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|  | **JAVA PROGRAMMING B.TECH**  **PART-I** |

**UNIT-I**

Q1. i) What gives java its “write once , run anywhere ” nature ?

**Jvm provides byte code which gives portability to run on any java enabled system or platform**

ii) Give an example of operator overloading in java

class College{

    void student(String name,int roll){

        System.out.printf("My name is %s and my roll no  is %d ",name,roll);

    }

    void student(String name){

        System.out.printf("\nMy name is %s",name);

    }

}

public class Test{

    public static void main(String arg[]){

        College st1 = new College();

        st1.student("Alok", 2102013);

        st1.student("Aviral");

    }

}

iii) What is UNICODE code in java ?

Unicode provides a unique number for every character, no matter what the platform, no matter what the language, no matter what the program. Example – **A = U + 0041, B = U + 0042, C = U + 0043, D = U + 0044**

iv) Assume double[][] x=new double[4][5], what are x.length and x[2].length ?

**x.length = 4**

**x[2].length = 5**

v) What are the default values for data field of a boolean type and object type?

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| --- | --- |
| object | null |
| boolean | **false** |

vi) What do you mean by auto initialization.

**Each class variable, instance variable, or array component is initialized with a default value when it is created, that is called auto initialization.**

vii) What is the output of the following program?

public class Test

{

public static void main(String args[]){

float x;

int y=3,a=5;

x=a+y/2;

System.out.println(“x=”,+x);

}

}

//will print 6.0

//will show an error message

Correct one will be System.out.println("x="+x);

**Which will give output 6.0**

viii) Write the condition in which OUTPUT will be ELSE ? Justify your answer

public void foo( boolean a, boolean b)

{

if( a ) **// a true**

{

System.out.println("A"); /\* Line 5 \*/

}

else if(a && b) /\* Line 7 \*/ // b true

{

System.out.println( "A && B");

}

else /\* Line 11 \*/

{

if ( !b )

{

System.out.println( "notB") ;// b false

}

else

{

System.out.println( "ELSE" ) ; // b true

}

}

}

ix) What is a static method?

**Method which does not require object declaration for calling are termed as static method**

**Can’t override but we can overload static method**

x) What will be the output

class Test{

public static void main(String[] args){

int x=(int )128.75;

byte a =(byte) x;

System.out.println(a);

}

} //128

**UNIT-II**

1. What do you mean by a constructor? When it is being called?

**Constructor is a method having same name as class name in which it is defined, it is called at the time of object creation**

1. Explain the use of the keyword ‘this’.

**This is a reference variable which is used to refer to the current object**

1. What is inheritance? Why it is used by the programmers?

**Inheritance is a mechanism where objects acquire all the properties and behaviour of the present class. Inherit from an existing class means it can reuse methods and fields to the current class.**

1. Explain widening and narrowing of primitive(basic) datatypes.

***Widening takes place when a smaller primitive type value is automatically accommodated in a larger/wider primitive data type.***

**byte b=10;**

**short s= b; *//byte value is widened to short***

**int i=b; *//byte value is widened to int***

1. Write different types of inheritance.

**Single, multiple, hybrid, hierarchial**

1. What is a static block? When it is being called?

**In simpler language whenever we use a static keyword and associate it to a block then that block is referred to as a static block. Unlike C++, Java supports a special block, called a static block (also called static clause) that can be used for static initialization of a class. This code inside the static block is executed only once: the first time the class is loaded into memory.**

1. What is an innerclass? Write the syntax of creating an object of innerclass, outside itsouterclass.

***Java inner class is a class which is declared inside a class or interface***

***class Java\_Outer\_class{***

***//code***

***class Java\_Inner\_class{***

***//code***

***}***

***}***

1. Explain method overriding.

**Declaring a method in subclass which is already present in parent class is known as method overriding. It is done so that a child class can give its own implementation to a method which is already provided by a parent class.**

1. How static methods are different from instance methods?

***for calling static method object creation is not required as method belongs to that particular class whereas calling an instance method object creation is required as methods belong to that particular object.***

1. Explain about the ‘Object’ class in java.

The Object **class is the parent class of all the classes in java by default**. In other words, it is the topmost class of java.

**UNIT-III**

a . Define an interface?

**b. What is Abstraction in Java?**

**c. Write difference between String and StringBuffer.**

**d. Explain about Public and Private access specifiers.**

**e. What are the types of Exceptions?**

### **f.** What are the ways to compare string?

**g. Why abstract class has constructor even though you cannot create object?**

**h. Can I import the same package/class twice? Will the JVM load the package twice at runtime?**

**i. What are the practical benefits, if any, of importing a specific class rather than an entire package (e.g. import Java.net.\* versus import Java.net.Socket) ?**

**j. Can a source file contain more than one class declaration?**

**UNIT-IV**

**a.** What is multithreading?

b. What are advantages of multithreading programming.

c. What is thread synchronization?

d.Write differences between sleep () and wait() methods .

e. Explain setPriority() and getPriotity() methods of Thread class.

f. Name the exception raised while invoking sleep() method.

g. What are the standard streams are available in Java?

h. What do you mean by Byte stream? Write name of two classes that support byte stream.

i. What do you know by Character stream in Java? Write the name of two classes that supports Character stream.

j. What do know by serialization in Java.

**UNIT-V**

1. What is an applet program?
2. Write class hierarchy of java AWT classes.
3. What is an event in java?
4. Explain Button class with example.
5. What is the use of paint() method in awt?
6. What do you know by Layout Manager in awt or swing?
7. What is the need of Adapter classes for event handling?
8. What is the difference between TextField and TextArea components?

PART-II

**UNIT-I**

Q. (a) Write a program in java to take an array and calculate sum of even and multiplication of odd numbers in the array

(b) What is type casting ? Explain different types of type casting with example .

(c) Briefly explain various features of java

(d) Write a java program to print prime number up to 50

(e) Write program to swap value of two variables by accepting them using Scanner class

(f) Write java program to input a temperature in Fahrenheit and convert it to Celsius using the following conversion formula. C=(F-32)/1.8

(g) Write a java program to create and display a unit matrix of size 4

**UNIT-II**

1. Create a class for product with private instance variablesproduct\_id,name,price. Create two product objects. Using parameterized constructor initialize the instance variables and display them using another method.
2. Write a program to differentiate the feature of static variable and instance variable.
3. Create an object for complex numbers with real and imaginary part. Using separate methods initialize and display the complex objects. Define another method to perform the addition of two complex numbers and will return the result complex object.
4. What is method overriding? Explain with a program.
5. With an example, explain widening and narrowing of referenced datatype(class type) achieved in inheritance.
6. Write a program to show multilevel inheritance.
7. Write short notes on Polymorphism.

**UNIT-III**

1. **Difference between Abstract class and Interface.**
2. **What is the final keyword in Java?**
3. **Difference between final, finally and finalize.**
4. **Explain about Exception Propagation.**
5. **What are the Exception handling keywords in Java?**
6. **What are the advantages of Exception handling?**
7. **What is a Java package and how is it used?**

**UNIT-IV**

. a. What do you know by a thread in java?.Explain how can a thread is created in java.

b. Write the hierarchy of all stream classes in java.

c. Explain the classes and methods used for writing and reading objects into a file.

d. Explain with an example how to check end of binary file in java.

e. Write a multithreaded java program to display contents of two arrays of two threads simultaneously.

**UNIT – V**

1. Write differences between applet and application programs.
2. What are differences between AWT and SWING components?
3. Write an applet program to display your name, branch and roll number in applet window.
4. What do you know by wrapper class in java? Write the name of all wrapper classes corresponding to all primitive types.
5. Explain the event delegation model used in java for event handling.

**PART-III**

**UNIT-I**

Q1. a) Write a program to input 10 integers into an array and print the second highest number ?

b) Write a program to reverse an input number and check whether or not it is a palindrome ( The number is same as its reverse )

Q2. a) Write a program to print the sum of the following series.

S= 1! + 2! + 3 ! +…….+N! (accept value of N as input)

N!= 1 \* 2\*3\*4\*…\*N

b) Write a program to accept two numbers as command line arguments and display their HCF

Q3. a) Write a program to input 9 elements each into two 2-D arrays(matrices) and print whether they are equal or not

b) Write a program to input 9 elements into 3x3 matrix. Print the elements of both left diagonal and right diagonal.

**UNIT-II**

1. a. With a suitable example, explain constructor overloading.

b. Explain the four types of access specifiers used in java. Demonstrate with an appropriate program.

1. WAP to store ‘ n ’ number of Employee objects in an array. Each object contains private instance variables ename, id, basic\_salary, gender and allowance. Initialize and display the array using separate methods, don't take input for allowance. Allowance is 10% of basic\_salary for male and 11% for female. Implement another static method which will return the name of the employee, who is getting highest salary.
2. a. Create a class Student with attributes roll, name, age, mark. Create three objects of Student class. Using methods input and display all the objects. Define a static method which will return the sum of marks of these three students.

b. Explain three uses of ‘super’ keyword. Write a program where the parent class (super class) and child class (sub class) are having parameterized constructors.

**UNIT-III**

1. a. What is the difference between exception and error?

b. Explain try, catch, throw, throws and finally keyword with example?

1. a. Explain the statement “A string is a static and immutable object”.

b. Write a program to input a sentence and display in short form.

e.g. INPUT: Mangoes Are Delivered At Midnight

OUTPUT: M.A.D.A.M

### 3. a. **What are the advantages of packages in Java? What is a standard package in Java?**

### **b. Write a program to accept three numbers as command line argument. Print the highest**

### **number.**

**Unit - IV**

1. a) Write a Java program to copy contents of one file to another.

b) What is thread synchronization? Explain with example how thread synchronization

2. a) Explain the concept of Auto Boxing and Auto Unboxing with suitable example.

b) Write a Java program to implement thread Synchronization

**Unit – V**

1. Explain the life cycle of an applet with state – transition diagram. Also discuss all 5 methods responsible for maintaining life cycle of an applet.
2. a. Write a Java program using awt components for displaying a login form.

b. What do you know by event delegation model? Explain all components of an event delegation model with example.

3. What do you know by layout manager? Explain FlowLayout, BorderLayout and GridLayout with example.

//java jvm

//array of objects