

Serialization and Deserialization in Java – Notes

1. What is Serialization?

Serialization is the process of converting a Java object into a byte stream so that it can be stored in a file, sent over a network, or saved in a database. In short: Object → Bytes.

2. What is Deserialization?

Deserialization is the process of converting a byte stream back into the original Java object. In short: Bytes → Object.

3. Why do we use Serialization?

- Save objects permanently
- Send objects between computers
- Save app or game state
- Store user session data
- Used internally by frameworks like Hibernate, Spring, RMI

4. Requirement to Serialize

```
The class must implement Serializable interface: class Student implements Serializable { }
```

5. Serializable Interface

This is a marker interface (without methods) used only to mark objects as serializable.

6. Example Serializable Class

```
import java.io.Serializable; public class Student implements Serializable { int id; String name; public Student(int id, String name){ this.id = id; this.name = name; } }
```

7. Serialization Program (Object to File)

```
import java.io.*; public class WriteObject { public static void main(String[] args) { try { Student s = new Student(1, "Rahul"); FileOutputStream fos = new FileOutputStream("student.ser"); ObjectOutputStream oos = new ObjectOutputStream(fos); oos.writeObject(s); oos.close(); fos.close(); System.out.println("Object saved to file"); } catch (Exception e) { e.printStackTrace(); } } }
```

8. Deserialization Program (File to Object)

```
import java.io.*; public class ReadObject { public static void main(String[] args) { try { FileInputStream fis = new FileInputStream("student.ser"); ObjectInputStream ois = new ObjectInputStream(fis); Student s = (Student) ois.readObject(); System.out.println("ID: " + s.id); System.out.println("Name: " + s.name); ois.close(); fis.close(); } catch (Exception e) { e.printStackTrace(); } } }
```

9. Steps in Eclipse

- 1) Open Eclipse
- 2) Create Java Project: SerializationDemo
- 3) Create Student class implementing Serializable
- 4) Create WriteObject class and run it (creates student.ser)
- 5) Create ReadObject class and run it (reads student.ser)
- 6) Refresh project to view .ser file

10. transient Keyword

Fields marked transient will not be serialized.

Example: transient String password;

11. One-line Summary

Serialization saves objects. Deserialization restores them.