**Time allowed: 90 Minutes Max. Marks: 40**

**General Instructions:**

* **Follow the instructions given in each section.**
* **Make sure that you attempt the questions in order.**

**SECTION-A (10\*1 mark=10 marks)**

***(All questions are compulsory)***

1) What are the major components of the JDBC?

**a) DriverManager, Driver, Connection, Statement, and ResultSet**

b) DriverManager, Driver, Connection, and Statement

c) DriverManager, Statement, and ResultSet

d) DriverManager, Connection, Statement, and ResultSet

2) Select the packages in which JDBC classes are defined?

a) jdbc and javax.jdbc

b) rdb and javax.rdb

c) jdbc and java.jdbc.sql

**d) sql and javax.sql**

3) Which of these packages contain classes and interfaces used for input & output operations of a program?

a) java.util

b) java.lang

**c) java.io**

d) all of the mentioned

4) Which of these class is not a member class of java.io package?

**a) String**

b) StringReader

c) Writer

d) File

5) What are generic methods?

a) Generic methods are methods that take void parameters

b) Generic methods are the methods defined in a generic class

c) Generic methods are the methods that extend generic class methods

**d) Generic methods are methods that introduce their own type parameters**

6) Which of these type parameters is used for a generic class to return and accept a number?

a) K

**b) N**

c) T

d) V

7) Which of these is not a interface in the Collections Framework?

a) Set

b) List

**c) Group**

d) Collection

8)Which of these packages contain all the collection classes?

a) java.net

b) java.awt

c) java.lang

**d) java.util**

9) Which of these classes is not part of Java’s collection framework?

a) Maps

b) Stack

c) Array

**d) Queue**

10) Which collection allows indexed access to its elements, but its methods are not synchronized?

a) Vector

b) TreeMap

c) HashSet

**d) ArrayList**

**SECTION-B (5\*2 mark=10 marks)**

***(All questions are compulsory)***

11) What will be the output of the following Java program?

import java)util.\*;

class Array

{

public static void main(String args[])

{

int array[] = new int [5];

for (int i = 5; i > 0; i--)

array[5-i] = i;

Arrays.fill(array, 1, 4, 8);

for (int i = 0; i < 5 ; i++)

System.out.print(array[i]);

}

}

a) 12885

b) 12845

**c) 58881**

d) 54881

12) What will be the output of the following Java program?

import java)util.\*;

class Collection\_iterators

{

public static void main(String args[])

{

ListIterator a = list.listIterator();

if(a)previousIndex()! = -1)

while(a)hasNext())

System.out.print(a)next() + " ");

else

System.out.print("EMPTY");

}

}

a) 0

b) 1

c) -1

**d) EMPTY**

13) What will be the output of the following Java program?

import java.util.\*;

public class genericstack

{

Stack stk = new Stack ();

public void push(E obj)

{

stk.push(obj);

}

public E pop()

{

E obj = stk.pop();

return obj;

}

}

class Output

{

public static void main(String args[])

{

genericstack gs<String> = new genericstack<String> ();

gs.push("Hello");

System.out.println(gs.pop());

}

}

a) H

**b) Hello**

c) Runtime Error

d) Compilation Error

14) What will be the output of the following Java code?

import java.io.\*;

class files

{

public static void main(String args[])

{

File obj = new File("/java/system");

System.out.print(obj.getName());

}

}

a) java

**b) system**

c) java/system

d) /java/system

15) Which statement is correct if we want to connect the Oracle database using the thin driver provided by Oracle Corp.?

**a) getConnection("jdbc::thin@localhost:1521:oracle", "scott", "tiger");**

b) getConnection("jdbc:thin@localhost:1521:oracle", "scott", "tiger");

c) getConnection("jdbc::thin@localhost:1522:oracle", "scott", "tiger");

d) getConnection("jdbc::oracle@localhost:1521:thin", "scott", "tiger");

**SECTION-C(Coding Question) (2x5 marks=5 marks)**

Q16) You are given an integer n, denoting the number of people who needs to be seated, and a list of m integers seats, where 0 represents a vacant seat and 1 represents an already occupied seat.

Find whether all n people can find a seat, provided that no two people can sit next to each other.

**Input**:

n = 2

m = 7

seats[] = {0, 0, 1, 0, 0, 0, 1}

**Output**:

Yes

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Test Case 1** | **Test Case 2** | **Test Case 3** |
| **Input** | n = 2  m = 7  seats[] = {1, 0, 1, 0, 1, 0, 1} | n = 1  m = 3  seats[] = {0, 0, 1} | n = 1  m = 3  seats[] = {0, 1, 0} |
| **Output** | No | Yes | No |

Solution :

**import java.io.\*;**

**import java.util.\*;**

**public class MyClass {**

**public static void main(String[] args) throws IOException {**

**int n =2;**

**int m = 7;**

**int [] seats ={0, 0, 1, 0, 0, 0, 1};**

**Solution obj = new Solution();**

**boolean res = obj.is\_possible\_to\_get\_seats(n, m, seats);**

**String \_result\_val = (res) ? "Yes" : "No";**

**System.out.println(\_result\_val);**

**}**

**}**

**class Solution {**

**public static boolean is\_possible\_to\_get\_seats(int n, int m, int[] seats) {**

**if(n>m)return false;**

**int count=0;**

**for(int i=0;i<m;i++){**

**int zeros=0;**

**while(i<m && seats[i]==0){**

**if((i==1 && seats[i-1]==0 && seats[i]==0)|| (i==m-2 && seats[i]==seats[i+1] && seats[i]==0))zeros+=2;**

**else{**

**zeros++;**

**}**

**i++;**

**}**

**if(n==1 && m==1 && zeros==1)return true;**

**if(zeros>0){**

**if(zeros%2==0){**

**count+=(zeros/2)-1;**

**}else{**

**count+=zeros/2;**

**}**

**}**

**}**

**return n<=count;**

**}**

**}**

Q17) Write a generic method in JAVA for printing elements of array.

**Input:**

Array={1,2,3,45,65}

**Output:** 1 2 3 45 65

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Test Case 1** | **Test Case 2** | **Test Case 3** |
| **Input** | {‘a’,’b’,’c’} | {2.4,5.7,8.7,4.2} | {“abc”,”efg”,”hij”} |
| **Output** | a b c | 2.4 5.7 8.7 4.2 | abc efg hij |

Solution :

**public class JavaProgram4{**

**public static < T > void printGenericArray(T[] items) {**

**for ( T item : items){**

**System.out.print(item + " ");**

**}**

**System.out.println();**

**}**

**public static void main( String args[] )**

**{**

**Integer[] int\_Array = { 1, 3, 5, 7, 9, 11 };**

**Character[] char\_Array = { 'J', 'A', 'V', 'A', 'T','U','T','O','R','I','A', 'L','S' };**

**System.out.println( "Integer Array contents:" );**

**printGenericArray(int\_Array );**

**System.out.println( "Character Array contents:" );**

**printGenericArray(char\_Array );**

**}**

**}**

**SECTION-D (Coding Question)(1x10 mark=10 mark)**

Q18) You are given an array of integers of size n where n being even.. You have to calculate the number of dominate pairs (i,j) . Where a pair is called dominant if ( 0<=i<n/2, n/2<=j<n, arr[i]>=5\*arr[j] ) these relation are fulfilled. For example in arr=[10,3,3,1] index i=0, j=3 form a dominating pair

Note : 0 based indexing is used and n is even

**Input**:

n=4

arr={10,2,2,1}

**Output**:

2

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Test Case 1** | **Test Case 2** | **Test Case 3** |
| **Input** | n=4  arr={10,3,3,1} | n=6  arr={10,8,2,1,1,2} | n=4  arr={10,12,6,1} |
| **Output** | 1 | 5 | 2 |

Solution :

**import java.io.\*;**

**import java.util.\*;**

**class IntArray**

**{**

**public static int[] input(BufferedReader br, int n) throws IOException**

**{**

**String[] s = br.readLine().trim().split(" ");**

**int[] a = new int[n];**

**for(int i = 0; i < n; i++)**

**a[i] = Integer.parseInt(s[i]);**

**return a;**

**}**

**public static void print(int[] a)**

**{**

**for(int e : a)**

**System.out.print(e + " ");**

**System.out.println();**

**}**

**public static void print(ArrayList<Integer> a)**

**{**

**for(int e : a)**

**System.out.print(e + " ");**

**System.out.println();**

**}**

**}**

**public class MyClass {**

**public static void main(String[] args) {**

**int n=4;**

**int[] arr = {10,3,3,1};**

**Solution obj = new Solution();**

**int res = obj.dominantPairs(n, arr);**

**System.out.println(res);**

**}**

**}**

**class Solution {**

**public static int dominantPairs(int n, int[] arr) {**

**Arrays.sort(arr,n/2,n);**

**int count = 0;**

**for(int i=n/2;i<n;i++){**

**arr[i] \*= 5;**

**}**

**for(int i=0;i<n/2;i++){**

**int l = n/2;**

**int h = n-1;**

**while(l<=h){**

**int mid = (l+h)/2;**

**if(arr[i] >= arr[mid]){**

**l = mid + 1;**

**}**

**else{**

**h = mid - 1;**

**}**

**}**

**count += l - n/2;**

**}**

**return count;**

**}**

**}**