QUESTION BANK (PROGRAMMING IN JAVA-1)

Short Answer Question

- What are the roles of Java Compiler and Java Interpreter?
- What is Javac ?
- What is the purpose of the jar tool ?
- What is the purpose of the jar tool ?
- "Java is Object Oriented Language". Give one reason supporting the given argument
- "Java is known as platform natural language" Give one reason supporting the given argument
- Give the difference between = = operator and equals ( ) method.
- State the purpose of a static block.
- A final method cannot be overridden. State True/False and justify.
- What are Java Bytecodes?
- What is JDB?
- Why Java is called TypeSafe Language as compare to C++
- What is the task of main method in Java Program
- Give memory requirement of Integer data types in Java
- What is the purpose of break and continue
- What is the purpose of super keyword?
- When do we declare a method or class final?
- Name the class which should be used to create User defined Exception
- A try Block must have catch block "state true or false"
- Difference between Checked and Unchecked Excaption
- What happens when the clone ( ) method is involved on a class which does
- not implement cloneable ?
- Give the two forms of the assertion statement.
- What is the difference between string and string Buffer class ?
- Which event is generated when the following components are updated ?
  Scroll bar ii) Slider

- How can we pass parameters to an applet ?
- What are Streams?
- j) What is the role of layout manager in AWT or swing ?
- What is the role of CLASSPATH variable?
- Explain JVM
- List Java Editions
- What is Blank Final variable?
- What is purpose if 'new' Operator
- What is final variable?
- What is the difference between Assignment and Initialization?
- What is the role of static keyword in public static void main(String args[])
- What happens when array is accessed beyond its range
- State the use of this keyword
- A class member should be accessed only by classes in the same package and its subclasses. How it would be decalred?
- Why is an Object[] array is called an Universal Array?
- Name a class which is at the top of the excaption class heirarchy
- What is dafault layout for frame and panel?
- Name the containers which uses Border Layout as their default layout?

Long Answer Question

- Explain the user defined Exceptions?
- Explain garbage collection?
- How are Java ByteCodes different from other machine level codes
- What are Access Specifiers available in Java?
- What does Java API consits of?
- State and Explains Java Tools
- What is the difference between String and String Buffer?
- Explain Component of Java Platform
- Explain non primitive data type in Java

- What is adapter class?
- Write a note on static member and static methods
- State the use of finalize method with example
- Explain Checked and Unchecked Exception
- Explain Exception and their types
- Explain Wrapper classes
- Explain "Package Vissiblity controll mechanism in java"
- Describe the wrapper classes in Java.
- What is final, finalize() and finally?
- What is the difference between this() and super()?
- What is difference between overloading and overriding?
- Explain useof user defined packages in Java.
- What are inner class and anonymous class?
- What is the difference between Integer and int?
- Discuss various levels of access protection avialble for packages and their implementation
- Create 2 packages; pack1 contains two classes Teacher and Courece. Both classes have method to read corrosponding inforamtion. Pack2 contains class college with method accept. Write a java program to display all information
- "The use of packages is naming and vissibity control mechanism in java" comment
- Creat a class in java that keep count of the number of its objects created. Every time an object of the class is created it assigned an id (1,2,3,..) and the total number object is displayed. The class should hav a display methid to display the id. In main Create n objects of the class
- Why is it illegal for static method to invoke a non static method?
- State the siginficance of following.
  - Static
  - Finalize
- State the use if super keyword with example.
- Explain abstract class with example.
- Create an abstract class Veichle having member owner and milage. Define methods accept() and display(). Derive one class four wheeler with one member-fuel used.

Override accept and display. Write a java program to accept and display details of n four wheeler objects.

- Create an abstract class Media (id, description). Derive classes Book(pagecount) and CD(playtime). Define paramterized constructors. Creat one object of Book and CD each and display the details.
- Explain inner class with example.
- Explain Anonymus inner class with example
- Explain how multiple inheritance can be achinieved in Java
- What is an Interface? How it is created? Explain its use with suitable example.
- Derive class square from class Rect. Create another class Circle. Create an interface with only one method call area. Implement this interface in all classes. Include appropriate data members and constrction in all classes. Write a program to accept details of square and circle and display the area.
- Can an interface be final? Justify.
- Define an interface "Operations" which has method area(), volume(). Define a constant PI having value 3.14. Create class a Cylinder which implements this interface(member-idm heigth). Create one object and calculate area and volume
- We can create a reference to an Interface type. State true or false and justify
- Explain difference between interface and abstract classes.
- What is an exception? What are their types? Explain how user defined exception clasess can be created
- Create a class BirthDay with parameterized constructor which takes three argument date, month and year. Raise an exception if birthdate is invalid.
- "A try block must have a catch block". State true or false and justify.
- What is difference between throw and throws.
- State difference between excetion and error,
- Write a note on nested try block,
- State the purpose of throws keyword.
- What is an exception? What are its types? Write a syntax for creating user defined exception class
- Explain the keyword finally

- Write a java program which accepts email address from the user and throws an exception "Invlaid-address". If it does not containg '@' symbol.
- Write a java program that accepts user-name and password and thrws an exception "Invlid-Login" if they do not match.
- Write a java program that define an exception called "NoMatch" Exception that is thrown when a string is not equal to "India"
- Write a java package containing all stream classes.
- Write a java program to accept two file names as command line argument. Copy only those lines from the first file to second which contains the word computer.
- What is difference between a byte steam and character stream?
- Write a java program to accept n strings from the user and display the length of the longes string.
- Write java program to accept a file name and a character as a command line aregument and replace all occurrences of that character by '*'. Store the result in file "output.txt"
- Differntiate between BufferedReader and BufferedWriter.
- What are the basic stream types supported by java?
- Write a program to accept book details as a code, title and price store onto file book.dat until user type '0'.
- Write a java program to accept name of college and chane case if each alphabet using command line argument.
- Write a java program which performs the following string operations.
    o Insert a string into second string at specified position.
    o Concatanation of two String
    o Comparision of two string
- Write a java program which accepts n integers from the user and Writes only the even numbers to a file "even.txt".
- Write a java program which accepts a file name as command line argument and finds the length of the longest line. Display error message if file does not exists.
- State difference between InputStream class and OutputStream class
- Write statements to create data stream for following operation.
    Reading primitive data from file
    Writting primitive data from file

> Reading bytes from file
>
> Writting bytes from file
>
> Buffering the imput

- List any four methods of the MouseListener interface.

- What is the use of layout manager?

- Name the method which is executed first when an applet starts running.

- Design a screen in Java which accepts text in textbox. If the left mouse is clicked, convert the text to uppercase and if the right button is clicked, convert it to lower case.

- Which method is used to sepecify containers layout? Write a syntax.

- Explain MouseListener

- Explain any five components of AWT

- Write a java program to create a combobox which includes list of subjects. Copy the subjects in textfied on click using applet.

- Write a note on LayOutManager

- Swing component are lightweighted components. Comments

- Write the Statement to set the layout of a container to a grid having 3 rows and 2 columns.

- State two methods of the MouseAdapter class.

- Explain in breif the event-handling mechanism in java with the example of sitable example.

- A class requires to handle events on a menu and checkbox. Which listener shoul implement?

- Write a program to create a screen which contains which contains three checkboxex (DOS, Linux, and Windows) and displays the selected items in a textbox.

- Which containers use flowlayout as default layout.

- What is difference between a menuitem and checkbox menuitem?

- What is an adapter class? Give suitable example of implementing Window Listener.

- Write a java program to create a frame which can be closed and use for drawing line. Handle mouse pressed to drag the line. Also display coordinates of points.

- Explain applet? Advanatage, Disadvantages

- What is the use of init() method.

- Can applet class have a constructor? Justify your answer.

- Write a program to create an applet which contains a list of conuntries. Display the selected country in a text box.
- Difference between inti() and start() method.
- Write a note on adapter classes
- State and Explain any 2 key listener with example

JAVA PROGRAMS:

1. Using javap, view the methods of the following classes from the lang package:
Object, String and Math.

2. Compile sample program 2. Type the following command and view the bytecodes. javap –c MyClass

Define a Student class (roll number, name, percentage). Define a default and parameterized constructor. Override the toString method. Keep a count objects created. Create objects using parameterized constructor and display the object count after each object is created. (Use static member and method). Also display the contents of each object.

2. Write a java program to create n objects of the Student class. Assign roll numbers in the ascending order. Accept name and percentage from the user for each object. Define a static method "sortStudent" which sorts the array on the basis of percentage.

1. Accept three integers using command line arguments and find their maximum and minimum.

2. Define a class CricketPlayer (name, no_of_innings, no_times_notout, total_runs, bat_avg). Create an array of n player objects. Calculate the batting average for each player using a static method avg(). Define a static method "sortPlayer" which sorts the array on the basis of average. Display the player details in sorted order.

3. Create a class date with day, month and year as members. Write appropriate member functions. Create another class student, which has id, name ,date of birth and marks of

3 subjects as members. Write appropriate constructor for the student which assigns values to the members. Accept the details as command line arguments and create a

student object using the arguments. Display the student details in a proper format.

1. Create a package named Maths. Define class MathsOperations with static methods to find the maximum and minimum of three numbers. Create another package Stats. Define class StatsOperations with methods to find the average and median of three numbers. Use these methods in main to perform operations on three integers accepted using command line arguments.

2. Write a Java program to create a Package "SY" which has a class SYMarks (members – ComputerTotal, MathsTotal, and ElectronicsTotal). Create another package TY which has a class TYMarks (members – Theory, Practicals). Create n objects of Student class (having rollNumber, name, SYMarks and TYMarks). Add the marks of SY and TY computer subjects and calculate the Grade ('A' for >= 70, 'B' for >= 60 'C' for >= 50 , Pass Class for > =40 else 'FAIL') and display the result of the student in proper format.

1. Define a class Employee having private members – id, name, department, salary. Define default and parameterized constructors. Create a subclass called "Manager" with private member bonus. Define methods accept and display in both the classes. Create n objects of the Manager class and display the details of the manager having the maximum total salary (salary+bonus)

2. Define an interface "IntOperations" with methods to check whether an integer is positive, negative, even, odd, prime and operations like factorial and sum of digits. Define a class MyNumber having one private int data member. Write a default constructor to initialize it to 0 and another constructor to initialize it to a value (Use this). Implement the above interface. Create an object in main. Use command line arguments to pass a value to the object and perform the above operations using a menu.

3. Define an interface "StackOperations" which declares methods for a static stack. Define a class "MyStack" which contains an array and top as data members and implements the above

interface. Initialize the stack using a constructor. Write a menu driven program to perform operations on a stack object.

1. Create an abstract class Shape with methods calc_area and calc_volume. Derive three classes Sphere(radius) , Cone(radius, height) and Cylinder(radius, height), Box(length, breadth, height) from it. Calculate area and volume of all. (Use Method overriding).

2. Define an interface "QueueOperations" which declares methods for a static queue. Define a class "MyQueue" which contains an array and front and rear as data members and implements the above interface. Initialize the queue using a constructor. Write a menu driven program to perform operations on a queue object.

1. Define a class "Employee" which has members id, name, date of birth. Define another class "Manager" which has members department name and joining date and extends Employee. Create n objects of the manager class and clone them. (Use the Cloneable interface)

2. Define an abstract class "Staff" with members name and address. Define two subclasses of this class – "FullTimeStaff" (department, salary) and "PartTimeStaff" (numberof- hours, rate-per-hour). Define appropriate constructors. Create n objects which could be of either FullTimeStaff or PartTimeStaff class by asking the user's choice. Display details of all "FullTimeStaff" objects and all "PartTimeStaff" objects.

1. Write a Java program to create a super class Vehicle having members Company and price. Derive 2 different classes LightMotorVehicle (members – mileage) and HeavyMotorVehicle (members – capacity-in-tons). Accept the information for n vehicles and display the information in appropriate form. While taking data, ask the user about the type of vehicle first.

1. Create a class Student with attributes roll no, name, age and course. Initialize values through parameterized constructor. If age of student is not in between 15 and 21 then generate user-defined exception "AgeNotWithinRangeException". If name contains numbers or special symbols raise exception "NameNotValidException". Define the two exception classes.

2. A program accepts two integers as command line arguments. It displays all prime numbers between these two. Using assertions, validate the input for the following criteria: Both should be positive integers. The second should be larger than the first.

1. Define Exceptions VowelException ,BlankException,ExitException.Write another class Test which reads a character from command line. If it is a vowel, throw VowelException,if it is blank throw BlankException and for a character 'X' throw an ExitException and terminate program. For any other character, display "Valid character".

2. Accept an integer as command line argument. Report an error using assertions if it is not within the valid range of 0-20.

1. Define class MyDate with members day, month, year. Define default and parameterized constructors. Accept values from the command line and create a date object. Throw user defined exceptions – "InvalidDayException" or "InvalidMonthException" if the day and month are invalid. If the date is valid, display message "Valid date".

2. Write a program which accept two integers and an arithmetic operator from the command line and performs the operation. Fire the following user defined exceptions:
i. If the no of arguments are less than 3 then fire "IllegalNumberOfArguments"
ii. If the operator is not an Arithmetic operator, throw "InvalidOperatorException".
iii. If result is –ve, then throw "NegativeResultException"

1. Write a program to accept a string as command line argument and check whether it is a file or directory. If it is a directory, list the contents of the directory, count how many files the directory has and delete all files in that directory having extension .txt. (Ask the user if the files have to be deleted). If it is a file, display all information about the file (path, size, attributes etc).

2. Write a java program to accept two file names as command line arguments and copy the contains of first to second in such a manner the case of all alphabet is changed and digits are replaced by '*'. Display appropriate error message if the first file does not exist. (Use methods from Character class)

3. Write a program to display the contents of a file in the reverse order.

1. Accept a filename from the user and display the contents of the file.

2. Accept the names of two files and copy the contents of the first to the second. Add Author name and Date in comments in the beginning of file. Add the comment 'end of file' at the end.

3. Accept the names of three files and copy the contents of the first two to the third.

1. Write a program to store item information (id, name, price, qty) in file "item.dat". Write a menu driven program to perform the following operations: i. Search for a specific item by name. ii. Find costliest item. iii. Display all items and total cost

2. Write a program to store student information (roll number, name, percentage) in a RandomAccessFile "student.dat". Display the details of the student having a specific roll number.

3. Write a Java program to accept an option, string and file name from user. Perform following operations:
      a. If no option is passed then print all lines in the file containing the string.
      b. If the option passed is –c then print the count of lines containing the string.
      c. If the option passed is –v then print the lines not containing the string.