1. What is java?

Developed by Sun Microsystems (now owned by oracle) in 1995, Java is a highly popular, object-oriented programming language. This platform independent programming language is utilized for Android development, web development, artificial intelligence, cloud applications.

1. What are the java variables?

In Java, Variables are the data containers that save the data values during Java program execution. Every Variable in Java is assigned a data type that designates the type and quantity of value it can hold. A variable is a memory location name for the data.

In java there 4 types of variables are available.

1. Instance variables
2. Static variables
3. Local variables
4. Parameterized variables
5. What are instance variables?

Instance variables are non-static variables and are declared in a class outside of any method, constructor, or block.

1. As instance variables are declared in a class, these variables are created when an object of the class is created and destroyed when the object is destroyed.
2. Unlike local variables, we may use access specifies for instance variables. If we do not specify any access specifier, then the default access specifier will be used.
3. Instance variables can be accessed only by creating objects.
4. We initialize instance variables using constructors while creating an object.
5. What are static variables?

Static variables are also known as class variables.

1. These variables are declared similarly to instance variables. The difference is that static variables are declared using the static keyword within a class outside of any method, constructor, or block.
2. Unlike instance variables, we can only have one copy of a static variable per class, irrespective of how many objects we create.
3. Static variables are created at the start of program execution and destroyed automatically when execution ends.
4. If we access a static variable like an instance variable (through an object), the compiler will show a warning message, which won’t halt the program. The compiler will replace the object name with the class name automatically.
5. If we access a static variable without the class name, the compiler will automatically append the class name. But for accessing the static variable of a different class, we must mention the class name as 2 different classes might have a static variable with the same name.
6. What are local variables?

A variable defined within a block or method or constructor is called a local variable.

1. These variables are created when the block is entered, or the function is called and destroyed after exiting from the block or when the call returns from the function.
2. The scope of these variables exists only within the block in which the variables are declared, i.e., we can access these variables only within that block.
3. Initialization of the local variable is mandatory before using it in the defined scope.
4. What is class?

Class is blue print or plan for creating an objects. Class contains variables and methods which shares common characteristics/ behavior and common properties/ attributes.

### Properties of Java Classes

1. Class is not a real-world entity. It is just a template or blueprint or prototype from which objects are created.
2. Class does not occupy memory.
3. Class is a group of variables of different data types and a group of methods.
4. A Class in Java can contain:
   * Data member
   * Method
   * Constructor
   * Nested Class
   * Interface
5. What is object?

A physical existence of class is nothing but object. For one class we can create more no of objects. Data members and methods of a class cannot be used directly. We need to create an object (or instance) of the class to use them. In simple terms, they are the actual world entities that have a state and behavior.

1. When will we use for loop?

When you know exactly how many times you want to loop through a block of code, use the for loop instead of a while loop.

Syntax:

for (*statement 1*; *statement 2*; *statement 3*) {

*// code block to be executed*

}

**Statement 1** is executed (one time) before the execution of the code block.

**Statement 2** defines the condition for executing the code block.

**Statement 3** is executed (every time) after the code block has been executed.

1. Difference between while, do while and for loop?

| **Feature** | **for Loop** | **while Loop** | **do-while Loop** |
| --- | --- | --- | --- |
| **Syntax** | for (initialization; condition; increment/decrement) {} | while (condition) { } | do { } while (condition); |
| **Initialization** | Declared within the loop structure and executed once at the beginning. | Declared outside the loop; should be done explicitly before the loop. | Declared outside the loop structure |
| **Condition** | Checked before each iteration. | Checked before each iteration. | Checked after each iteration. |
| **Update** | Executed after each iteration. | Executed inside the loop; needs to be handled explicitly. | Executed inside the loop; needs to be handled explicitly. |
| **Use Cases** | Suitable for a known number of iterations or when looping over ranges. | Useful when the number of iterations is not known in advance or based on a condition. | Useful when the loop block must be executed at least once, regardless of the initial condition. |

1. Difference between break and continue statements?

| **Break** | **Continue** |
| --- | --- |
| The break statement is used to terminate the loop immediately. | The continue statement is used to skip the current iteration of the loop. |
| Break keyword is used to indicate break statements in java programming. | Continue keyword is used to indicate continue statement in java programming. |
| We can use a break with the switch statement. | We cannot use a continue with the switch statement. |
| The break statement terminates the whole loop early. | The continue statement brings the next iteration early. |
| It stops the execution of the loop. | It does not stop the execution of the loop. |

Arrays and Strings:

### 1. What is an Array in Programming?

1. An Array is a collection of similar data types stored in contiguous memory locations.
2. At the time of declaration of an array, you must specify the type of data with the array name.
3. You can access different elements present in an array using their index.

### 2.  When will we get ArrayIndexOutOf Bounds Exception?

ArrayIndexOutOfBoundsis a runtime exception that occurs when the program tries to access the invalid index of an array such as an Index higher than the size of the array or a negative index.

**3.  When will we get ArrayStoreException?**

1. ArrayStoreException is a runtime exception.
2. **For example**, you will get this exception at run time if you declare a String Array and then try to insert integer elements in the array.

### 4. State the difference between String and StringBuffer.

String objects in Java are immutable and final, so we can't change their value after they are created. Since strings are commonly used in applications, we need to perform several operations on them such as substring(), equals(), indexof(), toUppercase(), etc. Each time we manipulate a string, a new String object is created, and all previous objects will be garbage, placing a strain on the garbage collector. This is why The Java team developed StringBuffer.

A StringBuffer is a mutable object, meaning it can be changed, but the string is an immutable object, so it cannot be changed once it has been created.

5. How to declare a string in Java?

String declaration in Java can be done in two ways:

1. **By string literal**: Double quotes are used to create Java String literals.
   * Example: String str= "Scalar";
2. **By new keyword**: Keyword "new" is used to create a Java string.
   * Example: String str=new String ("Scalar");

### 6. What is the use of the substring() method in Java?

The substring method is used to return substring from a specified string. This method takes two parameters i.e., begin Index (the starting index) and end Index (the ending index). In the case of substring (), method start Index is inclusive and end Index is exclusive.

Syntax:

Substring (int begin Index, int end Index)

Or

Substring (int begin Index)

Here,

1. **Begin Index**: Index that marks the starting of subsequence and it is inclusive.
2. **End Index**: Index that marks the ending of subsequence and it is exclusive.

### 7. What are the different string methods in Java?

There are various string operations in Java that allow us to work with strings. These methods or operations can be used for string handling in Java as well as string manipulation in Java. Some of such methods are as follows:

1. **Split ()**: Split/divide the string at the specified regex.
2. **CompareTo ()**: Compares two strings on the basis of the Unicode value of each string character.
3. **CompareToIgnoreCase ()**: Similar to compare to, but it also ignores case differences.
4. **length ()**: Returns the length of the specified string.
5. **Substring ()**: Returns the substring from the specified string.
6. **EqualsIgnoreCase ()**: Compares two strings ignoring case differences.
7. **Contains ()**: Checks if a string contains a substring.
8. **Trim ()**: Returns the substring after removing any leading and trailing whitespace from the specified string.
9. **charAt ()**: Returns the character at specified index.
10. **toLowerCase ()**: Converts string characters to lower case.
11. **toUpperCase ()**: Converts string characters to upper case.
12. **Concat ()**: Concatenates two strings.

### 8. What is the difference between length and length () in Java?

In Java, the length () is a method of String class whereas length is an instance variable of an array.

* **length in Java**
  + The length variable returns the length of an array i.e. a number of elements present in an array.
  + After initializing, the length of an array cannot be changed, so the length variable can directly be used to get the length of an array.
  + It is used only for an array.
* **length() in Java**
  + It is a static method of String class.
  + The length () returns the number of characters stored in a string object.
  + The string class uses this method as the length of a string can be modified using the various operations performed on a string object.
  + The String class uses a char [] array internally.

### 9. Can you declare an array without assigning the size of an array?

No, we cannot declare an array without assigning size. If we declare an array without size, it will throw compile time error.

### 10.  What is the default value of Array in Java?

If we don't specify the values by ourselves, then Java assigns default values in them which are 0 for byte, short, int, and long, 0.0 for float and double, false for boolean, and null for objects respectively.

1. What is Java?

Answer: Java is a high-level, object-oriented programming language

developed by Sun Microsystems.

2. What is the difference between JDK, JRE, and JVM?

Answer:

• JDK (Java Development Kit) includes JRE and development tools.

• JRE (Java Runtime Environment) provides libraries and JVM to run

Java applications.

• JVM (Java Virtual Machine) executes Java bytecode.

3. List out the main features of Java?

Answer:

• Object-oriented

• Platform-independent

• Simple and Familiar

• Secure

• Robust and Multithreaded

• High Performance

5.What is Variable? and its type?

Answer: Variable is a container which can hold data to represent data we need variables.

1. Local Variable-- declared within a method or constructor

2.Instance Variable--are non-static variables and are declared in a class outside of any method, constructor, or block.

3.Static variable-- are also known as class variables.These variables are declared similarly to instance variables.

The difference is that static variables are declared using the static keyword within a class outside of any method, constructor, or block.

6.What is datatypes & its type?

Answer: It represents type of data.

Premitive: used to store single value at a time. byte,short,int,long,float,double,char,boolean.

Non-premitive:used to store multiple value into single variable.String,ArrayList,HashMap,HashSet etc.

7.What is operators & its type?

Answer: is a symbol which will perform an operation.

--Arithmetic operators +,-,\*,/,%

--Comparison/relational >,>=,<,<=,!=,==

--Logical && || !

--Increment/Decrement ++ --

--Assignment = += -= \*= /= %=

8.What is control statements?

Answer: is used to control the execution of the program or control execution order of the program.

9.What is Loop? & its type?

Answer: is a set of statements or group of statements which are excecuted multiple times. to reduce the code & duplication we use loops.

while loop

do while loop

for loop

enhanced for loop/for each loop

10. What is the Class?

Answer: class is collection of variables and methods.class is logical entity/blue print & will not occupy space in the memory.

class Employee

{

variables

methods

}

11.What ia an Object?

Answer:object is an instance of a class/ object will be created by using class.

-- object is physical entity

-- occupy space in memory

-- we can create multiple objects for single class.

Employee emp=new Employee();

12.What is a method?

Answer: block or group of statements which will perform certain task.

we have to call the method through object.

Different ways to create a methods

1) No params No return value

2) No params Return value

3) Takes params No return value

4) Takes params Returns value

13.How many ways we can store data into varaibles

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Answer:

1) by using object reference varaible

2) method

3) constructor

14. Difference between Method & Constructor?

Answer:Method:

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1) Method name can be anything

2) Method may or may not return a value

3) If method is not returning any value then specify void

4) Method can take parameters/arguments

5) We have to invoke/call methods explicitely through object

6) used for specifying logic

Constructor

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1) Constructor name should be same as class name.

2) Constructor will never return a value ( not even void)

3) We dont specify the void

4) Constructor can take parameters/arguments

5) Constructor automatically invoked at the time of object creation.

6) used for initilizing the values of the variables.

15. What is the difference between == and .equals()?

Answer:

• == compares object references.

• .equals() compares object content.(values of object)

16. Explain the static keyword in Java.

Answer:

static is used to create class members that belong to the class rather

than an instance.

17. What is the purpose of the final keyword?

Answer:

final is used to declare a constant variable or a method that cannot be

overridden or a class that cannot be extended.

18. What is the difference between String and String Buffer?

Answer:

String is immutable (unchangeable).

StringBuffer is mutable (changeable).

19. Explain the try, catch, and finally blocks.

Answer:

try block contains the code that may throw an exception.

catch block handles the exception.

finally block contains code that will be executed regardless of whether

an exception is thrown or not.

20. What is the purpose of the this keyword?

Answer: this refers to the current instance of the class and is used to

differentiate instance variables from local variables.

21. What is an abstract class?

Answer: An abstract class is a class that cannot be instantiated and may

have abstract methods. It serves as a blueprint for other classes.

22. What is an interface?

Answer: An interface is a collection of abstract methods. A class

implements an interface.

23.What is an Array? and what is the type of it ?

Answer: Array is a collection of elements of same datatype(Homogenous data).We can store multiple values into single variable.

One dimensional

Two dimensional

24.What is String?

Answer: Strings are the type of objects that can store the character of values.

objects of String are immutable which means a constant and cannot be changed once created.

java basics----------

1.what is java?

Java is a high-level programming language and is platform-independent.

Java is a collection of objects. It was developed by Sun Microsystems. There are a lot of applications, websites, and games that are developed using Java.

2.What are the features of JAVA?

Answer: Features of Java are as follows:

OOP concepts

Object-oriented

Inheritance

Encapsulation

Polymorphism

Abstraction

3.1.Explain public static void main(String args[]) in Java.?

It serves as the entry point for any Java program and is the first method that gets executed when a Java application starts.

4. what is Class?

Is a blue print / template which contains methods & variables.

they are two types classes

Executable class & Non Executable class

5.what is Method?

Is a block of code which only runs when it is called, we can pass data known as parameters into methods.

Methods are used to perform certain actions & they are also known as functions.

Methods are called for reusable purpose also.

2 types

Void method – is not a return type

Static void method – is a return type

6.what is Variables?

Is a named memory location to store temporary data within a program.

We have variables in every programing language, the usage of variables is same for all programing languages but syntax varies from one language to another.

Declaration of variable:-

Syntax:-

Datatype variablename;

EX:- int a;

7.Why Packages are used?

We use packages to avoid name conflicts, and to write a better maintainable code.

8.Differentiate between instance and local variables?

An instance variable is a variable that is declared in a class but outside a method

An local variable is a variable that is declared inside the method itself

9. What is Inheritance?

 Inheritance means one class can extend to another class. So that the codes can be reused from one class to another class. The existing class is known as the Super class whereas the derived class is known as a sub class.

10. What is the difference between a class and an object?

A class is a blueprint or template for creating objects, while an object is an instance of a class. In other words, a class defines the properties and behaviors of an object, while an object is an instance of those properties and behaviors.

Arrays::------------------------------------------------------------------------------------------------------------

1.What is an array in Java?

An array is a container object that holds a fixed number of values of a single type

2.What is the difference between int array[] and int[] array?

The int array[] syntax was only added to help C programmers get used to java. int[] array is much preferable, and less confusing.

3.How do you declare an array in Java?

int[] arrayName; or int arrayName[];

4.How do you initialize an array in Java?

int[] arrayName = new int[5]; or int[] arrayName = {1, 2, 3, 4, 5};

5.How do you find the length of an array in Java?

arrayName.length

Strings--------------------------------------------------------------------------------------------------------

1.What is a string in Java?

A string is a sequence of characters. In Java, strings are objects of the String class.

2.How do you declare and initialize a string in Java?

String str = "Hello, World!";

String str = new String("Hello, World!");

3.How do you concatenate two strings in Java?

Using the + operator: String result = str1 + str2;

Using the concat() method: String result = str1.concat(str2);

4.How do you find the length of a string?

Using the length() method: int length = str.length();