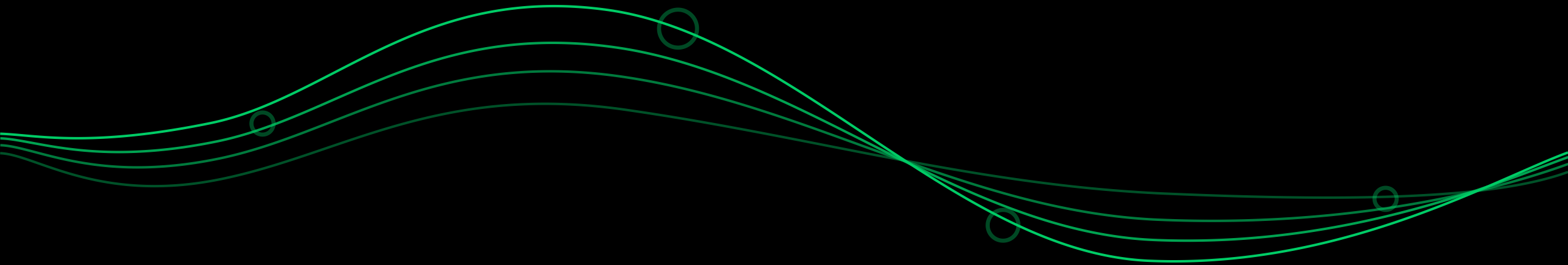


Java [Unit-1]

2 Mark Questions with answers

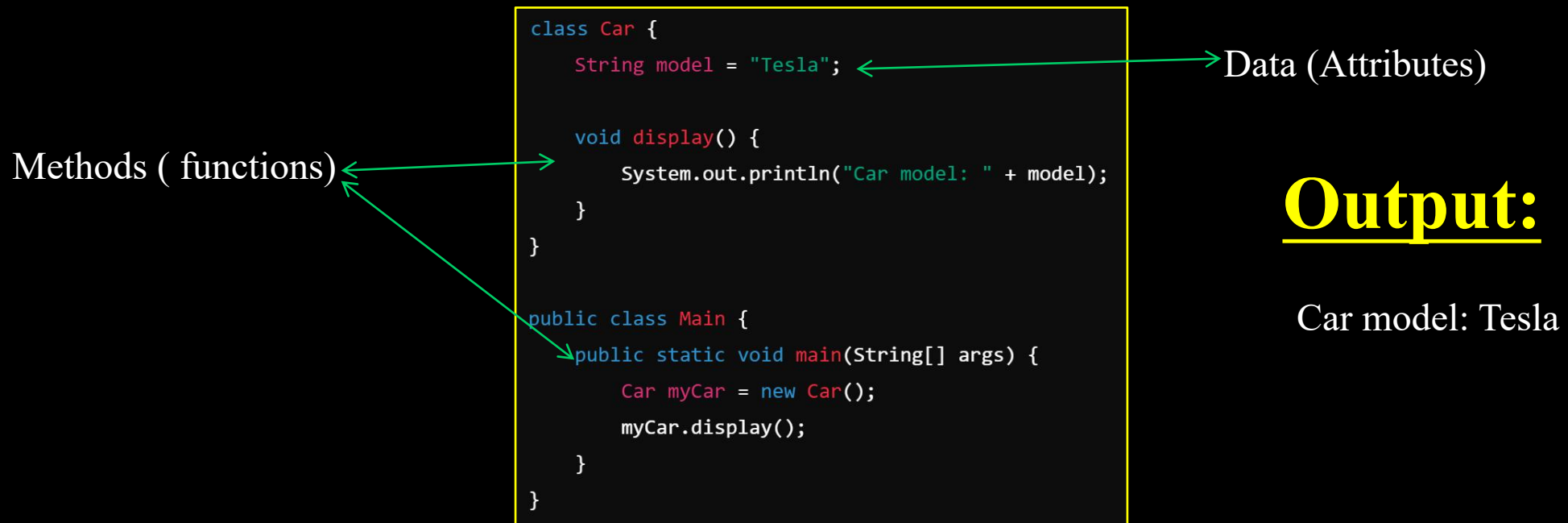
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1. Define Object-Oriented Programming (OOP)

Answer:

Object-Oriented Programming (OOP) is a programming paradigm based on the concept of objects, which can contain data (attributes) and methods (functions) to manipulate that data. It helps in organizing code using real-world entities like classes and objects.



2. List the four main principles of OOP and briefly explain them.

Answer:

The four main principles of OOP are:

Encapsulation – Wrapping data (variables) and code (methods) together in a single unit (class).

Abstraction – Hiding implementation details and exposing only the essential features.

Inheritance – Allowing a class to inherit properties and behavior from another class.

Polymorphism – The ability of a function, method, or object to take multiple forms.

3. What are the different object-oriented programming paradigms?

Answer:

The key object-oriented programming paradigms are:

Class-Based Programming – Uses classes as blueprints to create objects. (e.g., Java, C++)

Prototype-Based Programming – Objects inherit directly from other objects. (e.g., JavaScript)

Aspect-Oriented Programming (AOP) – Separates cross-cutting concerns (e.g., logging, security).

4. Mention any four Java buzzwords and explain their meaning.

Answer:

Java buzzwords are the key features of Java:

Platform Independent – Java code runs on any OS using JVM.

Object-Oriented – Java is based on OOP principles.

Robust – Java has strong memory management and exception handling.

Secure – Java provides built-in security features like bytecode verification.

5. What is a class in Java? How is it different from an object?

Answer:

1. A class is a **blueprint** for creating objects. It defines properties (variables) and behaviors (methods).
2. An object is an **instance of a class**. It has state and behavior.

```
class Car {  
    String brand = "Tesla";  
}  
  
public class Main {  
    public static void main(String[] args) {  
        Car myCar = new Car(); // Object creation  
        System.out.println(myCar.brand);  
    }  
}
```

Output:

Tesla

6. What is the main method in Java? Why is it always `public static void main(String[] args)`?

Answer:

1. public – Accessible from anywhere.
2. static – No object is needed to call it.
3. void – Doesn't return any value.
4. main(String[] args) – The entry point of Java programs.

```
public class Main {  
    public static void main(String[] args) {  
        System.out.println("Hello, Java!");  
    }  
}
```

Output:

Hello, Java!

7. What is JVM? How does it execute a Java program?

Answer:

The Java Virtual Machine (JVM) is a runtime environment that converts Java bytecode into machine code for execution.

Steps:

1. Java Compiler compiles .java file to bytecode (.class).
2. JVM interprets the bytecode and runs it on the OS.

8. Differentiate between JDK, JRE, and JVM.

Answer:

Component	Description
JDK (Java Development Kit)	Includes JRE + Compiler + Debugger (for development).
JRE (Java Runtime Environment)	Includes JVM + Libraries (for running Java applications).
JVM (Java Virtual Machine)	Executes Java bytecode on any OS.

9. List the different data types available in Java with an example for each.

Answer:

Data Type	Example
byte	byte b = 10;
short	short s = 200;
int	int num = 5000;
long	long bigNum = 1000000L;
float	float f = 5.75f;
double	double d = 19.99;
char	char letter = 'A';
boolean	boolean isTrue = true;

10. Compare Java's memory management with C's memory management.

Answer:

Feature	Java	C
Memory Allocation	Automatic (new keyword)	Manual (malloc(), free())
Garbage Collection	Automatic	Manual
Pointers	No direct pointers	Uses pointers

11. What are variables in Java? How do you declare them?

Answer:

A variable stores a value that can change during program execution.

```
public class Main {  
    public static void main(String[] args) {  
        int age = 25;  
        System.out.println(age);  
    }  
}
```

Output:

25

12. What are the different types of variables in Java?

Answer:

1. Local Variable – Declared inside a method.
2. Instance Variable – Declared inside a class but outside methods.
3. Static Variable – Declared with static keyword.

```
class Example {  
    int instanceVar = 10;  
    static int staticVar = 20;  
  
    void show() {  
        int localVar = 5;  
        System.out.println(localVar);  
    }  
}
```

13. What are the different types of operators in Java?

Answer:

1. Arithmetic (+, -, *, /, %)
2. Relational (==, !=, >, <, >=, <=)
3. Logical (&&, ||, !)
4. Assignment (=, +=, -=, *=, /=)
5. Unary (++ , --)

14. What are control statements in Java?

Answer:

Control statements manage the flow of execution.

1. Selection: if, if-else, switch
2. Looping: for, while, do-while
3. Jump: break, continue, return

```
public class Main {  
    public static void main(String[] args) {  
        if (5 > 2) System.out.println("Yes");  
    }  
}
```

15. Explain the difference between while and do-while loops with an example.

Answer:

1. while loop – Checks condition first, then executes.
2. do-while loop – Executes once, then checks condition.

```
public class Main {  
    public static void main(String[] args) {  
        int i = 1;  
        do { System.out.println(i); i++; } while (i < 1);  
    }  
}
```

```
public class Main {  
    public static void main(String[] args) {  
        int i = 1;  
        while(i<=10){  
            System.out.println(i);  
            i++;  
        }  
    }  
}
```

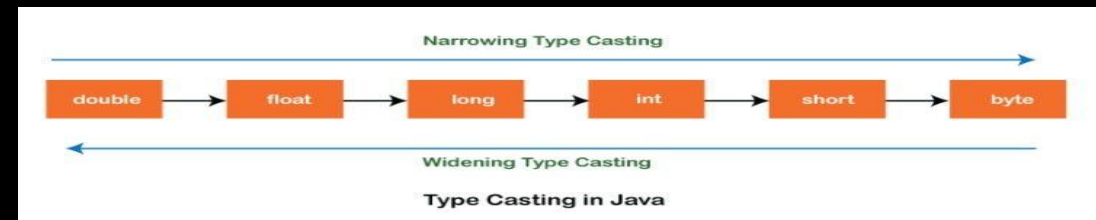

16. What is type casting in Java? Give an example.

Answer:

Type Casting is converting one data type into another.

1. Implicit (Widening) – Smaller to larger type.
2. Explicit (Narrowing) – Larger to smaller type.

```
public class Main {  
    public static void main(String[] args) {  
        int num = 10;  
        double d = num; // Implicit casting  
        short s=(short)num; //Explicit casting  
        System.out.println(d);  
        System.out.println(s);  
    }  
}
```



Answer:

10.0

10

17. What is an array in Java? How do you declare it?

Answer:

An array is a collection of elements of the same type.

```
public class Main {  
    public static void main(String[] args) {  
        int[] arr = {1, 2, 3};  
        System.out.println(arr[0]);  
    }  
}
```

Output:

1

18. What is the difference between for and foreach loops in Java?

Answer:

1. for loop – Uses index to access elements.
2. foreach loop – Iterates through elements directly.

```
public class Main {  
    public static void main(String[] args) {  
        int[] arr = {1, 2, 3};  
        for (int num : arr) System.out.println(num);  
    }  
}
```

Output:

1
2
3

19. What happens if you remove static from the main method in Java?

Answer:

1. The program will compile successfully but will fail at runtime with an error.

```
Error: Main method not found in class Main
```

1. Since main() is called before any objects are created, it must be static.

20. Can a Java program run without a main method?

Answer:

1. Before Java 7: A program could run using a static block, but this was removed in later versions.
2. From Java 7 onwards: The main method is mandatory for execution.

THANK YOU

Petchiammal N

