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NPTEL (https://swayam.gov.in/explorer?ncCode=NPTEL) » Fundamentals of Object Oriented Programming (course)

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Course outline

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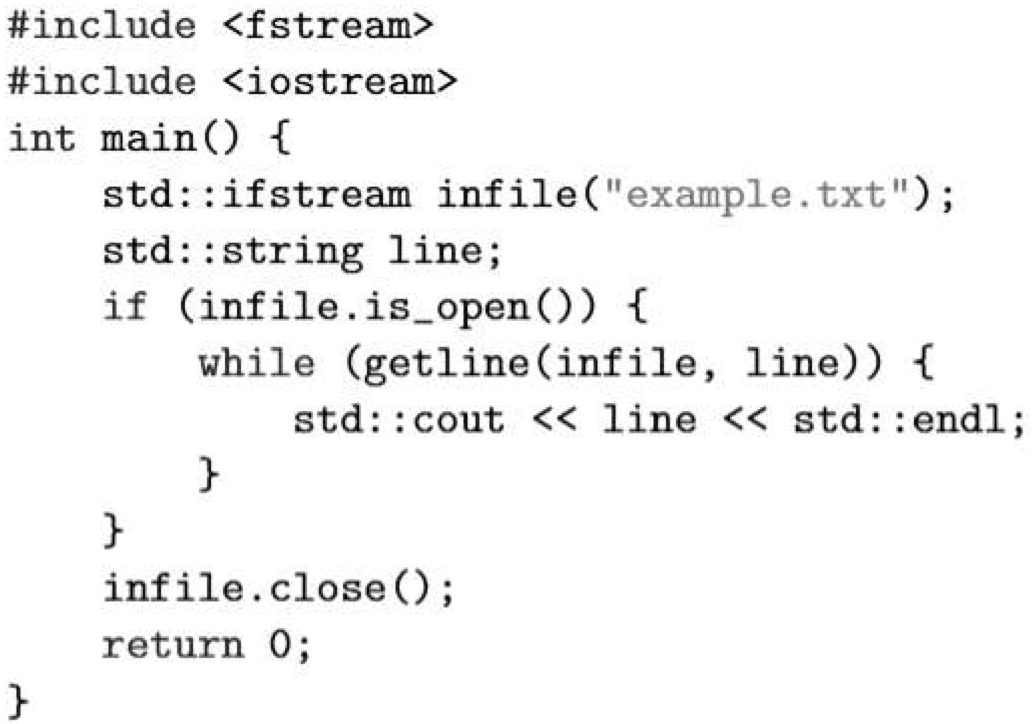
Week 7: Assignment 7

The due date for submitting this assignment has passed.

Due on 2025-03-12, 23:59 IST.

Assignment submitted on 2025-03-01, 10:28 IST

1) Consider the following C++ code: ***1 point***



```
#include <fstream>
#include <iostream>
int main() {
    std::ifstream infile("example.txt");
    std::string line;
    if (infile.is_open()) {
        while (getline(infile, line)) {
            std::cout << line << std::endl;
        }
    }
    infile.close();
    return 0;
}
```

If the file example.txt contains the text ”File Handling in C++”, what is the output?

● File Handling in C++

○ Prints nothing.

○ Compilation error.

○ Undefined behavior.

Yes, the answer is correct.
Score: 1

Accepted Answers:
File Handling in C++

2) To write a C++ program that reads the contents of a file input.txt and copies it to ***1 point***

○ Serialization and Deserialization (unit?unit=59&lesson=85)

● **Quiz: Week 7: Assignment 7 (assessment?name=99)**

○ Solution for Week 7 (unit?unit=59&lesson=127)

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output.txt, which of the following achieves this?

○ Using ifstream and ofstream to read and write line by line.

○ Using ifstream and ofstream with a buffer.

● Both A and B.

○ File copy cannot be achieved in C++.

Yes, the answer is correct.
Score: 1

Accepted Answers:
Both A and B.

3) To write a Java program to serialize an object of a class Student with attributes name and id, which of the following statements is true about serialization in Java? ***1 point***

○ The class must implement Serializable.

○ Attributes must be declared as private.

○ Serialization writes the object to a binary file.

● All of the above.

Yes, the answer is correct.
Score: 1

Accepted Answers:
All of the above.

4) What is the correct method to read a serialized object from a file in Java? ***1 point***

● readObject() from the ObjectInputStream.

○ deserialize() from the Serializable interface.

○ read() from the FileReader.

○ deserialize() from the Deserializable interface.

Yes, the answer is correct.

Score: 1

Accepted Answers:
readObject() from the ObjectInputStream.

5) To write a C++ program to serialize a class Employee with attributes name and age with following functionality: ***1 point***

- Write the object data to a binary file.
- Read the object data back from the file.

What is the correct method to write and read binary data using file streams?

● ofstream::write() and ifstream::read().

○ ofstream::write() and ifstream::getline().

○ ofstream::put() and ifstream::get().

○ ofstream::getline() and ifstream::getline().

Yes, the answer is correct.
Score: 1

Accepted Answers:
ofstream::write() and ifstream::read().

6) To write a Java program to merge the contents of two text files file1.txt and file2.txt into output.txt, which of the following steps is necessary? ***1 point***

○ Open both input files using FileReader.

○ Read the contents line by line and write them to the output file using FileWriter.

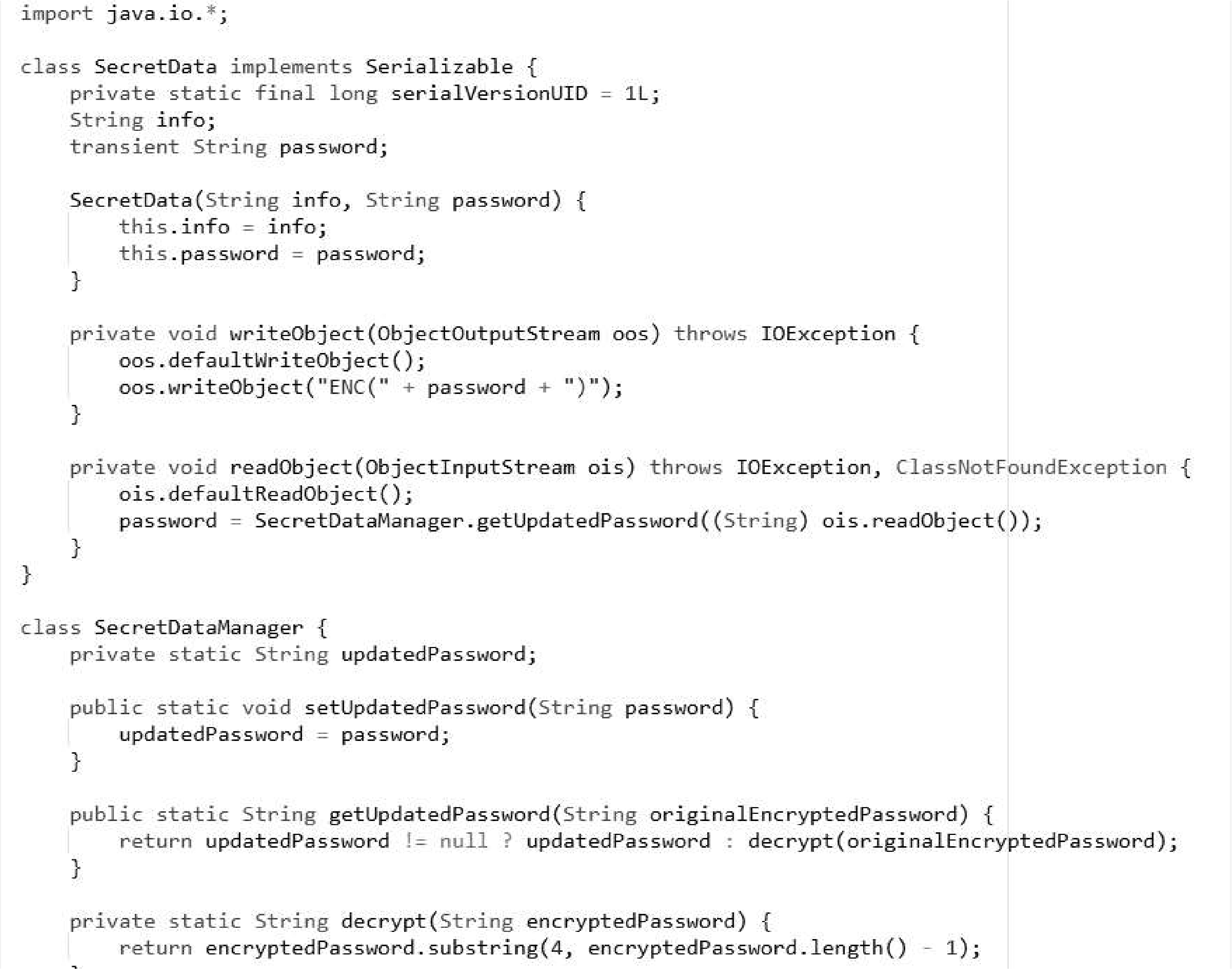
○ Close all the files after the operation is complete.

● All of the above.

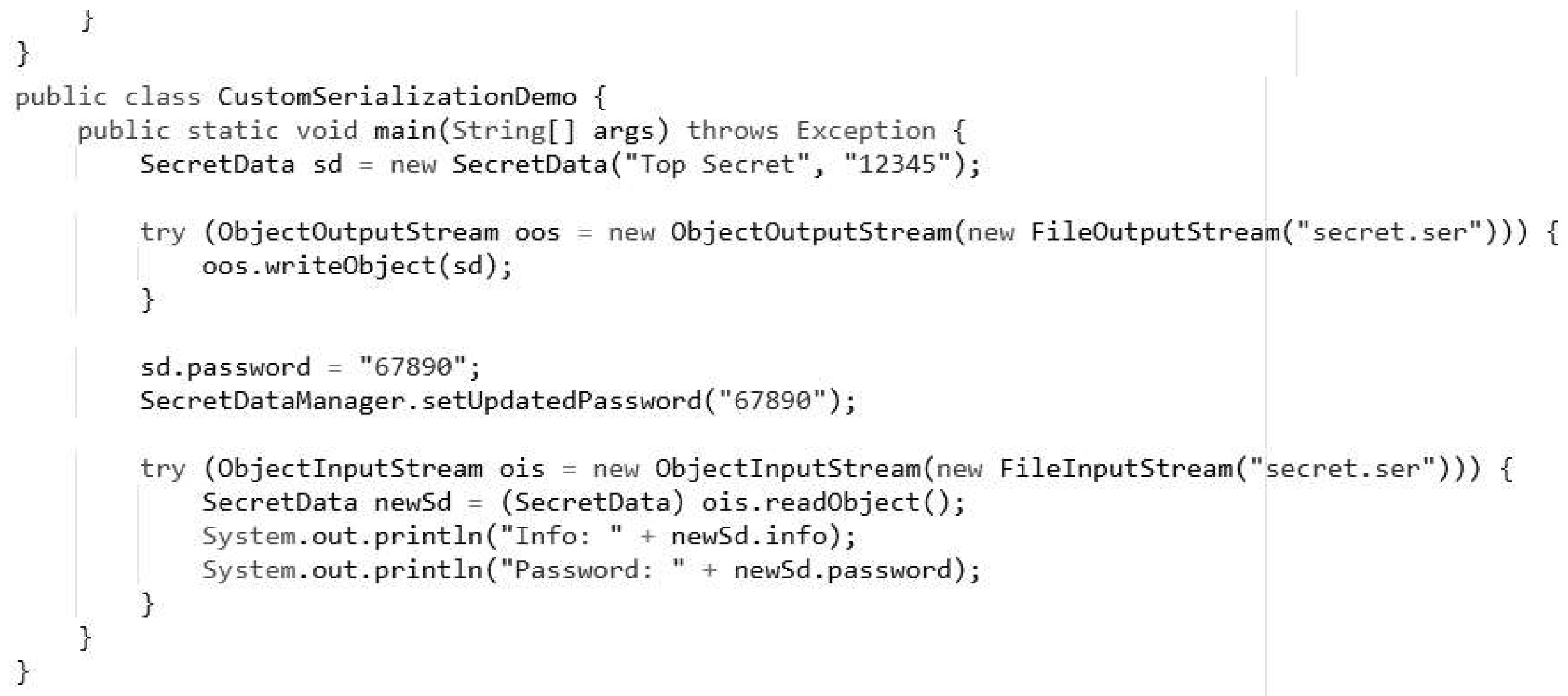
Yes, the answer is correct.
Score: 1

Accepted Answers:
All of the above.

7) What will be the output of this code? ***1 point***



```java
import java.io.*;

class SecretData implements Serializable {
    private static final long serialVersionUID = 1L;
    String info;
    transient String password;

    SecretData(String info, String password) {
        this.info = info;
        this.password = password;
    }

    private void writeObject(ObjectOutputStream oos) throws IOException {
        oos.defaultWriteObject();
        oos.writeObject("ENC(" + password + ")");
    }

    private void readObject(ObjectInputStream ois) throws IOException, ClassNotFoundException {
        ois.defaultReadObject();
        password = SecretDataManager.getUpdatedPassword((String) ois.readObject());
    }
}

class SecretDataManager {
    private static String updatedPassword;

    public static void setUpdatedPassword(String password) {
        updatedPassword = password;
    }

    public static String getUpdatedPassword(String originalEncryptedPassword) {
        return updatedPassword != null ? updatedPassword : decrypt(originalEncryptedPassword);
    }

    private static String decrypt(String encryptedPassword) {
        return encryptedPassword.substring(4, encryptedPassword.length() - 1);
```



```
    }
}
public class CustomSerializationDemo {
    public static void main(String[] args) throws Exception {
        SecretData sd = new SecretData("Top Secret", "12345");

        try (ObjectOutputStream oos = new ObjectOutputStream(new FileOutputStream("secret.ser"))) {
            oos.writeObject(sd);
        }

        sd.password = "67890";
        SecretDataManager.setUpdatedPassword("67890");

        try (ObjectInputStream ois = new ObjectInputStream(new FileInputStream("secret.ser"))) {
            SecretData newSd = (SecretData) ois.readObject();
            System.out.println("Info: " + newSd.info);
            System.out.println("Password: " + newSd.password);
        }
    }
}
```

○ Info: Top Secret
Password: 1234567890

● Info: Top Secret
Password: 67890

○ Info: Top Secret
Password: ENC(12345)

○ Info: Top Secret
Password: ENC(67890)

Yes, the answer is correct.

Score: 1

Accepted Answers:

Info: Top Secret

Password: 67890

8) In Java, which of the following statements about the readObject() method when customizing deserialization is correct? **1 point**

● The readObject() method must call defaultReadObject() to ensure the non-transient fields are correctly deserialized.

○ The readObject() method is only used for reading transient fields and should not call defaultReadObject().

○ The readObject() method cannot be overridden in a Serializable class.

○ The readObject() method is automatically generated by the Java compiler and cannot be customized.

Yes, the answer is correct.
Score: 1

Accepted Answers:

The readObject() method must call defaultReadObject() to ensure the non-transient fields are correctly deserialized.

9) In C++, when serializing an object by writing its raw memory to a binary file using reinterpret cast, which of the following statements is true regarding portability and object reconstruction? **1 point**

○ This method ensures platform-independent serialization, and the object can be safely deserialized on any machine.

● This method may lead to issues due to differences in endianness, padding, and alignment between different systems, making deserialization unsafe across platforms.

○ The use of reinterpret cast guarantees that the object’s virtual table pointers are correctly serialized and deserialized.

○ C++ provides built-in serialization support that handles these issues automatically.

Yes, the answer is correct.
Score: 1

Accepted Answers:
This method may lead to issues due to differences in endianness, padding, and alignment between different systems, making deserialization unsafe across platforms.

10) Considering the differences between text mode and binary mode in C++ file I/O, which of the following statements is accurate? ***1 point***

● In text mode, newline characters are translated to the system’s native line-ending representation, while in binary mode, no such translation occurs.

○ Binary mode is preferred for reading and writing text files because it handles newline characters correctly across different platforms.

○ There is no difference between text mode and binary mode in modern C++ implementations.

○ When opening a file in binary mode, data is automatically compressed to save space.

Yes, the answer is correct.
Score: 1

Accepted Answers:
In text mode, newline characters are translated to the system’s native line-ending representation, while in binary mode, no such translation occurs.