**Java – Classes and Objects**

Q1: What is a Class and Object in Java?

Answer:

A class is a user-defined blueprint or prototype from which objects are created. It represents the set of properties or methods that are common to all objects of one type. Using classes, you can create multiple objects with the same behavior instead of writing their code multiple times.

An object is a basic unit of Object-Oriented Programming that represents real-life entities. A typical Java program creates many objects for the same class.

Q2: What are the pillars of OOPs?

Answer: Abstraction,Encapsulation,Inheritance,Polymorphism

Q3: What is Abstraction in Java? Can you give an example?

Answer:

Data Abstraction is the property by virtue of which only the essential details are displayed to the user. The trivial or non-essential units are not displayed to the user.

Eg: A person driving a car knows that pressing the accelerators will increase the car speed or applying brakes will stop the car, but he/she does not know how on pressing the accelerator, the speed is actually increasing. He/She does not know about the inner mechanism of the car or the implementation of the accelerators, brakes etc. in the car. This is what abstraction is.

Q4: What is Encapsulation in Java? Can you give an example?

Answer: It is defined as the wrapping up of data under a single unit. It is the mechanism that binds together the code and the data it manipulates.

Eg: If combinations of medicine are variables and methods then the capsule will act as a class and the whole process is called Encapsulation

Q5: What is Inheritance in Java? Can you give an example?

Answer:

Inheritance is an important pillar of OOP (Object Oriented Programming). It is the mechanism in Java by which one class is allowed to inherit the features (fields and methods) of another class.

Real-life example – Parent-child. A child inherits certain features from parents.

Q6: How to create an object in Java?

Answer: By using the new keyword. Eg: Box mybox = new Box();

Q7: What is a Constructor in Java?

Answer: A constructor initializes an object immediately upon creation. It has the same name as the class in which it resides and is syntactically similar to a method.

Q8: What is a parameterized constructor in Java?

Answer: Constructor that takes certain parameters to assign the attributes of a class is called a parameterized constructor

Q9: What is “this” keyword in Java?

Answer: Sometimes a method will need to refer to the object that invoked it. b. To allow this, Java defines the this keyword. this can be used inside any method to refer to the current object.

Q10: How do we create a method in Java?

Answer: This is the general form of a method:

type name(parameter-list) { // body of method

}

Q11: What is overloading in Java? Can you give an example?

Answer:

When we have more than one method with same name, but different parameters, then Java decides which one to call at run time.

Eg:

int add(int num1,int num2);

double add(double num1, double num2);

Here both methods have same name add, but have different parameters

Q12: What is call by value and call by reference in Java?

Answer:

Call By Value: In Java, when you pass a primitive type to a method, it is passed by value. Thus, what occurs to the parameter that receives the argument has no effect outside the method.

Call By Reference: When you create a variable of a class type, you are only creating a reference to an object. Thus, when you pass this reference to a method, the parameter that receives it will refer to the same object as that referred to by the argument. If any attribute of the reference is changed,we see the change in the object attributes as well.

Q13: How many constructors are there in below class?

class Test{

int i;

int j;

Test(){

}

Test(int i, int j){

}

void m1(){

}

Test(int i){

}

}

Answer : 3

Q14: O/p of following program?

class T {

int t = 20;

}

class A {

public static void main(String args[]) {

T t1 = new T();

System.out.println(t1.t);

}

}

Answer: 20

Q15: O/p of following program

class T {

int t = 20;

T() {

t = 40;

}

}

class A {

public static void main(String args[]) {

T t1 = new T();

System.out.println(t1.t);

}

}

Answer: 40

Q16:

**Java – Arrays**

Q1: What are Arrays in Java?

Answer: An array is, essentially, a list of like-typed variables. To create an array, you first must create an array variable of the desired type. The general form of a one-dimensional array declaration is

type var-name[ ];

Q2: What is ArrayIndexOutOfBoundsException wrt to Arrays?

Answer: It occurs when a program attempts to access an invalid index in an array i.e. an index that is less than 0, or equal to or greater than the length of the array

Q3: Which index do array elements start from?

Answer: 0

Q4: Output of following

class A{

public static void main(String[] args){

int[] rollNumber = { 23, 17, 20, 29, 30 };

for (int temp : rollNumber)

System.out.print(temp+" ");

}

} }

Answer: Error – We are missing a bracket { at the for loop.

Q5: What is the length of the following array:

byte[] data = { 12, 34, 9, 0, -62, 88 };

Answer: 6

Q6: O/p of following program:  
class A{

public static void main(String[] args){

int i[] = new int[10];

System.out.println(i[10]);

} }

Answer: Exception. We are trying to access index 10, the array will have a max index of 9 since its length is 10.

Q7: Given, int [] nums = {2, 3, 5, 8, 9, 11};

How would you access the fourth element in nums?

Answer: nums[3] – This will give the fourth element.

Q8: O/p of following program:

class A{

public static void main(String[] args){

int [] arr1= {1, 2, 3};

int [] arr2 = {1, 2, 4};

if(arr1[0] == arr2[0])

System.out.println("Same");

else

System.out.println("Not same");

} }

Answer: Same

Q9: Which is correct declaration of a 2d array?

int intArray1[][]; // A

int[][] intArray2; // B

Answer: Both are correct.

Q10: O/p of following program?

class A{

public static void main(String[] args){

int i[] = new int[10];

i[0]= 8;

System.out.println(i[0]+i.length);

} }

Answer: 18

**Java – Operators**

Q1: Give examples of Arithmetic operators

Answer: Some arithmetic operators are +, -, ++, -- etc

Q2:What is output of following program  
class A{

public static void main(String[] args){

int a = 10;

int b=20;

System.out.println(a++);

System.out.println(b++);

System.out.println(a);

System.out.println(b);

} }

Answer:

10

20

11

21

Q3: What is the output of following program?

class A{

public static void main(String[] args){

int a = 10;

int b=20;

a += 7;

b -= 3;

System.out.println(a);

System.out.println(b);

} }

Answer:

17

17

Q4: What is the output of following program?

class A{

public static void main(String[] args){

int a = 10;

int b=20;

System.out.println(a&b);

System.out.println(a|b);

} }

Answer:

0

30

Q5: What is the output of following program?

class A{

public static void main(String[] args){

int a = 10;

int b=20;

System.out.println(a>>1);

System.out.println(b<<2);

}}

Answer:

5

80

Q6: O/p of below program?

class A{

public static void main(String[] args){

int a = 10;

int b=20;

int c = a < b ? a > 8 ? 9 : 4 : 5;

System.out.println(c);

}}

Answer:

9

Q7: O/p of this- System.out.println(6 + 4 \* 5 + 2);

Answer: 28

Q8: O/p of this - System.out.println( (8 + 1)\* 4 + 5 \* 3);

Answer: 51

Q9: Write the if statement to print if a number is even or odd. (Use if else)

Answer:

If(number%2==0){

System.out.println(“Even”);

}

else{

System.out.println(“Odd”);

}

Q10: Program to find factorial of a number

Answer: Discussed in class in details

**Commands in Git**

Q1: What are branches in Git?

Answer : A branch is a version of the repository that diverges from the main working project. A git project can have more than one branch.

Q2 : What is the master branch in Git?

Answer : The master branch is the default branch in Git. It is instantiated when first commit made on the project. A repository can have only one master branch. Some companies may also use the name main for this starting branch.

Q3 : How to create a branch?

Answer : Use command git branch <branch\_name>

Eg: To create a dev branch we can create using, git branch dev

Q4 : How to see all branches of a repository ?

Answer: Use command: git branch

Q5 : How to move to a particular branch?

Answer : Use command: git checkout <branch\_name>

Eg: To move to dev branch, the command is git checkout dev

Q6: How to create and checkout a branch at the same time?

Answer: Use command: git checkout -b <branch\_name>

Q7: How to merge a branch to the other branch?

Answer : Use command: git merge dev

If you are on master branch, this will merge the dev branch changes to the master branch

Q8: What is the use of the .gitignore file?

Answer: If there are any files in the project that we do not want to track and do not want them to show up in the git status command, we can add such files to the .gitignore file.

Q9: How to see what changes we have made to a file with what is currently present in the file?

Answer: Use command git diff <file\_name>

Q10: What is GitHub?

Answer: GitHub, Inc. is an Internet hosting service for software development and version control using Git.

Q11 : What does git remote command do?

Answer: It helps to create,view and delete connections to other repositories

Q12 : What does git push command do?

Answer : It updates remote refs along with associated objects.

Eg: Once you make changes to your branch on local and want to push it to git hub, you could use this command: git push -u origin master

**Git – Questions and Answers**

Q1 : What is GIT ?

Answer: Git is a distributed version control system that tracks changes in any set of computer files, usually used for coordinating work among programmers collaboratively developing source code during software development.

Q2 : Why is GIT used?

Answer: GIT is used for Synchronous development, to increase team speed and productivity. It is also used across many industries and has become an industry standard.

Q3 : What does git init command do?

Answer: It is used to initialize a new or an empty repository to a Git repository.

Q4 : How do add a file to the staging area?

Answer: Use git add <file\_name> to add a file to a staging area.

Q5 : What does git commit command do?

Answer: It records the file(s) permanently in the version history.

Q6 : Which command is used to see the commit history?

Answer : The git log command is used to see the commit history

Q7 : What does the git status command do?

Answer: It displays the state of the working directory and the staging area.

Q8: How to add all files to the staging area?

Answer : Use the command **git add .**

Q9: How to go back to a previous commit?

Answer: Use the command git checkout <commit\_id>

**Java – Basic Questions**

Q1: What is Java?

Answer: Java is a high-level, class-based, object-oriented ,platform independent programming language

Q2: Can you give a few buzz words of Java?

Answer : Fe buzz words of Java are – Simple, Secure, Portable, Object-Oriented, Robust etc.

Q3: From which method does Java program processing start?

Answer: It starts from the main method.

Q4: How to compile a program in Java?

Answer: Use the command javac <file\_name>.java

Q5: When we compile a java program which file is generated?

Answer: When we compile a program, a .class file is generated.

Q6: How to run a Java Program?

Answer: Use command java <name\_of\_the\_class>

Q7: Can you write a simple program to print Hello World using Java?

Answer: public class MyFirstJavaProgram {

public static void main(String []args) {

System.out.println("Hello World"); // prints Hello World

}

}

Q8: What happens at compile time?

Answer: At compile time, the Java file is compiled by Java Compiler and converts the Java code into bytecode.

Q9: What is JVM?

Answer: JVM (Java Virtual Machine) is an abstract machine that enables your computer to run a Java program.

When you run the Java program, Java compiler first compiles your Java code to bytecode. Then, the JVM translates bytecode into native machine code

Q10: Why is Java platform independent?

Answer: It's because when you write Java code, it's ultimately written for JVM but not your physical machine (computer). Since JVM executes the Java bytecode which is platform-independent, Java is platform-independent.

Q11: What is JRE?

Answer: JRE (Java Runtime Environment) is a software package that provides Java class libraries, Java Virtual Machine (JVM), and other components that are required to run Java applications.

Q12: What is JDK?

Answer: JDK (Java Development Kit) is a software development kit required to develop applications in Java. When you download JDK, JRE is also downloaded with it.

In addition to JRE, JDK also contains a number of development tools (compilers, JavaDoc, Java Debugger, etc).

Q13: What are the primitive types in Java?

Answer: We have 8 primitive types in Java, they are:   
byte, short, int, long, char, float, double, and boolean.

Q14: List a few Java keywords

Answer: There are many Java keywords, some of them are for,if,else,continue,break etc.