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rg0102@srmist.edu.in

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 5: Assignment 5

The due date for submitting this assignment has passed.

Due on 2025-02-26, 23:59 IST.

Assignment submitted on 2025-02-16, 13:47 IST

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

Consider the following C++ code:

```
class Example {
private:
    int secret;

public:
    void setSecret(int value) {
        secret = value;
    }

    int getSecret() {
        return secret;
    }
};

int main() {
    Example obj;
    obj.setSecret(42);
    std::cout << obj.getSecret();
```

```
    return 0;
}
```

What is the output of the program?

- 0
- 42
- Compilation error
- Undefined behavior

Yes, the answer is correct.
Score: 1

Accepted Answers:
42

2) Which of the following access specifiers allows a member to be accessible only within the same package in Java? ***1 point***

- private
- protected
- Default(no modifier)
- public

Yes, the answer is correct.
Score: 1

Accepted Answers:
Default(no modifier)

3) Write a C++ program to demonstrate the use of all three access specifiers (public, protected, and private) in a class. ***1 point***

- Define a Base class with three variables: one for each access specifier.
- Define a Derived class that inherits from Base.
- Show how the derived class can access the protected and public members but not the private member.

Which of the following is true?

- Private members are accessible in the derived class.
- Protected members are accessible in the derived class.
- Only public members are accessible in the derived class.
- None of the above.

Yes, the answer is correct.
Score: 1

Accepted Answers:
Protected members are accessible in the derived class.

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

```
class Shape {
public:
    virtual void draw() = 0;
};

class Circle : public Shape {
public:
    void draw() override {
        std::cout << "Drawing Circle" << std::endl;
    }
};

int main() {
    Circle c;
    c.draw();
    return 0;
}
```

What is the output of the program?

- Compilation error
- Drawing Circle

- No output
- Undefined behavior

Yes, the answer is correct.
Score: 1

Accepted Answers:
Drawing Circle

5) Which of the following statements is true about abstract classes and interfaces in Java? ***1 point***

- An abstract class cannot have concrete methods.
- Interfaces can have constructors.
- An interface can extend another interface.
- Abstract classes cannot be inherited.

Yes, the answer is correct.
Score: 1

Accepted Answers:
An interface can extend another interface.

6) Write a Java program that: ***1 point***

- Defines an interface Shape with a method area().
- Implements the interface in two classes: Circle and Rectangle.
- Implements the interface in two classes: Circle and Rectangle.

What is the correct way to implement the area() method in Circle?

- public double area(){ return Math.PI * radius * radius; }
- private double area() { return Math.PI * radius * radius; }
- public void area() { System.out.println(radius * radius); }
- protected double area() { return Math.PI * radius * radius; }

Yes, the answer is correct.
Score: 1

Accepted Answers:
*public double area(){ return Math.PI * radius * radius; }*

7) Consider the following C++ program: ***1 point***

```
class BankAccount {
private:
    double balance;

public:
    BankAccount(double initial) : balance(initial) {}

    void deposit(double amount) {
        balance += amount;
    }

    double getBalance() {
        return balance;
    }
};

int main() {
    BankAccount account(100.0);
    account.deposit(50.0);
```

```
    std::cout << account.getBalance();
    return 0;
}
```

What is the output of this program?

- (●) 150.0
- ( ) 100.0
- ( ) Compilation error
- ( ) Undefined behavior

Yes, the answer is correct.
Score: 1

Accepted Answers:
150.0

8) Which of the following best describes the purpose of data hiding in OOP? ***1 point***

- ( ) To optimize memory usage.
- (●) To prevent unauthorized access to class data.
- ( ) To allow multiple inheritance.
- ( ) To ensure faster compilation.

Yes, the answer is correct.
Score: 1

Accepted Answers:
To prevent unauthorized access to class data.

9) What is a key difference between abstract classes and interfaces in Java? ***0 points***

- ( ) Abstract classes support multiple inheritance, interfaces do not.
- (●) Abstract classes can have concrete methods, interfaces cannot.
- ( ) Interfaces can have static methods, abstract classes cannot.
- ( ) An interface can only be implemented, not extended.

No, the answer is incorrect.
Score: 0

Accepted Answers:
Interfaces can have static methods, abstract classes cannot.

10) What is required for method overriding in polymorphism? ***1 point***

- The method must have the same name but different parameters.
- The method must have the same name, return type, and parameters in a parent and child class.
- The method must be marked as static.
- The method must be private in the base class.

Yes, the answer is correct.
Score: 1

Accepted Answers:
The method must have the same name, return type, and parameters in a parent and child class.