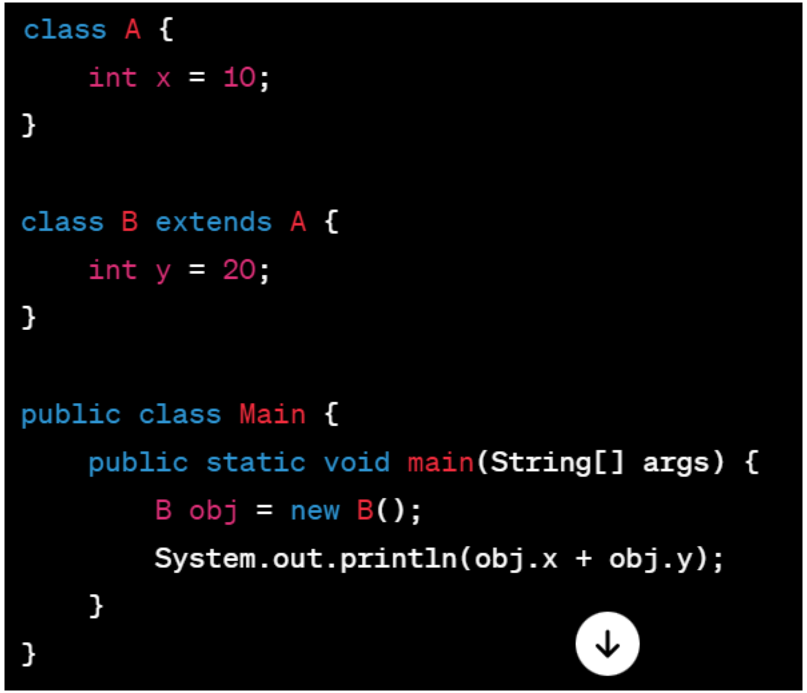
ABSTRACT

Recap

Q1. What will be the output of the above Java program?

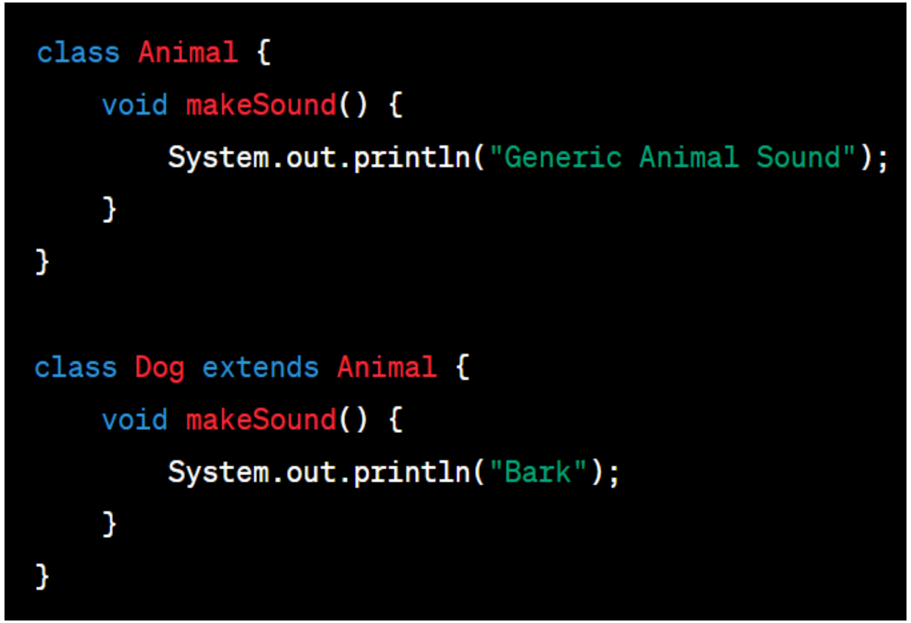


```
class A {
    int x = 10;
}

class B extends A {
    int y = 20;
}

public class Main {
    public static void main(String[] args) {
        B obj = new B();
        System.out.println(obj.x + obj.y);
    }
}
```

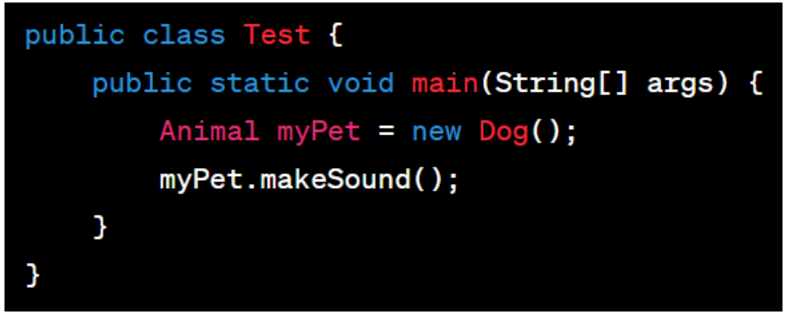
- A) 10
- B) 20
- [✓ C) 30]
- D) Compilation Error

Recap

Q2. What will be the output of the above Java program?



```
class Animal {
    void makeSound() {
        System.out.println("Generic Animal Sound");
    }
}

class Dog extends Animal {
    void makeSound() {
        System.out.println("Bark");
    }
}
```



```
public class Test {
    public static void main(String[] args) {
        Animal myPet = new Dog();
        myPet.makeSound();
    }
}
```

- A) Generic Animal Sound
- [✓ B) Bark]
- C) Compilation Error
- D) Runtime Error

OBJECTIVES

On completion of this topic, you will be able to:

- Work with Abstract methods
- Write an Abstract class
- Apply the rules for Inheriting Abstract class
- Relate Abstract class to Abstraction concept

ABSTRACTION

Abstract is a modifier, used with class or method

ABSTRACT METHOD

- A method in a class that is just declared without any implementation is an abstract method.
- It just has the method signature.
- Syntax

  abstract return_type function_name(<parameterlist>);

ABSTRACT CLASS

- A class declared as abstract is an abstract class.
- If a class contains any abstract method it has to be declared as abstract.
- Syntax

  abstract class class_name
- Abstract class can also have attributes and normal methods with implementations along with abstract methods.

ABSTRACT CLASS

ABSTRACT CLASS

- Cannot be instantiated.
- Can be inherited.
- Reference can be created, to hold the child class objects.
- Can contain both abstract and non abstract methods.

CLASS INHERITING AN ABSTRACT CLASS

- When a class inherits an abstract class with abstract methods, it has to provide implementation for all the abstract methods to make it a concrete class.
- If the subclass does not implement all the abstract methods, then the subclass also needs to be declared abstract.

ABSTRACT CLASS

ABSTRACT CLASS WITH ZERO ABSTRACT METHODS

- If an object need not be created for a class, it can be declared as abstract though it does not have any abstract methods.
- Abstract classes contain zero or more abstract methods, which are later implemented by its subclass.

ABSTRACT CLASS

ABSTRACT CLASS WITH ZERO ABSTRACT METHODS - EXAMPLE

- Assume, class Account, SavingsAccount and CurrentAccount
- Account is the parent of SavingsAccount and CurrentAccount
- When object is created it cannot be just Account. It should be either Savings or Current account.

  For Account class object need not be created.
- Now make class Account as abstract, even if it has no abstract methods in it.

HANDS ON TRAINING

Doubts Time

QUIZ TIME

Quiz Time

Q1. Which Inheritance type not supported in java

A Single Inheritance

B Hierarchy Inheritance

[✓ C] Multiple Inheritance

D Multi-Level Inheritance

Quiz Time

Which Keyword is used to call the base class constructor from child class constructor

A base

B this

[✓ C] super

D extends

SUMMARY

SUMMARY

Having completed this module, you should be able to:

- Define Inheritance
- Implement Inheritance in Java
- Use the Access Specifier Protected
- List the type of Inheritance
- Implement method overriding concept in Inheritance