Java[J2SE] Docs 5/12/2018

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Java is simple, secure , object-oriented ,class-based general purpose programming language.

**Java Applications:**

Java run under over 3 billion devices world wide.it have many applications.

* Desktop applications
* Web applications
* Enterprise applications
* Mobile
* Embedded System etc

**Types of Java Applications** :

1. Standalone applications : it is used to develop Desktop applications mostly run traditional operating systems ex: music player
2. Web applications : it is used to develop server and run dynamic web pages it uses servlets,JSP,springs,hibernate etc
3. Enterprise application : it is used to develop enterprise or industrial applications for this it will use EJB[Enterprise Java Bean]
4. Mobile application : it used to develop small mobile applications.

**Java Platforms/Editions :**

1. J2SE[Java Standard Edition]
2. J2EE[Java Enterprise Edition]
3. J2ME[Java Micro Edition}
4. JavaFX[for Internet applications]

**Features of Java :**

1. Simple
2. Object-oriented
3. Secured
4. Portable
5. Robust
6. Platform independent
7. Interpreted
8. Architectural neutral
9. High performance
10. Multi-threaded
11. Distributed
12. Dynamic
13. **Simple** :

→ java syntax based on c++.

→ java removed complicated features like explicit pointers ,operator overloading.

→ java has automatic garbage collector which removes automatically unreferenced

Objects.

**2. Object-oriented:**

→ everything in java is object , which is like a blueprint for class.

**3. Security : java is known for its security**

→ no explicit pointers

→ java runs inside a virtual machine

→ class loader : it provides security by separated package from classes.

→ Bytecode verifier : java checks weather bytecode is clean or not

→ java provides security.

**4.Platform independent:**

→ java is portable and platform independent write once and run anywhere.

→ for c and c++ it produce machine based .exe files if this files run under another system

It wont work

→ for java where it carries bytecode to any level and can make it work

**5. Robust :**

→ it had strong memory management

→ there is automatic garbage collector

→ type checking and exception handling.

**6.Portable:**

→ java will allow you to carry bytecode to any level and execute on all machines which

Have JVM

**7. High-Performance :**

→ java is faster than traditional interpreted programming languages but it is still slower

Than c and c++.

**8.Distributed :**

→ java is distributed languages which can obtain buy Rmi and ejb allows to transfer files

Destination

**9. Multi-Threaded :**  java supports thread concept which can all web and server side a

Applications

**10.Architectural neutral :**

→ if it is 32 bit or 64 bit pc java has a sample data typing..

**11. Dynamic :**

→ java supports dynamic class loading it also supports native class loading.

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**Drawbacks of c and c++:**

* C and C++ are platform dependent.while java is platform dependent.
* They are used mainly for system programming but java supports wide range of applications including internet.
* C and C++ has no bound checking
* Security issues were high while compared to java
* Complexity of code increases while writing large software.
* C is not a object oriented and c++ supports but its not true
* Both uses pointers which leads to security fixes

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**JVM Architecture :**

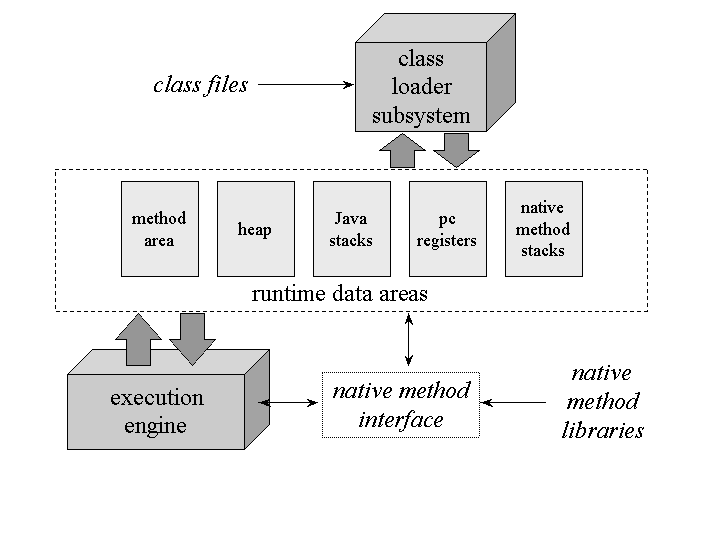
Jvm is a abstract machine where bytecode is executed. Jvm is available on various hardware and software platforms

**Implementation :**

jvm implements is known as JRE[java runtime environment].

**RuntimeInstance :**

to run the java class every time a jvm instance created.



**1.Class loader subsystem:**

class loader subsystem under jvm loads .class file into it it had mainly three types.

**Bootstrapclassloader :**

bootstrapclassloader is super class of extension class loader . it loads rt.jar files which contain all apis of j2se like java.lang,java.util,java.math etc.

**Extension class loader :**

extension class loader is child of bootstrap class and parent for system/application class loader which loads jar files from $java\_Home/jre/lib/ext directory.

**System/Application class loader :**

it is a child class of extension class loader it loads all class files under class path. When every programs executed it point to present working directory.

**2.class or method area :**

Class or method area stores class structures such as runtime constant pool method data, fields and code fro methods.

**3.Heap:**

It is runtime area where objects were allocated.

**4.stack :**

Stack store frames , it holds local variables and partial result , it is also play key role in method invocation and return.each thread has a private jvm stack created at the same of creation of thread.a new frame is created when every time a method invoke and destroy after its completion .

**5.PC Registers :**

Pc registers holds addressed of currently executing on jvm .

**6. Native stack methods :**

It all contains all native methods used in application .

**7.Execution engine :**

execution engine where programs executes it contain mainly three parts

1. **Virtual processor**
2. **Interpretation :**

where it reads bytecode streams and executes it

1. **JIT-Compiler:**

it transforms instruction of jvm into cpu instruction, also it reduce the code which have similar functionality

**8.Java native Interfaces :**

Java native interface is a framework where it helps to communicate with other programming languages , it uses OS libraries from console input and Output.

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**JAVA/BIN FILES:**

**Basic Tools:**

AppletViewer:

Applet viewer is used to use applets outside of browser

Extcheck:

Extcheck is used for solve the jar files version conflicts.

Jar:

Create and manage java and archive files[jar]files.

Apt:

Apt is for annotation processing tool

Java:

Launcher for java application , a single launcher for both development and deployment is used for an old .jre is no longer exist

Javac :

Compiler for java programming language

Javadoc:

API documentation generator

Javah:

C header and stub generator , used to write native methods.

Javap:

Class file disassembler

Jdb:

The java debugger.

**Security tools:**

These security tools help you set security policies on your system and create applications that can work within the scope of security policies set at remote sites.

Keytool:

Manages keystores and certificates.

Jarsigner:

Generates and verify JAA signatures.

Policytool:

GUI tool for managing policy files.

These security tools help you obtain, list, and manage Kerberos tickets

Kinit:

Tool for obtaining Kerberos v5 tickets .

Klist:

Command line tool to list entries in credential cache and key tab

Ktab:

Command line tool to help user manage entries in key user table.

**Internalization Tools:**

This tool helps to create localizable applications.

Native2ascii:

Convert text to unicode latin-1

**Remote Method Invocation [RMI] Tools :**

These tools help to create applications that interact over the Web or other network**.**

Rmic :

Generate stubs and skeletons for remote objects.

Rmiregistry:

Remote object registry service

Rmid:

RMI activation system daemon

Serialver:

Return class serialVersionUID.

JAVA IDL and RMI-IIOP Tools :

These tools are used when creating applications that use OMG-standard IDL and CORBA/IIOP.

Idlj:

Idlj generates java bindings from IDL files.IDL[interface definition language] is a generic term that lets a program or object to communicate with another program written in another unknown language. To use CORBA functionality

Orbd:

Provides support for clients to transparently locate and invoke persistent objects on servers in the CORBA environment. ORBD is used instead of the Transient Naming Service, tnameserv. ORBD includes both a Transient Naming Service and a Persistent Naming Service. The orbd tool incorporates the functionality of a Server Manager, an Interoperable Naming Service, and a Bootstrap Name Server. When used in conjunction with the servertool, the Server Manager locates, registers, and activates a server when a client wants to access the server.

Servertool:

Provides ease-of-use interface for the application programmers to register, unregister, startup, and shutdown a server.

Java Deployment Tools:

Utilities for use in conjunction with deployment of java applications and applets on the web.

Javafxpackager :

Packages javafx applications for deployment.  
Pack200:

Transforms jar file into compressed pack200 using the java gzip compresser , the compressed pack files are compressed JARs which can be dirctly deployed saving bandwidth and reducing download time.

Unpack200:

Transforms a packed file of pack200 into jar file.

Java Web Start Tools:

It used for conjunction with java web start

Javaws :

Command line tool for java web start and setting various options

Java Troubleshooting,Profiling,Monitoring and Management Tools:

Jcmd :

JVM diagnostic commands tool - sends diagnostic command request to run a java virtual machine.

Jconsole:

A JMX -compliant graphical tool for monitoring java virtua, machine.it can monitor both local and remote jvms it cal also monitor and manage an application .

Jmc:

Java mission control client includes tools to monitor and manage java application without introducing performance overhead normally associated with these tools.

Jvisualvm :

A graphical tool that provides detailed information about the Java technology-based applications (Java applications) while they are running in a Java Virtual Machine. Java VisualVM provides memory and CPU profiling, heap dump analysis, memory leak detection, access to MBeans, and garbage collection

Java Web Services Tool :

Schemagen :

Schema generator for java architecture for xml binding.

Wsgen:

Tool for generate JAX-WS portable artifacts.

Wsimport:

Tool for generate JAX-WS portable artifacts

Xjc :

Binding compiler for java architecture for xml binding.

Day-2

DataTypes and Operators

DATA TYPES:

In java they are mainly two types of data types.  
1.Primitive Data Types

2.non-primitive data types

1.primitive data types:

1. Numeric : byte,short,int,long
2. Floating-point : float and double
3. Character : char
4. Boolean - boolean

.

2.non-primitive data types:

String and array :

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Byte : it's a 8-bit two's bit 2’s complement integer, it's value range between -128 to 127

Its default value is 0

Programs : Test byte range value by increasing its range and see output if it shows error write the error.

public void bytechecking() {

byte a = 128;

System.out.println(a);

}

Output : Exception in thread "main" java.lang.Error: Unresolved compilation problem:

Type mismatch: cannot convert from int to byte

at java\_prac.DatatypesandOperators.bytechecking(DatatypesandOperators.java:17)

at java\_prac.DatatypesandOperators.main(DatatypesandOperators.java:24)

Short: it’s a 16-bit two’s complement integer, its value range between -32,768 to 32,767, its default value is zero.s

Programs : Test short range value by increasing its range and see output if it shows error write the error.

public void shortrange() {

// TODO Auto-generated method stub

short b = 32768;

System.out.println((int)b);

}

Output : Exception in thread "main" java.lang.Error: Unresolved compilation problem:

Type mismatch: cannot convert from int to short

at java\_prac.DatatypesandOperators.shortrange(DatatypesandOperators.java:23)

at java\_prac.DatatypesandOperators.main(DatatypesandOperators.java:31)

Int :

Int is a primitive data type its a 32 bit two’s complement number its value ranges from

- 2,147,483,648 to 2,147,483,647

Programs : Test int range value by increasing its range and see output if it shows error write the error.

public void intrange() {

int c = 2147483648;

System.out.println(c);

}

Output :

Exception in thread "main" java.lang.Error: Unresolved compilation problem:

The literal 2147483648 of type int is out of range

at java\_prac.DatatypesandOperators.intrange(DatatypesandOperators.java:28)

at java\_prac.DatatypesandOperators.main(DatatypesandOperators.java:36)

Long :

Long is a 32 bit 2’s complement it value range from -9,223,372,036,854,775,808 to 9,223,372,036,854,775,807 .

Program : Test program without oyt writing l in in input

public void longrange() {

long l = -9223372036854775808; // with out ‘l’

System.out.println(l);

}

Output : Exception in thread "main" java.lang.Error: Unresolved compilation problem:

The literal 9223372036854775808 of type int is out of range

at java\_prac.DatatypesandOperators.longrange(DatatypesandOperators.java:32)

at java\_prac.DatatypesandOperators.main(DatatypesandOperators.java:41)

Program : test the long range value by increasing its value .

public void longrange() {

long l = -922337203685477581000l;

System.out.println(l);

}

Output :

Exception in thread "main" java.lang.Error: Unresolved compilation problem:

The literal 922337203685477581000l of type long is out of range

at java\_prac.DatatypesandOperators.longrange(DatatypesandOperators.java:32)

at java\_prac.DatatypesandOperators.main(DatatypesandOperators.java:41)

Program : type cast long range maximum value to int

Output : for positive it will give -1 and negative its -1

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**EXERCISE TASKS :**

**Exercise-1:**

int x=10;

x++;

sopln(x);

Program:

public void exe\_1() {

//POST-INCREMENT OPERATION PROGRAM

/\* x value will be incremented with one value, its a post increment operation it initialize

\* variable first and increment with one\*/

//Declared a variable x as 10 for post increment operation

int x = 10;

x++;

System.out.println(x); //output : 11

//output of this program is 11

}

--------------------------------------------------------------------------------------------------------------

**Exercise-2:**

int a=10,b=20,c=30;

b=a;c=b;

sopln(c);

int a=b=c=10;

sopln(c);

int a,b,c;

a=b=c=10;

sopln(c);

Program :

public void exe\_2() {

/\*equal assignment operation first initialize

\* three Integer variables with value later

\* assign variable with another check the operation\*/

//Declared and initialize variables with values

int a = 10,b=20,c=30;

b=a;

c=b;

System.out.println(c);

int a=b=c=10;//duplicate local variable ‘a’

System.out.println(c);

int a,b,c;// all are duplicate local variable.

a=b=c=10;

System.out.println(c);

/\* java will throw java.lang.Error duplicate value a two times, duplicate value b one time and c two time

\*/

}

Programm - 3:

private void exe\_3() {

// TODO Auto-generated method stub

//Initializing a character a

char ch = 'a';

//incrementing a character

ch++;

System.out.println(ch); // output = b

/\* output of this program will be = b

\* because its use character alphabet values its

\* will print next alphabet automatically.

\* its increment of character will be next alphabet

\*/

}

Program - 4 :

public void exe\_4() {

//initializing a value double of 10.5

double d = 10.5;

d++;// incrementing a double with one its add 1 to 10.5

System.out.println(d);// output = 11.5

/\*double value will be incremented with one

\* it will become 11.5

\*/

}

Program - 5:

public void exe\_5() {

//declaring a boolean flag with true

boolean b = true;

b++;//trying to increment a boolean

/\*it will throw java.lang.Error :unresolved compilation

\* error. type mismatch : cannot convert from boolean

\* int.because boolean is data type with 1 bit it will

\* have only true either false we cannot perform any arithmetic operation.

\* it will used for true or false condition.

\*/

}

program -6:

public void exe\_6() {

//initializing a byte with value 20

byte b = 20;

/\*duplicate a local variable b and type mismatch

\* cannot convert from int to b

\*/

byte b = b+1;

/\*duplicate local variable b

\* but mismatch error will be solved

\*/

byte b = (byte) (b+1);

System.out.println(b);

/\*two types of compilation errors will be seen here

\* first one is duplicate local variable there must

\* be no declaring variable that already declared.

\* second one is type mismatch from into to byte because

\* initially in integer data types its initially all declared as int

\* if u perform any increment arithmetic operations it will show error

\* we have to explicit cast of byte it will tell to java to ignore

\* bits that won't fit, they will be cut even if it changes the value of a number.

\*/

}

Program -7 :

public void exe\_7() {

//initializing two byte variables

byte a = 10;

byte b = 20;

/\*adding two byte variables to byte c

\* it will show typemismatch cast error tells

\* us to explicit cast to byte

\*/

byte c = a+b;

/\*adding two byte variables with explicit cast ,

\* but compiler will show duplicate local c variable.

\*/

byte c = (byte)(a+b);

System.out.println(c);

/\*duplicate local variable c and cast error of type conversion

\* we have to explicitly cast the byte to resolve the issue.

\*/

}

Program - 8 :

public void exe\_8() {

//dividing a value with zero and printing the output

System.out.println(10/0);

System.out.println(10/0.0);

/\*java compiler throw java.lang.Arithmeticexception

\* value cannot be divide with zero in both cases.

\*/

}

Program - 9 :

public void exe\_9() {

System.out.println('a'+'b'); // output = 195

System.out.println('a'+1); // output = 98

System.out.println('a'+1.2); //output = 98.2

/\* IN first println statement we are adding two character a and b

\* it will add its ascii values, ascii value of a = 097 and b = 098

\* ...in second println statement it will print ascii value of = 97 +1

\* its gives output of 98

\* in third println statement it will add ascii value of a with 1.2

\* gives output 98.2

\*/

}

Program - 10

public void exe\_10() {

//initializing string ashok

String a = "ashok";

//initializing three int variable with values.

int b=10,c=20,d=30;

/\*adding all three int values and trying to assign in string variable

\*/

a = b+c+d;

//adding all int values and assigning in a int variable

a = a+b+c;

/\*adding a string variable with int values. it show cast error

\* cannot convert from string to int

\*/

b = a+c+d;

/\*in first compilation error we can't store it in int beacuse string is immuatble it cannothanhge

\* as well as we assign int to string instead on concatenating

\* in second compilation error the string will concatenation with int values but

\* it can't store in a a int its cast error.

\*/

}

Program - 11:

public void exe\_11() {

System.out.println(10<10.5);//output = true

System.out.println('a'>100.5);//output = false

System.out.println('b'>'a');//output = true

System.out.println(true>false);//compilation error

/\* in first three print statements it operation works successfully output

\* will five true or false for condition case

\* but in third scenario > operator cannot done on true or false

\* it can't determine the value and throw and compilation error.

\*/

}

Program - 12:

public void exe\_12() {

//all four print statements are condition based.

System.out.println(10 == 20);//output = false

System.out.println('a' == 'b');//output = false

System.out.println('a' == 97.0);//output = true

System.out.println(false==false);//output true

/\* In first print statement condition failed because 10

\* is not equal to 20.

\* In second print condition failed because a is not equal to b

\* in third print statement the condition will be true because the ascii

\* value of a is 97 97==97.0 the condition is true.

\* in final fourth print condition statement we campring

\* false with false it true both values are same.

\*/

}

Program - 13:

public void exe\_13() {

//instantiated thread object t1

Thread t1 = new Thread();

//instantiated another thread object t2

Thread t2 = new Thread();

Thread t3 = t1; // assigning t1 object to newly created thread variable t3

System.out.println(t3); // output = Thread[Thread-0,5,main]

System.out.println(t1);// output = Thread[Thread-0,5,main]

System.out.println(t2);// output = Thread[Thread-1,5,main]

System.out.println(t1==t2);//comparing t1 object with t2 gives false

System.out.println(t1==t3);//comparing the t1 with t3 gives true

/\* we created two separate thread objects t1 and t2 both will have separate thread values

\* if we compare it will give false,but in third we just instancited thread we assign the t1

\* value to the t3 variable if we compare both have same value condition satisfied and it will

\* print true.

\*/

}

Program - 14 :

public void exe\_14() {

System.out.println(true&false); // output = false

System.out.println(true|false); // output = true

System.out.println(true^false); // output = true

/\*in first we performed a bitwise and on and gate table 1 & 0 = false

\* in or gate table 1 | 0 or true | false = true

\* in third bitwise xor or in xor gate 1 ^ 0 = true.

\*/

}

Program -15 :

public void exe\_15() {

System.out.println(4&5); // output = 4

System.out.println(4|5); // output = 5

System.out.println(4^5); // output = 1

/\* binary value of 4 = 0100

\* binary value of 5 = 0101

\* bitwise and (&)=

\* ------------------------------

\* 0100 = 4

\* -------------------------------

\* binary value of 4 = 0100

\* binary value of 5 = 0101

\* bitwise or (|)=

\* ------------------------------

\* 0101 = 5

\* -------------------------------

\* binary value of 4 = 0100

\* binary value of 5 = 0101

\* bitwise xor (&)=

\* ------------------------------

\* 0001 = 1

\* -------------------------------

\*/

}

Program - 16 :

public void exe\_16() {

System.out.println(~true); // compilation error

System.out.println(~4); // output = -5

/\*it will given java.lang.Error negation operators

\* is undefined for boolean types

\* for second print statement it will give -5 negation will applied.

\*/

}

Program - 17:

public void exe\_17() {

System.out.println(!false); // output = true

System.out.println(!4); //compilation error

/\*in first statement not operator will successfully apply on boolean case

\* where as it can't apply to integer , it shows ! operator undefined for type

\* int

\*/

}

Program - 18 :

public void exe\_18() {

int x = 10, y = 15;

if (++x < 10 || ++y > 15) {

x++;

} else {

y++;

}

System.out.println(x+"----"+y); // output (12,16)

int x = 'a';//compilation error

System.out.println(x); // output = 12

/\* In if condition we have do a logical or operation in this case

\* either one of the statements must be true.

\* in if +++x = 11 < 10 condition fails another side ++y = 16 > 15

\* condition true, it will enter into if condition perform

\* increment operation on x giving final value 12

\* and y = 16

\* compilation errors is creating a local duplicate variable.

\*/

}

public void exe\_18B() {

int x = 10, y = 15;

if (++x < 10 & ++y > 15) {

x++;

} else {

System.out.println("ok");

y++;

}

System.out.println(x+"----"+y); // output (11,17)

// int x = 'a';//compilation error

System.out.println(x); // output = 11

/\* Bitwise and in if condition it will take the

\* boolean values in if condition and operates

\* bitwise and operation in above it has true and false

\* it give false so else state executed.

\*/

}

public void exe\_18C() {

int x = 10, y = 15;

if (++x < 10 | ++y > 15) {

x++;

} else {

System.out.println("ok");

y++;

}

System.out.println(x+"----"+y); // output (12,16)

// int x = 'a';//compilation error

System.out.println(x); // output = 11

/\*bitwise or operator in above if condition

\* it will take resultant boolean values and on them

\* bitwise or operation swill perform true and false in or

\*/

}

Program - 19 :

public void exe\_19() {

int x = 130;//initializing a integer variable

byte b = (byte) x; //explicit type casting int to byte

System.out.println(b); //output = -126

/\* byte memory has range o f -128 to 127 but int value 130 when we typecaste

\* it it will cut of the memory and print the bits.

\*/

}

Program - 20 :

public void exe\_20() {

int x = 150;

short s = (short)x;

byte b = (byte) x;

System.out.println(s); // output = 150

System.out.println(b); // output = -106

/\*short ranges for -32,768 to 32,767, the int x value is 150

\* is within range of shorthand by explicit casting short error and with

\* in range it will print as same

\* but coming to byte casting it int value is exceeds the byte range

\* so by explicitly type casting it will reduce the memory seize and

\* value inside will change by bit manipulation.

\*/

}

Program - 21

public void exe\_21() {

double d = 130.456;

int x = (int) d;

System.out.println(x);//output = 130

byte b = (byte) d;

System.out.println(b); //output = -126

/\*when we type cast a double to int it will remove decimal values

\* and it will print.

\* in byte scenario it same but exceeding memory range it will give a another value.

\*/

}

Program -22 :

public void exe\_22() {

int x = (10>20) ? 30:((40>50)?60:70);

System.out.println(x); // output = 70

/\* in above statement we done multiple ternary operations

\* we checked with 10 > 20 if condition success it store 30 else

\* it will lead to another statement in that we compared 40 > 50 condition

\* failed it store the values of 70.

\*/

}

Program - 23 :

public static int m1(int i) {

/\* we created static method so there is no need to instance the class

\* we declared method m1 with return type int

\* so the method must return a integer value to the calling

\* method with parameter int i

\*/

System.out.println(i);

return i;

public static void main(String[] args){

System.out.println(m1(1)+m1(2)\*m1(3)/m1(4)\*m1(5)+m1(6));

}

}

Output:

1

2

3

4

5

6

12

DAY - 5

1.Write a java program to print the following series using while loop and for loop

1,2,4,7,11,16,22…. For a given number n.

Program :

public void number\_series() {

/\*1.Write a java program to print the following

series using while loop and for loop

1,2,4,7,11,16,22…. For a given number n.\*/

//Using for loop

int n = 25;

int i;

for (i = 1; i <=n; i++) {

int num = (i\*(i-1)/2+1);

System.out.print(num+",");

}

System.out.println(" ");

int j=1;

//using while loop for sequence

do {

System.out.print((int)(j\*(j-1)/2+1)+",");

j++;

} while (j<=n);

/\*output of program = 1,2,4,11,16,22,......\*/

}

Output : 1,2,4,11,16,22,......

2.Write a java program to print all the alphabets using while loop and for loop.

Program :

public void alphabet\_series() {

/\*Write a java program to print all the

\* alphabets using while loop and for loop.

\*/

//using for loop.

char ch = 'a';

System.out.println("Using For loop:");

for (int i = 0; i < 26; i++) {

System.out.print(ch++);

}

//using while loop

System.out.println("using while loop:");

char alph = 'a';

do {

System.out.print(alph);

alph++;

} while (alph<='z');

//output : a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,p,q,r,s,t,u,v,w,x,y,z.

}

Output : a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,p,q,r,s,t,u,v,w,x,y,z

3.Write a java program to print the following pattern with for loop.

Input n = 3

\*\*\*\*\*

\*

\*\*\*\*\*

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\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

\*\*\*

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Program :

public void start\_sequence() {

/\*Write a java program to print the following pattern

\*Input n = 3

\*/

// \*\*\*\*\*

// \*

// \*\*\*\*\*

// \*\*\*\*\*\*\*\*\*\*

// \*\*

// \*\*\*\*\*\*\*\*\*\*

// \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

// \*\*\*

// \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

int n = 3;

//Using for loop

for(int i =1;i<=n;i++) {

int ul = i\*5;

for(int j = 0;j<ul;j++) {

System.out.print("\*");

}

System.out.println(" ");

for(int k=0;k<i;k++) {

System.out.print("\*");

}

System.out.println(" ");

for(int l =1;l<=ul;l++) {

System.out.print("\*");

}

System.out.println(" ");

}

4. Write a java program to print the following pattern with while loop.

Input n = 3

\*\*\*\*\*

\*

\*\*\*\*\*

\*\*\*\*\*\*\*\*\*\*

\*\*

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\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

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\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Program:

public void star\_With\_WhileLoop() {

int n = 3;

int i = 1;

do {

int l = i\*5;

int j = 1,k=1,m=0;

while (j<=l) {

System.out.print("\*");

j++;

}

System.out.println(" ");

while (m<i) {

System.out.print("\*");

m++;

}

System.out.println(" ");

while (k<=l) {

System.out.print("\*");

k++;

}

System.out.println(" ");

i++;

} while (i<=n);

}

Output :

\*\*\*\*\*

\*

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DAY - 6

1.Differentiate between JDK, JRE and JVM ?

→ JVM is a java virtual machine is used to execute the java compiled .class files, its virtua, machine environment its components is used to execute and interpret bytecode of their respective premises.its a abstract machine or code.

→ Java Runtime Environment[JRE] is physical file which contains jvm and other files which are used to develop java applications.

→ JDK[Java Development Kit] JDK is framework which contains jre and java files to create and execute java applications , it is based on system OS.

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2.Outline the major java features ?

1.Object-oriented:

→ everything in java is object , which is like a blueprint for class.

2. Security : java is known for its security

→ no explicit pointers

→ java runs inside a virtual machine

→ class loader : it provides security by separated package from classes.

→ Bytecode verifier : java checks weather bytecode is clean or not

→ java provides security.

4.Platform independent:

→ java is portable and platform independent write once and run anywhere.

→ for c and c++ it produce machine based .exe files if this files run under another system

It wont work

→ for java where it carries bytecode to any level and can make it work

5. Robust :

→ it had strong memory management

→ there is automatic garbage collector

→ type checking and exception handling.

------------------------------------------------------------------------------------------------------------------

3.Explain public static void main(String[] args) ?

→ java can contain multiple main methods but jvm will consider from only which contains String[] args [string array args].

Public ; public is a access modifier

Static : static is a java keyword if we declare with static its a static method with static there will be no need to create object. There will no memory allocation for object invocation.because if we declare variable, method with static it will store in stack it point to that memory always so no need to for object creation.

Void : void is a non return type.

main(String[] args) : the entire program process starts from here . String [] args is used for command line arguments . string is a data type [] “arrays is used for storing commands.

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4.What are constructors in java ?

→ in java constructors are used for object creation, there are two types of constructors in java

→ constructors are created with same class name.

→ it don't have a return type.

→ it's used to have parameter values from object .

1. Default constructor
2. Parameterized constructor

Default constructor : java will have a default constructor even if developer didn't write it jvm will create automatic constructor for it . for object creation or class invocation.

Parameterized constructor : if developer wants to send data from object where it can pass to another objects.

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5.How java enabled high performance :

→ java is a simple and secure programming language but its platform independency [ write once run anywhere [WORA]] make java applications can run on any systems.

→ it have a automatic garbage collector used for deleting unused objects and removed explicit compilers

→ java is a object oriented , everything in java is a object and security to data and code .

→ in jvm execution engine there will be jit compiler it allows java class files to executed faster .

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6. Can we overload the constructors ? explain with example ?

→ yes we can overload the constructor in java.

Program :

Class Test{

String accountno;

String name;

String phonenum;

String address;

Test(String a,String n, String p){

accountno = a;

name = n;

phonenum = p;

}

Test(String a ,String n, String p,String ad){

accountno = a;

name = n;

phonenum = p;

address = ad;

}

Public void show(){

System.out.println(accountno+”,”+name+”,”+phonenum);

}

public static void main(String[] args){

Test t1 = new Test(“A/c10101”,”hemanth”,”9603799767”);

Test t2 = new Test(“A/c10101”,”hemanth”,”9603799767”,”hyderabad”);

}

}

------------------------------------------------------------------------------------------------------------------------

7. What is the output of the following Java program ?

class Test

{

public static void main (String args[])

{

System.out.println(10 + 20 + "Javatpoint");

System.out.println("Javatpoint" + 10 + 20);

}

}

Output:

1.30Javatpoint

2.Javatpoint30

------------------------------------------------------------------------------------------------------------------------------

8. What is the output of the following Java program

class Test

{

public static void main (String args[])

{

System.out.println(10 \* 20 + "Javatpoint");

System.out.println("Javatpoint" + 10 \* 20);

}

}

Output :

1. 200Javatpoint
2. Javatpoint200

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9. What are the primitive data types in java ?

1. byte
2. short
3. int
4. long
5. float
6. double
7. char
8. boolean

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10. Can you compare a boolean with int value ?

→ no we cannot use because boolean is used for true or false condition only where is int values is used for arithmetic and over other operations. But we can use boolean condition for arithmetic comparisons and operations.

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11. Predict the output of following Java program.

class Main {

public static void main(String args[]) {

int t;

System.out.println(t);

}

}

Output : compilation error,t must be initialized

--------------------------------------------------------------

12. What are the default or implicitly assigned values to datatypes in java ?

→ for string = null

→ for numeric data types = 0;

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13. What is type casting ?

Converting a value from one data type into the another.   
------------------------------------------------------------------------

14. Difference between implicit and explicit type casting. Explain with examples ?

Explicitly :

int a = 125;

byte b = (byte) a;

Implicit :

double d = 12.25;

Int a = d;

---------------------------------------------------------------------------------------------------------------------

15. What kind of variables a class can consist of ?

→ class can contain instance variables and local variables which are under methods.

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16. What are the various access specifiers in Java ?

1. private
2. public
3. Default
4. protected

--------------------------------------------------------------------------------------------------------------------

17. When are static variables loaded in memory ?

→ at a runtime in jvm at the stack it will allocated the memory.

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18. How to define a constant variable in Java ?

public int final MAX\_CONSTANT = 20;

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19. Explain the types of operators used in Java ?

1. arithmetic operator [ +,-,\*,/,%]
2. Unary[++,--]
3. Shift[<< , >> ,<<<]
4. Bitwise[ | , & , ^]
5. Relational[ < , > , < =, >= , != ]
6. Assignment [ = , += , -=, \*= ]
7. Logical [ &&, ||]
8. Ternary [ ?:]

---------------------------------------------------------------------------------------------------------------------

20. Predict the output of following Java program

class Test

{

public static void main(String args[])

{

String s1 = "geeksquiz";

String s2 = "geeksquiz";

System.out.println("s1 == s2 is:" + s1 == s2);

}

}

Output : S1==S2 is: true

---------------------------------------------------------------------------------------------------------------------

21. What are control statements and explain different kinds of control statements used in java ?

1. If - else : if one condition true it will enter into if block or else block.
2. if - elseif -else : it’s a else if ladder in case if condition fails it goes to else if finally all conditions faile it goto else:
3. Switch: it will jump to block of case option
4. for loop: for loop have three condition first one has initialization, second is condition, third one is increment for(int i = 0; i< n ;i++){}
5. Do-while: do case will execute once if while statement works or not do {}while();
6. While : while loop will continue until it condition breaks
7. Continue : it continue the statements
8. Break : break is used to stop the loop

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22. What will be the output of the following program?

class IfExample

{

public static void main(String s[])

{

if( 1 < 2 )

{

System.out.println("1 is less than 2");

}

else

System.out.println("2 is less than 1");

System.out.println("Hello From IfExample");

}

}

Output : 1 is less than 2

---------------------------------------------------------------------------------------------------------------------

23. What will be the output of the following program.

class HappyNewYear

{

public static void main(String s[])

{

int code = 3;

switch(code)

{

case 1:

System.out.println("Wish");

case 2:

System.out.println("You");

default:

System.out.println("A");

case 3:

System.out.println("Happy");

case 4:

System.out.println("New");

case 5:

System.out.println("Year");

}

}

}

Output : HappyNewYear