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*Course- B.Tech (second year)*

*Branch -Cs*

*Subject-Java Assignment-1*

Q1. Differentiate between print() and println() methods in Java.

Ans:

|  |  |
| --- | --- |
| **println()** | **print()** |
| 1.It adds new line after the message gets dispalyed. | 1.It does not add any new line. |
| 2.It can work without arguments. | 2.This method only and only works with argument, otherwise it is an syntax error. |

3. This text is passed as 3. This text is passed as the

the parameter to this parameter to this method in

method in the form of String. the form of String.

4. This method prints the text 4. This method prints the text On the

On the console and the cursor console and the cursor remains at

remains at the start of the  end of the text at the console.

next line at the console. 5. The next printing takes

5. The next printing takes  place from just here.

place from next line.

Q2. What is meant by byte code? Briefly explain how Java is platform independent.

Ans: The meaning of platform-independent is that **the java compiled code (byte code) can run on all operating systems**. A program is written in a language that is a human-readable language. It may contain words, phrases, etc which the machine does not understand. ... This intermediate representation in Java is the Java Byte Code.

Q3. Discuss about CLASSPATH environment variables

Ans. CLASSPATH: CLASSPATH is an environment variable which is used by Application ClassLoader to locate and load the class files. The CLASSPATH **defines the path**, to find third-party and user-defined classes that are not extensions or part of Java platform. Include all the directories which contain. class files and JAR files when setting the CLASSPATH.

Q4. Define the basic characteristics of object oriented programming.

Ans: **Encapsulation –**Encapsulation is capturing data and keeping it safely and securely from outside interfaces.  
  
**Inheritance-**This is the process by which a class can be derived from a base class with all features of base class and some of its own. This increases code reusability.  
  
**Polymorphism-** This is the ability to exist in various forms. For example an operator can be overloaded so as to add two integer numbers and two floats.  
  
**Abstraction-**The ability to represent data at a very conceptual level without any details.

Q5. Describe the structure of a typical Java program with an example.

Ans: Java is a very popular language and used on 7 billion devices worldwide. It is one of the most secured, [platform-independent](https://www.thejavaprogrammer.com/java-platform-independent-language/), and [object oriented](https://www.thejavaprogrammer.com/what-is-object-oriented-paradigm-in-java/) programming languages that’s why it is necessary to be familiar with the basic structure of Java program.

|  |
| --- |
| Documentation Section |
| Package Statement |
| Import Statements |
| Interface Statements |
| Class definitions |
| main method class  {  main method definitions  } |

(structure of java)

Example: Import java. util. Scanner;

public class Example

{

public void add()

{

System.out.println(“Enter the first number:”);

int a =sc.nextInt();

System.out.println(“Enter the second number:”);

int b =sc.nextInt();

int c= a + b;

System.out.println(“Sum of two numbers is”+c);

}

public void multiply()

{

System.out.println(“Enter the first number”);

int x =sc.nextInt();

System.out.println(“Enter the second number”);

int y =sc.nextInt();

int z= x \* y;

System.out.println(“Multiplication of two numbers is”+z);

}

public static void main (String []args)

{

Scanner sc=new Scanner(System.in);

Example obj=new Example();

obj.add();

obj.multilply();

}

}

Q6. Write the significance of Java Virtual Machine.

### Ans: 1.Classloader

Classloader is a subsystem of JVM which is used to load class files. Whenever we run the java program, it is loaded first by the classloader. There are three built-in classloaders in Java.

### 2. Class (Method) Area

Class (Method) Area stores per-class structures such as the runtime constant pool, field and method data, the code for methods.

### 3. Heap

It is the runtime data area in which objects are allocated.

### 4. Stack

Java Stack stores frames. It holds local variables and partial results, and plays a part in method invocation and return.

### 5. Program Counter Register

PC (program counter) register contains the address of the Java virtual machine instruction currently being executed.

### 6. Native Method Stack

It contains all the native methods used in the application.

### 7. Execution Engine

It contains:

1. **A virtual processor**
2. **Interpreter:** Read bytecode stream then execute the instructions.

### 8. Java Native Interface

Java Native Interface (JNI) is a framework which provides an interface to communicate with another application written in another language like C, C++, Assembly etc. Java uses JNI framework to send output to the Console or interact with OS libraries.

Q7. Differentiate between class and object.

Ans:

CLASS OBJECT

1.Class is used as a template 1. An object is an instance of a class.

for declaring and creating the  
objects.

2.When a class created, no memory 2.Objects are allocated memory

Is allocated. Space whenever they are created.

3. The class has to be declared only 3. An object is created many times

once. as per requirement.

4. A class is a logical entity. 4. An object is a physical entity.

5. Class does not contain any 5. Each object has its own values

values which can be associated which are associated with it.

  with the field.

Q8. What are the commands used for compilation and execution of java programs?

Ans: Let's look at how to save the file, compile, and run the program. Please follow the subsequent steps −

* Open notepad and add the code as above.
* Save the file as: MyFirstJavaProgram.java.
* Open a command prompt window and go to the directory where you saved the class. Assume it's C:\.
* Type 'javac MyFirstJavaProgram.java' and press enter to compile your code. If there are no errors in your code, the command prompt will take you to the next line (Assumption: The path variable is set).
* Now, type ' java MyFirstJavaProgram ' to run your program.
* You will be able to see ' Hello World ' printed on the window.

Q9. Explain briefly class, public, static, void, main, string[] and System.out.println() key words.

Ans:

Class: Java class keyword is used to declare a class.

public: Java public keyword is an access modifier. It is used to indicate that an item isaccessible anywhere. It has the widest scope among all other modifiers.

static: Java static keyword is used to indicate that a variable or method is a classmethod. The static keyword in Java is mainly used for memory management.

Void: This keyword allows **us to create methods which do not return a value**. Which means void is a special type of keyword in Java as a void keyword does not return value unlike int, double, float etc at method declaration.

Main: The main() is **the starting point for JVM to start execution of a Java program**. Without the main() method, JVM will not execute the program

String[]:In Java, string is **basically an object that represents sequence of char values**. An array of characters works same as Java string.

System.out.println(): In Java, System.out.println() is a statement which prints the argument passed to it. The println() method display results on the monitor.Usually, a method is invoked by objectname.methodname().

Q10. Explain JDK, JRE and JVM?

ANS:

JDK: JDK is an acronym for Java Development Kit. The Java Development Kit (JDK) is a software development environment which is used to develop Java applications and applets. It physically exists. It contains JRE + development tools.

o Standard Edition Java Platform

o Enterprise Edition Java Platform

o Micro Edition Java Platform

JRE: JRE is an acronym for Java Runtime Environment. It is also written as Java RTE. TheJava Runtime Environment is a set of software tools which are used for developing Javaapplications. It is used to provide the runtime environment. It is the implementation of JVM. It physically exists. It contains a set of libraries + other files that JVM uses atruntime. The implementation of JVM is also actively released by other companies besides SunMicro Systems.

JVM: JVM (Java Virtual Machine) is an abstract machine. It is called a virtual machine because it doesn & #39;t physically exist. It is a specification that provides a runtime environment in which Java bytecode can be executed. It can also run those programs which are written in other languages and compiled to Java bytecode.

o Loads code

o Verifies code

o Executes code

o Provides runtime environment

Q11. Why java is not 100% object-oriented?

Ans: Pure Object Oriented Language or Complete Object Oriented Language are Fully Object Oriented Language which supports or have features which treats everything inside program as objects. It doesn’t support primitive datatype (like int, char, float, bool, etc.). There are seven qualities to be satisfied for a programming language to be pure Object Oriented. They are:

1. Encapsulation/Data Hiding
2. Inheritance
3. Polymorphism
4. Abstraction
5. All predefined types are objects
6. All user defined types are objects
7. All operations performed on objects must be only through methods exposed at the obj

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