Module 1   Assignment Topic: Fundamental

Assignment Level Basic

B1. Features of Java. (or) Java buzzwords.

B2. Difference between JDK, JRE and JVM.

B3. Java is Platform independent.?

B4. Three flavors of Java.

B5. How many types of memory areas are allocated by JVM?

B6. What is the latest version of Java?

B7. What is Write Once, Run Anywhere (WORA)?

B8. Is Java a pure/fully object oriented language?

B9. What is bytecode?

B10. What is Heap space in Java?

B11. Difference between EAR, JAR and WAR file in J2EE.

B12. Explain memory leak in Java.

B13. How Garbage collection works in Java?

B14. Does Java garbage collector clean both heap and stack memory?

B15. Why garbage collection is required in Java?

B16. W.A.J.P to Take three numbers from the user and print the greatest number.

B17. Write a Java program that takes the user to provide a single character from the alphabet. Print Vowel or Consonant, depending on the user input. If the user input is not a letter (between an and z or A and Z), or is a string of length > 1, print an error message.

B18. Write a Java program that takes a year from user and print whether that year is a leap year or not.

B19. Write a program in Java to display the first 10 natural numbers using while loop.

B20. Write a program in Java to input 5 numbers from keyboard and find their sum and average using for loop.

B21. Write a program in Java to display the pattern like right angle triangle with a number.

1
12
123
1234
12345
123456
1234567
12345678

B22. Write a program in Java to make such a pattern like right angle triangle with number increased by 1. The pattern like:

1
2 3
4 5 6
7 8 9 10

B23. Write a program in Java to print the Floyd's Triangle.

1

```
1
01
101
0101
10101
```
B24. Write a Java program to display Pascal's triangle.
```
    1
   1 1
  1 2 1
 1 3 3 1
1 4 6 4 1
```
B25. Write a Java program that reads a positive integer and count the number of digits the number.

       Input an integer number less than ten billion: 125463

       Number of digits in the number: 6

B26. Write a Java program to count the letters, spaces, numbers and other characters of an input string.

B27. Write a Java program to print the ascii value of a given character.

B28. Write a Java program that accepts an integer (n) and computes the value of n+nn+nnn.

       Input number: 5

       5 + 55 + 555

B29. Write a Java program to display the system time.

B30. Write a Java program to print numbers between 1 to 100 which are divisible by 3, 5 and by both.

B31. Write a Java program to calculate the sum of two integers and return true if the sum is equal to a third integer.

       Input the first number: 5

       Input the second number: 10

       Input the third number: 15

       The result is: true

B32.Write a Java program that accepts two integer values between 25 to 75 and return true if there is a common digit in both numbers.

       Input the first number: 35

       Input the second number: 45

       Result: true

B33.Write a Java program to compute the sum of the first 100 prime numbers.

B34. Write a Java program that accepts two double variables and test if both strictly between 0 and 1 and false otherwise.

       Input first number: 5

       Input second number: 1

       false

B35.Write a Java program to break an integer into a sequence of individual digits.

       TestData

Input six non-negative digits: 123456
ExpectedOutput :
1 2 3 4 5 6

Module 2 Assignment Topic: Array

Assignment Level Basic

B1. How do I initialize a String array?
B2. What is Array?
B3. How many types of array available?
B4. Is arrays are considered as primitive data types?
B5. How do I create a list from Array which is completely independent of the original array?
B6. What is the index of the first element in an array?
B7. How do you print the content of an array in Java?
B8. How do you print the content of a multi-dimensional array in Java?
B9. Why is it a good practice to store sensitive information like password, SSN into a character Array rather than String?
B10. Which algorithm does Arrays. Sort use in Java?
B11. W.A.J.P to sort a numeric array and a string array.
B12. W.A.J.P to sum values of an array.
B13. W.A.J.P to calculate the average value of array elements.
B14. W.A.J.P to test if an array contains a specific value.
B15. W.A.J.P to find the index of an array element.
B16. W.A.J.P to find the maximum and minimum value of an array.

Assignment Level Intermediate

I1. W.A.J.P to remove a specific element from an array
I2. W.A.J.P to copy an array by iterating the array.
I3. W.A.J.P to insert an element (specific position) into an array.
I4. W.A.J.P to reverse an array of integer values.
I5. W.A.J.P to find the duplicate values of an array of integer values.
I6. W.A.J.P to find the duplicate values of an array of string values.
I7. W.A.J.P to find the second largest element in an array.

Assignment Level Advance

A1. W.A.J.P to find the common elements between two arrays (string values).
A2. W.A.J.P to compute the average value of an array of integers except the largest and smallest values. A3. W.A.J.P to check if the sum of all the 10's in the array is exactly 30. Return false if the condition does not satisfy, otherwise true.

```
Original Array: [0, 1, 0, 1, 1, 0, 1, 1, 0, 0, 1]
```

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```
        Array after segregation is: [0, 0, 0, 0, 0, 1, 1, 1, 1, 1, 1]
```

A4. W.A.J.P to segregate all 0s on left side and all 1s on right side of a given array of 0s and 1s.

A5. W.A.J.P to cyclically rotate a given array clockwise by one.

```
        Original array: [10, 20, 30, 40, 50, 60]
        Rotated array: [60, 10, 20, 30, 40, 50]
```

Module 2   Assignment Topic: String

Assignment Level Basic

B1. Can String be referred as a datatype?

B2. What is toString () method?

B3. All the String objects created using String literals are stored in String pool?

B4. Difference between StringBuffer and StringBuilder.

B5. What is Immutable?

B6. Is String is Immutable?

B7. How do you create a String object?

B8. What is the difference between creating String object using new and String literals?

B9. What is Java String Pool?

B10. Immutable objects are thread-safe?

B11. Overriding toString () example.

B12. What is String interpolation in Java?

B13. Name the interfaces that Java String class implements.

B14. How do I compare strings in Java?

B15. Can we have case null in string switch case?

B16. What is the default implementation of equals method in Object class?

B17. W.A.J.P to get the character at the given index within the String.

        Original String = Tops Technologies!

        The character at position 0 is T

        The character at position 10 is o

B8. W.A.J.P to concatenate a given string to the end of another string.

B19. W.A.J.P to compare a given string to the specified character sequence.

        Comparing topsint.com and topsint.com: true

Comparing Topsint.com and topsint.com: false

Assignment Level Intermediate

I1. W.A.J.P to check whether a given string ends with the contents of another string.

        "Java Exercises" ends with "se"? false

        "Java Exercise" ends with "se"? true

I2. W.A.J.P to check whether a given string starts with the contents of another string.

        Red is favorite color. starts with Red? true

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Orange is also my favorite color. starts with Red? false I3.
W.A.J.P to find all interleaving of given strings.
The given strings are: WX YZ   The
interleaving strings are: YWZX
       WYZX
       YWXZ
       WXYZ
       YZWX
       WYXZ
I4. W.A.J.P to find the second most frequent character in a given string.
       The given string is: successes
       The second most frequent char in the string is: c

Assignment Level Advance

A1. W.A.J.P to find first non-repeating character in a string.
       The given string is: gibblegabbler
       The first non-repeated character in String is: i A2.
W.A.J.P to divide a string in an equal part.
       The given string is: abcdefghijklmnopqrstuvwxy
       The string divided into 5 parts and they are:

       abcde
       fghij
       klmno
       pqrst
       uvwxy

A3. W.A.J.P to count and print all the duplicates in the input
       string. The given string is: w3resource tops
       technologies The duplicate characters and
       counts are: t appears 2 times o appears 3 times
       so on………….
A4. W.A.J.P to return a string where every appearance of the lowercase word 'is' has been replaced with
'is not'.
       The given string is: it is a string
       The new string is: it is not a string

Module 2   Assignment Topic: OOPs Concept – Inheritance/Polymorphism/Abstraction/Encapsulation

Assignment Level Basic

B1. What is inheritance?
B2. Which inheritance is not supported by Java? Why?
B3. What is advantage of inheritance?
B4. Difference between inheritance and encapsulation.
B5. Difference between inheritance and abstraction.
B6. Difference between inheritance and polymorphism.
B7. Can we override static method in Java?
B8. Can we overload static method in Java?
B9. Can a class implement more than one interface?
B10. Can a class extend more than one class in Java?
B11. Can an interface extend more than one interface in Java?
B12. What will happen if a class implements two interfaces and they both have a method with same name and signature?
B13. Can we pass an object of a subclass to a method expecting an object of the super class?
B14. Are static members inherited to sub classes?
B15. What happens if the parent and the child class have a field with same identifier?
B16. Are constructors and initializers also inherited to sub classes?
B17. How do you restrict a member of a class from inheriting by its sub classes?
B18. How do you implement multiple inheritance in java?
B19. Can a class extend by itself in Java?
B20. How do you override a private method in java?
B21. When to overload a method in Java and when to override it?
B22. What is the order of extends and implements keyword on Java class declaration?
B23. How do you prevent overriding a Java method without using the final modifier?
B24. What are the rules of method overriding in Java?
B25. Difference between method overriding and overloading in Java.
B26. What happens when a class implements two interfaces and both declare field (variable) with same name?
B27. Can a subclass instance method override a superclass static method?
B28. Can a subclass static method hide superclass instance method?
B29. Can a superclass access subclass member?
B30. Difference between object oriented and object based language.
B31. Explain Diamond problem.

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B32. Why Java does not support operator overloading?

B33. What is Encapsulation in Java?

B34. Which of the Java OOPS feature promotes access protection or data hiding?

B35. Create a class named 'PrintNumber' to print various numbers of different datatypes by creating different methods with the same name 'printn' having a parameter for each data type.

B36. Create a class to print an integer and a character with two methods having the same name but different sequence of the integer and the character parameters.

For example, if the parameters of the first method are of the form (int n, char c), then that of the second method will be of the form (char c, int n).

B37. Create a class to print the area of a square and a rectangle. The class has two methods with the same name but different number of parameters. The method for printing area of a rectangle has two parameters which are length and breadth respectively while the other method for printing area of square has one parameter which is side of square.

B38. Create a class with a method that prints "This is a parent class" and its subclass with another method that prints "This is child class". Now, create an object for each of the class and call
1 - method of parent class by object of parent class
2 - method of child class by object of child class
3 - method of parent class by object of child class

B39. Create a class named 'Member' having the following members:
Data members
1 - Name
2 - Age
3 - Phone number
4 - Address 5 - Salary
It also has a method named 'printSalary' which prints the salary of the members.
Two classes 'Employee' and 'Manager' inherits the 'Member' class. The 'Employee' and 'Manager' classes have data members 'specialization' and 'department' respectively. Now, assign name, age, phone number, address and salary to an employee and a manager by making an object of both of these classes and print the same.

B40. Create a class named 'Rectangle' with two data members 'length' and 'breadth' and two methods to print the area and perimeter of the rectangle respectively. Its constructor having parameters for length and breadth is used to initialize the length and breadth of the rectangle. Let class 'Square' inherit the 'Rectangle' class with its constructor having a parameter for its side (suppose s) calling the constructor of its parent class as 'super (s, s)'. Print the area and perimeter of a rectangle and a square.

B41. Write a program to print the area and perimeter of a triangle having sides of 3, 4 and 5 units by creating a class named 'Triangle' without any parameter in its constructor.

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B42. Print the sum, difference and product of two complex numbers by creating a class named 'Complex' with separate methods for each operation whose real and imaginary parts are entered by user.

B43. Create an abstract class 'Parent' with a method 'message'. It has two subclasses each having a method with the same name 'message' that prints "This is first subclass" and "This is second subclass" respectively. Call the methods 'message' by creating an object for each subclass.

B44. Create an abstract class 'Bank' with an abstract method 'getBalance'. $100, $150 and $200 are deposited in banks A, B and C respectively. 'BankA', 'BankB' and 'BankC' are subclasses of class 'Bank', each having a method named 'getBalance'. Call this method by creating an object of each of the three classes.

B45. We have to calculate the percentage of marks obtained in three subjects (each out of 100) by student A and in four subjects (each out of 100) by student B. Create an abstract class 'Marks' with an abstract method 'getPercentage'. It is inherited by two other classes 'A' and 'B' each having a method with the same name which returns the percentage of the students. The constructor of student A takes the marks in three subjects as its parameters and the marks in four subjects as its parameters for student B. Create an object for eac of the two classes and print the percentage of marks for both the students.

Assignment Level Intermediate

I1. Write a program to print the factorial of a number by defining a method named 'Factorial'.
Factorial of any number n is represented by n! and is equal to 1*2*3*.... *(n-1) *n. E.g.-
4! = 1*2*3*4 = 24
3! = 3*2*1 = 6
2! = 2*1 = 2
Also,
1! = 1
0! = 0

I2. We have to calculate the area of a rectangle, a square and a circle. Create an abstract class 'Shape' with three abstract methods namely 'RectangleArea' taking two parameters, 'SquareArea' and 'CircleArea' taking one parameter each. The parameters of 'RectangleArea' are its length and breadth, that of 'SquareArea' is its side and that of 'CircleArea' is its radius. Now create another class 'Area' containing all the three methods 'RectangleArea', 'SquareArea' and 'CircleArea' for printing the area of rectangle, square and circle respectively. Create an object of class 'Area' and call all the three methods.
I3. Write a program which will ask the user to enter his/her marks (out of 100). Define a method that will display grades according to the marks entered as below:
Marks   Grade
91-100   AA

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81-90	AB
71-80	BB
61-70	BC
51-60	CD
41-50	DD
<=40	Fail

I4. Create a class named 'Shape' with a method to print "This is This is shape". Then create two other classes named 'Rectangle', 'Circle' inheriting the Shape class, both having a method to print "This is rectangular shape" and "This is circular shape" respectively. Create a subclass 'Square' of 'Rectangle' having a method to print "Square is a rectangle". Now call the method of 'Shape' and 'Rectangle' class by the object of 'Square' class.

Assignment Level Advance

A1. All the banks operating in India are controlled by RBI. RBI has set a well-defined guideline (e.g. minimum interest rate, minimum balance allowed, maximum withdrawal limit etc) which all banks must follow. For example, suppose RBI has set minimum interest rate applicable to a saving bank account to be 4% annually; however, banks are free to use 4% interest rate or to set any rates above it.

Write a JAVA program to implement bank functionality in the above scenario and demonstrate the dynamic polymorphism concept. Note: Create few classes namely Customer, Account, RBI (Base Class) and few derived classes (SBI, ICICI, PNB etc). Assume and implement required member variables and functions in each class.

A2. Suppose a class 'A' has a static method to print "Parent". Its subclass 'B' also has a static method with the same name to print "Child". Now call this method by the objects of the two classes. Also, call this method by an object of the parent class referring to the child class i.e. A obj = new B ()

Module 2   Assignment Topic: Exception

Assignment Level Basic

B1. How are the exceptions handled in java?
B2. Difference between Error and Exception in Java.
B3. What are checked and unchecked exceptions?
B4. How do we handle more Than One Type of Exception using catch block in Java?
B5. What happens if an exception is thrown from the finally or catch block in Java?
B6. Will the finally block be executed when the catch clause throws exception in Java?
B7. What is a user defined/custom exception in Java?
B8. Does a finally block always run in Java?
B9. Does return statement allow finally block to execute in Java?
B10. Should a catch block always follow try block in Java for Exception handling?
B11. Difference between Error and runtime exceptions in Java.

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B12. Difference between throw and throws clause in Java.

B13. Can try block exist without any catch and finally block in Java?

B14. What is stack trace?

B15. What is the order of catch blocks when catching more than one exception?

B16. Can we use FileNotFoundException and IOException in Java multi catch?

B17. Give few examples of checked exceptions.

B18. Give few examples of unchecked exceptions.

B19. Explain exception handling when overriding a method?

B20. Can overridden method throw RuntimeException when original method throw ArithmeticException?

B21. Can I write only try block without any catch and finally block?

B22. Difference between final, finally and finalize in Java.

B23. What is rethrowing an exception?

B24. Explain the rules of Exception Handling in terms of Method Overriding?

B26. W.A.J. P to demonstrate try catch block,

Take two numbers from the user and perform the division operation and handle Arithmetic Exception.

O/P-

      Enter two numbers: 10   0

      Exception in thread main java.lang.ArithmeticException:/ by zero

B27. W.A.J. P to demonstrate multiple catch blocks, (one is to handle divide by zero exception and another one is to handle ArrayIndexOutOfBoundException)   int a [] =new int [5];   a [5] =30/0;

B28. W.A.J. P to implement the above program(pro.no-B27) using nesting of try-catch block.

```
 try {
try
   {
     //code
   }
   catch (Exception e)
   {
    //code
   }
 }
 catch (Exception e)
 {
    //code
}
```

B29. W.A.J. P to demonstrate try catch block, take two numbers from the user by Command line argument and perform the division operation and handle Arithmetic

O/P-

Exception in thread main java. lang. ArithmeticException:/ by zero

Assignment Level Intermediate

I1. W.A.J.P to read 10 integer values using Scanner class from keyboard. Generate the exception if the entered value is less than 10 and or greater than 40. Program should display appropriate message as and when this exception occurs otherwise it will display all the entered values.

I2. W.A.J.P to create the validate method that takes integer value as a parameter. If the age is less than 18, then throw an ArithmeticException otherwise print a message welcome to vote.

  O/P-   Enter your age:16

              Exception in thread main java. lang. ArithmeticException: not valid

Assignment Level Advance

A1. W.A.J.Pto create a custom exception if Customer withdraw amount which is greater than account balance then program will show custom exception otherwise amount will deduct from account balance.

      Account balance is:2000
      Enter withdraw amount:2500
      Sorry, insufficient balance, you need more 500 Rs.
      To perform this transaction.

A2. W.A.J.P to 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 userdefined exception "AgeNotWithinRangeException". If name contains numbers or special symbols raise exception "NameNotValidException". Define the two exception classes.

Output:

i. When we enter invalid name or age

ii. Enter valid name as well as age

Module 2 Topic: Thread

Assignment Level Basic

B1. W.A.J. P to create one thread by implementing Runnable interface in Class.

B2. W.A.J. P to create one thread by extending Thread class in another Class.

B3. W.A.J.P to create 2 threads and execute that threads by providing sleep time as 2000ms and check the execution.

B4.W.A.J.P to start the same Thread twice by calling start () method twice.   TestThreadTwice1 t1=new TestThreadTwice1();
t1.start();   t1.start();

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B5.W.A.J.P to call run() method directly without calling start() method for 2 threads.

```
     TestCallRun2 t1=new TestCallRun2();
TestCallRun2 t2=new TestCallRun2();
t1.run();          t2.run();
```

Assignment Level Intermediate

I1. W.A.J.P to set the user defined name, priority and get that name and priority for 2 threads using setName (), setPriority (), getName (), getPriority () methods of Thread class.

```
        TestMultiPriority1 m1=new TestMultiPriority1();
        TestMultiPriority1 m2=new TestMultiPriority1();
         m1.setName("mythread-1");   m2.setName("mythread-
        2");   m1.setPriority(Thread.MIN_PRIORITY);

        m2.setPriority(Thread.MAX_PRIORITY);
        m1.start();    m2.start();
```

I2. W.A.J.P to create 2 threads and make one thread as DaemonThread by using setDaemon () method of Thread class and check whether the thread is set daemon or not by using isDaemon () method.

```
        TestDaemonThread2 t1=new TestDaemonThread2();
        TestDaemonThread2 t2=new TestDaemonThread2();
       t1.start();
        t1.setDaemon(true);//will throw exception here
       t2.start();
```

Assignment Level Advance

A1. W.A.J.P to to create 3 threads and make one thread group for all 3 threads and use list () method to list all threads from group.

```
        ThreadGroup tg1 = new ThreadGroup ("Group A");
        Thread t1 = new Thread (tg1, new MyRunnable(),"one");
        Thread t2 = new Thread (tg1, new MyRunnable(),"two");
        Thread t3 = new Thread (tg1, new MyRunnable(),"three");
```

A2. W.A.J.P to create one class named First having method display () which display message with "["as,
```
        public void display (String msg)
        {
                        System.out.print("["+msg);
                        try
                        {
                                Thread.sleep(1000);
                        }
                        catch(InterruptedExceptione)
```

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```
                         {
                                 e. printStackTrace ();
                         }
                         System.out.println("]");
             }
             Then create another class named Second by extending First class in it and use synchronized
             () method and use display () method in it. public void run ()
             {
                         synchronized(fobj) //Synchronized block
                 {
                             fobj.display(msg);
                 }
             }
             First fnew= new First();
             Second ss= new second(fnew, "welcome");
             Second ss1= new second (fnew,"new");
             Second ss2 = new second(fnew, "programmer"); o/p-
                 [welcome]
                 [new]
                 [programmer]
```

Module 2 Topic: Collection

Assignment Level Basic

B1. How do you initialize an ArrayList?

B2. What is Java Collections Framework?

B3. What is the difference between List and Set?

B4. What is the difference between Map and Set?

B5. What are the classes that implements List and Set interface?

B6. What is an iterator?

B7. What is the difference between Iterator and Enumeration?

B8. What is the difference between HashMap and Hashtable?

B9. What is the difference between Iterator and ListIterator?

B10. What is the difference between Array and ArrayList in Java?

B11. List the differences between LinkedList and ArrayList in Java.

B12. Difference between Comparable and Comparator interface.

B13. Write a Java program to create a new array list, add some colors (string) and print out the collection.

B14. Write a Java program to iterate through all elements in a array list.

B15. Write a Java program to insert an element into the array list at the first position.

B16. Write a Java program to retrieve an element (at a specified index) from a given array list.

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B17. Write a Java program to update specific array element by given element.
B18. Write a Java program to remove the third element from a array list.
B19. Write a Java program to search an element in a array list.
B20. Write a Java program to sort a given array list.
B21. Write a Java program to copy one array list into another.
B22. Write a Java program to shuffle elements in a array list.
B23. Write a Java program to append the specified element to the end of a hash set.
B24. Write a Java program to iterate through all elements in a hash list.
B25. Write a Java program to get the number of elements in a hash set.
B26. Write a Java program to associate the specified value with the specified key in a HashMap. B27.
Write a Java program to count the number of key-value (size) mappings in a map.

Assignment Level Intermediate

I1. Write a Java program to reverse elements in a array list.
I2. Write a Java program to extract a portion of a array list.
I3. Write a Java program to compare two array lists.
I4. Write a Java program of swap two elements in an array list.
I5. Write a Java program to join two array lists.
I6. Write a Java program to convert a hash set to an array.
I7. Write a Java program to convert a hash set to a List/ArrayList.
I8. Write a Java program to check whether a map contains key-value mappings (empty) or not.

Assignment Level Advance

A1. Write a Java program to increase the size of an array list.
A2. Write a Java program to replace the second element of a ArrayList with the specified element.
A3. Write a Java program to print all the elements of a ArrayList using the position of the elements.
A4. Write a Java program to compare two sets and retain elements which are same on both sets. A5.
Write a Java program to get a collection view of the values contained in this map.

Module 3

Topic: SQLEMP

TABLE:

Field	Type	Null	Key	Default
Empno	int(4)	NO	PRI	0
Ename	varchar(10)	YES		(NULL)
Job	varchar(9)	YES		(NULL)

15

Mgr	int(4)	YES		(NULL)
Hiredate	date	YES		(NULL)
Sal	decimal(7,2)	YES		(NULL)
Comm	decimal(7,2)	YES		(NULL)
Deptno	int(2)	YES	MUL	(NULL)

DEPT TABLE:

Field	Type	Null	Key	Default
Deptno	int(2)	NO	PRI	0
Dname	varchar(14)	YES		(NULL)
Loc	varchar(13)	YES		(NULL)

STUDENT TABLE:

Field	Type	Null	Key	Default
Rno	int(2)	NO	PRI	0
Sname	varchar(14)	YES		(NULL)
City	varchar(20)	YES		(NULL)
State	Varchar(20)	YES		(NULL)

EMP_LOG TABLE:

Field	Type	Null	Key	Default
Emp_id	int(5)	NO		(NULL)
Log_date	Date	YES		(NULL)
New_salary	Int(10)	YES		(NULL)
Action	Varchar(20)	YES		(NULL)

DEPT TABLE DATA:

Deptno	dname	loc
10	ACCOUNTING	NEW YORK
20	RESEARCH	DALLAS

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30	SALES	CHICAGO
40	OPERATIONS	BOSTON

EMP TABLE DATA:

Empno	ename	job	mgr	hiredate	sal	comm	deptno
7369	SMITH	CLERK	7902	1980-12-17	800.00	(NULL)	20
7499	ALLEN	SALESMAN	7698	1981-02-20	1600.00	300.00	30
7521	WARD	SALESMAN	7698	1981-02-22	1250.00	500.00	30
7566	JONES	MANAGER	7839	1981-04-02	2975.00	(NULL)	20
7654	MARTIN	SALESMAN	7698	1981-09-28	1250.00	1400.00	30
7698	BLAKE	MANAGER	7839	1981-05-01	2850.00	(NULL)	30
7782	CLARK	MANAGER	7839	1981-06-09	2450.00	(NULL)	10
7788	SCOTT	ANALYST	7566	1987-06-11	3000.00	(NULL)	20
7839	KING	PRESIDENT	(NULL)	1981-11-17	5000.00	(NULL)	10
7844	TURNER	SALESMAN	7698	1981-08-09	1500.00	0.00	30
7876	ADAMS	CLERK	7788	1987-07-13	1100.00	(NULL)	20
7900	JAMES	CLERK	7698	1981-03-12	950.00	(NULL)	30
7902	FORD	ANALYST	7566	1981-03-12	3000.00	(NULL)	20
7934	MILLER	CLERK	7782	1982-01-23	1300.00	(NULL)	10

1. Select unique job from emp table.
2. List the details of the emps in asc order of the Dptnos and desc of Jobs?
3. Display all the unique job groups in the descending order?
4. List the emps who joined before 1981.
5. List the Empno, Ename, Sal, Daily sal of all emps in the asc order of Annsal.
6. List the Empno, Ename, Sal, Exp of all emps working for Mgr 7369.
7. Display all the details of the emps whose Comm. Is more than their Sal.
8. List the emps who are either 'CLERK' or 'ANALYST' in the Desc order.
9. List the emps Who Annual sal ranging from 22000 and 45000.
10. List the Enames those are starting with 'S' and with five characters.
11. List the emps whose Empno not starting with digit78.
12. List all the Clerks of Deptno 20.
13. List the Emps who are senior to their own MGRS.
14. List the Emps of Deptno 20 whose Jobs are same as Deptno10.
15. List the Emps whose Sal is same as FORD or SMITH in desc order of Sal.
16. List the emps whose jobs same as SMITH or ALLEN.
17. Any jobs of deptno 10 those that are not found in deptno 20.

18. Find the highest sal of EMP table.
19. Find details of highest paid employee.
20. Find the total sal given to the MGR.
21. List the emps whose names contains 'A'.
22. Find all the emps who earn the minimum Salary for each job wise in ascending order.
23. List the emps whose sal greater than blakes sal.
24. Create view v1 to select ename, job, dname, loc whose deptno are same.
25. Create a procedure with dno as input parameter to fetch ename and dname.
26. Add column Pin with bigint datatype in table student.
27. Modify the student table to change the sname length from 14 to 40.
28. Create trigger to insert data in emp_log table whenever any update of sal in emp table. You can set action as 'New Salary'.

Module 3   Assignment Topic: JDBC/Swing

Assignment Level BasicB1.
What is JDBC?
B2. Differences Between JDBC and ODBC.
B3. What is JDBC driver?
B4. Which is the pure Java driver among the 4 types of JDBC Driver?
B5. What are the steps involved in creating a JDBC connection?
B6. What is a Driver in JDBC?
B7. What is the role of Driver Manager in JDBC?
B8. Explain JDBC statement.
B9. Difference between execute, executeQuery and executeUpdate in JDBC.
B10. Explain JDBC PreparedStatement.
B11. Why JDBC PreparedStatement is preferred?
B12. How do I set NULL as an input value for JDBC PreparedStatement?
B13. What are the steps to connect to the database in JDBC?
B14. What are the types of JDBC statements?
B15. How do you execute stored procedures and functions using JDBC?
B16. What is JDBC ResultSet?
B17. What is the return type of Class.forName method in Java?
Assignment Level Advance

A1. Write swing example with database connectivity to achieve the following.

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Module 4   Assignment Topic: JSP/Servlet

Assignment Level Basic

B1. What is servlet?
B2. Advantages of Servlet over CGI.
B3. Can we call servlet destroy () from service ()?
B4. Difference between out.println and System.out.println in JSP Scriptlet.
B5. What happens when JSTL expression encounter NullPointerException?
B6. Types of a servlet
B7. Servlet Life Cycle
B8. What is deployment descriptor?
B9. What is RequestDispatcher?
B10. What is SendRedirect method and its use?
B11. Difference between Servlet Config and Servlet Context B12.
What is Filter and types of filter?
B13. How can we refresh automatically when new data has entered the database?
B14. What are the supporting protocol by HttpServlet?
B15. What are the important functions of filters?
B16. What is the difference between JSP and Servlets?
B17. What is called Scriptlet?
B18. Can we refresh servlet in client and server side automatically?
B19. What is Generic Servlet class?
B20. Which exception is thrown if servlet is not initialized properly?
B21. Who is responsible for writing a constructor in Servlet?
B22. Whether we can get deadlock situation in Servlets?

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B23. What is the default HTTP method in the servlet?

B24. Whether thread can be used in Servlets?

B25. Difference between sendredirect and forward in Servlet?

B26. Write a Java program to fetch data from web.xml to Servlet using ServletConfig.

B27. Write a Java program to fetch data from web.xml to Servlet using ServletCotext.

B28. Write a Java program to submit student information (fname, lname, email, mobile, gender, password) using jsp form to servlet. Fetch data at servlet and print all the data in console. B29. Write above Java program and print fetched data on another jsp using expression language. B30. Write a Java program to fetch all the data from database table and print on jsp page using JSTL SQL tag library.

Assignment Level Intermediate

I1. Write a Java program to validate jsp form server side.

    First Name: Only Alphabets

    Last Name: Only Alphabets

    Mobile: Only 10 Numbers

    Email: Standard Email Id

    Password: Minimum One 1 Upper, Minimum 1 Lower, Minimum 1 Digit, Minimum 1 Special Character from @, #, $, %, _, & I2. Write CRUD operation using jsp only.

Assignment Level Advance

A1. Write a jsp/servlet CRUD operation for following.

    Student:

        Int id;(primary key, Auto Increment)

        String fname, lname, email, mobile, gender, password;

1. Need to use bootstrap responsive template for the same.
2. Use client side validation to for all data input.
3. Use regular expression for email for standard email input.
4. Use regular expression for password like(Test@123)
5. Use server side validation(Filter) same as client side validation.
6. All the inserted data should be show in show.jsp with edit and delete functionality.
7. Store all the deleted record in table named deleted_data.

Module 5   Assignment Topic: Session Management

Assignment Level Basic

B1. How do your logout a session user in servlet?
B2. How to protect session cookies in Servlet?
B3. What is called a session?
B4. What are session tracking techniques.
B5. Why session tracking is needed?
B6. How to get the current HttpSession object?
B7. What is Session?
B8. What is MVC?
B9. What is Cookie?
B10. What is URL rewriting?
B11. How to get session id?

Assignment Level Advance

A1. Write a Java dynamic application "Message Passing System "using MVC and JDBC.

       User:
              Int uid;(primary key, auto_increment)
String fname, lname, email, mobile;   Message:
              Int uid;
              String from, to, msg;

1. Create one registration form to register user.
2. Do client and server side validation.
3. Use AJAX to register with unique email id.
4. After successful registration confirmation email should be sent to user's email id with one OTP.
5. Verify OTP and then and then allowed to login to the user.
6. After successful login user can edit their profile.
7. Also one user can send some msg to another user using their email id.
8. When another user logged in they are able to see msg sent by a particular user and also can reply.
9. Logout button is there to invalidate session.
10. Also take care when user logged out and press back button on browser then it should be in logged out mode.

Module 6   Assignment Topic: Hibernate

Assignment Level Basic

B1. What is HQL (Hibernate Query Language)?
B2. What are the most common methods of Hibernate configuration?
B3. In a Parent-child relationship, how will you only access the columns from parent?
B4. Difference between Hibernate createCriteria, createQuery, createSQLQuery.
B5. Different between session.get() and session.load() in Java.

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B6. What is ORM?

B7. What is hibernate?

B8. core interfaces of Hibernate.

B9. Is SessionFactory a thread-safe object?

B10. What role does the SessionFactory interface play in Hibernate?

B11. Is Hibernate Session a thread-safe object?

B12. Different types of association in hibernate.

B13. Benefits of hibernate over JDBC?

B14. How do we see hibernate generated SQL on console?

B15. W.A.J.P to insert below data from jsp to MySQL database using ". cfg.cml" and ". hbm.xml" file. Variable id must be primary key and auto increment

      Int id

      String first name, last name, email, mobile, password, gender

B16. W.A.J.P using above configuration with annotation and also show login jsp after data insert or registration.

Assignment Level Intermediate

I1. Write above Java program for after successful registration student can login and if login credentials are correct then show student's home page with his/her detail.

I2. Write above Java program for after successful login student can able to view and edit his/her profile with logout option. Also need to upload and show student's picture on his/her profile's home page.

Assignment Level Advance

"All The Questions Below Need to Perform Using Some Bootstrap Design Templates "

A1. Write a program to establish One to One Relationship between given 2 classes and perform a CRUD operation.

Student:

      Int studentId;

      String studentName;

      Address; Address:

      Int addressId;

      String street, city, state, zipcode;

A2. Write a program to establish One to Many and Many to One relationship between given 2 classes and perform a CRUD operation.

Cart:

int cartId;   double

total;   String name;

Set<Item> items;

Items:

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        Int id;
        String itemId;
        Double itemTotal;
        Int quantity;
        Cart cart;

A3. Write a program to establish Many to Many relationships between given 2 classes and perform a CRUD operation.

Reader:
        Int readerId;
        String email, firstName, lastName;
        Set<Subscription> subscriptions;

Subscription:
        Int subscriptionId;
        String subscriptionName;

Set<Reader> readers;

Module 7   Assignment Topic: Spring

Assignment Level Basic

B1. Explain Spring Framework.
B2. What are the advantages of using Spring Framework?
B3. What is the difference between singleton and prototype bean?
B4. What are the types of Dependency Injection Spring supports?
B5. What is Bean Factory in Spring?
B6. How do I decide between when to use prototype scope and singleton-scoped bean?
B7. Different types of IOC.
B8. Difference between BeanFactory and ApplicationContext in spring.
B9. What is Bean Wiring?
B10. Types of IoC containers.
B11. Explain different modes of bean autowiring in Spring Framework.
B12. What is Dependency Injection in Spring framework?
B13. Which DI should I prefer, Constructor-based or setter-based in spring?
B14. Difference between the setter and constructor injection in Spring.
B15. What is the default scope of Spring bean?
B16. How does Spring achieve loose coupling?
B17. Write a program to demonstrate the setter based dependency injection.
B18. Write a program to demonstrate the constructor based dependency injection.
B19. Write a program to demonstrate the object based dependency injection and also implement inner bean concept in your spring beans configuration file.
B20. Write a program to collect 5 student information using spring collection(List) in spring bean configuration file.
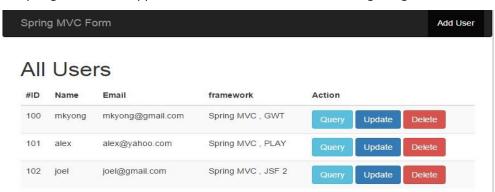
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Student:
    Int id;
    String fname, lname, email, mobile.

Assignment Level Intermediate

I1. Write a Spring ORM application to demonstrate following things.
1. Need to use bootstrap template.
2. There will be 2 modules. User and Admin.
3. User (id, firstname, lastname, email, mobile, password, gender, profile_pic) have to register to the site. (registration.jsp)
4. Then user have to login(login.jsp) and can able to edit profile like email, mobile or profile_pic.
5. Admin can login to the site and able see all the user registered with system and also able to delete profile of a user.

Assignment Level Advance

A1. Write a Spring MVC+ORM application to demonstrate the following things.

1. Add user with validation.
2. On clicking Query display single user data.
3. Update is for changes in user data.
4. Delete data.
5. Use bootstrap for UI part.