with exit code 0
```

Question: 3 Code:

Student.java:

```
import java.io.Serializable;  
  
public class student implements Serializable  
{  
    int id;        String name;        float  
marks;  
    public student(int id, String name, float marks)  
    {  
        this.id = id;        this.name = name;  
this.marks = marks;  
    }  
    public String toString() {  
        return id + " | " + name + " | " + marks;  
    }  
}
```

client.java:

```

import java.io.*;
import java.net.*;

public class client {
    public static void main(String[] args) throws Exception
    {
        student s = new student(1, "Ali", 89.5f);
        Socket socket = new Socket("localhost", 9999);
        ObjectOutputStream out = new
        ObjectOutputStream(socket.getOutputStream());
        out.writeObject(s);
    }
}

```

Server.java:

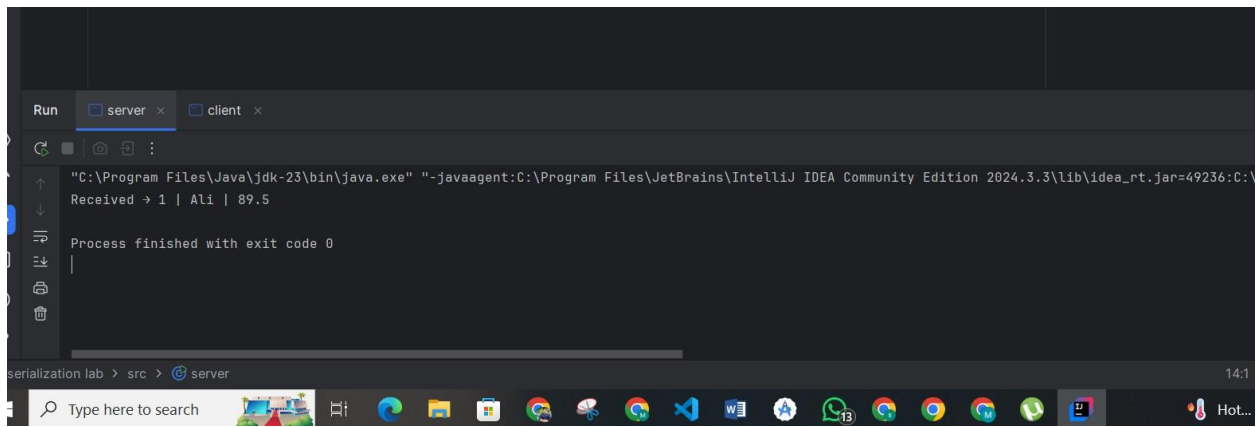
```

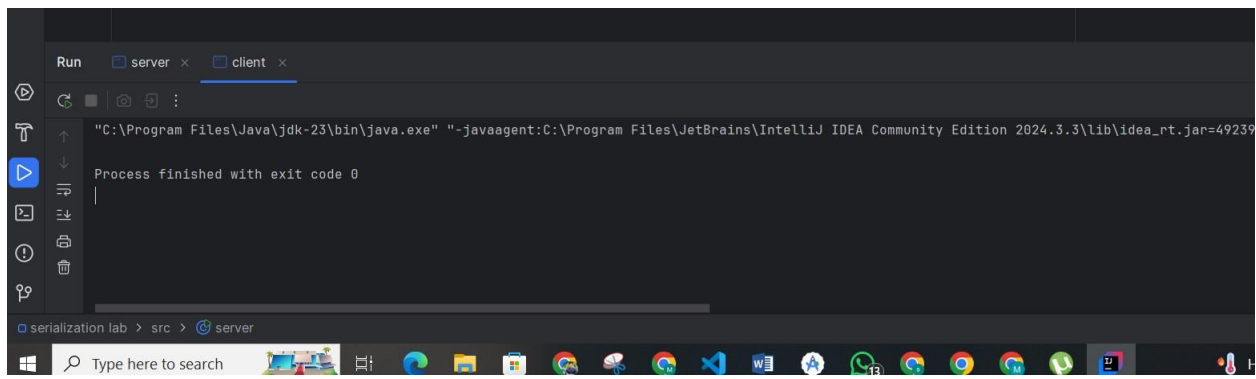
import java.io.*;
import java.net.*;

public class server {
    public static void main(String[] args) throws Exception {
        ServerSocket server = new ServerSocket(9999);
        Socket socket = server.accept();
        ObjectInputStream in = new
        ObjectInputStream(socket.getInputStream());
        student s = (student) in.readObject();
        System.out.println("Received → " + s);
    }
}

```

Output:





Question: 4 Code:

Employee:

```
import java.io.Serializable;

public class Employee implements Serializable
{
    int id;        String name;        double
    basicSalary;    double allowance;    double
    deduction;

    public Employee(int id, String name, double basicSalary,
double allowance, double deduction) {
        this.id = id;
        this.name = name;
        this.basicSalary = basicSalary;
        this.allowance = allowance;
        this.deduction = deduction;
    }
}
```

Client:

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

public class client {
    public static void main(String[] args) throws Exception {
        List<Employee> list = new ArrayList<>();
        list.add(new Employee(1, "Ali", 50000, 8000, 3000));
    }
}
```

```

        list.add(new Employee(2, "Sara", 60000, 10000, 4000));
        Socket socket = new Socket("localhost", 8888);
        ObjectOutputStream out = new
ObjectOutputStream(socket.getOutputStream());
        out.writeObject(list);
        ObjectInputStream in = new
ObjectInputStream(socket.getInputStream());
        @SuppressWarnings("unchecked")
        List<String> reply = (List<String>)
in.readObject();        for (String s : reply)
System.out.println(s);        in.close();
out.close();        socket.close();
    }
}

```

Server:

```

import java.io.*; import
java.net.*; import
java.util.*;

public class server {
    public static void main(String[] args) throws Exception {
        ServerSocket ss = new ServerSocket(8888);
        Socket socket = ss.accept();
        ObjectInputStream in = new
ObjectInputStream(socket.getInputStream());
        @SuppressWarnings("unchecked")
        List<Employee> list = (List<Employee>) in.readObject();
        List<String> reply = new ArrayList<>();
        for (Employee e : list) {
            if (e.id < 0 || e.basicSalary < 0 || e.allowance < 0 ||
e.deduction < 0)
                reply.add(e.name + ": invalid data");
            else
                reply.add(e.name + ": " + (e.basicSalary + e.allowance -
e.deduction));
        }
        ObjectOutputStream out = new
ObjectOutputStream(socket.getOutputStream());
        out.writeObject(reply);        out.close();
        in.close();        socket.close();
        ss.close();
    }
}

```

Output:

