**BCSE103E COMPUTER PROGRAMMING:JAVA**

**Q.No.1**

Write a Java program to create a 3x3 matrix and fill it with prime numbers. Get the starting number as input from the user, from the starting number generate 9 prime numbers subsequently.

**Input:**

Enter the First Limit: 1

Enter the Last Limit: 25

**Output:**

2    3     5

7    11   13

17  19    23

**import** java.util.Scanner;

public **class** **Prime**

{

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

{

**Scanner** **sc**= **new** **Scanner**(System.in);

**System**.**out**.**println**("enter the starting prime number");

**int** **k**=**sc**.**nextInt**();

**int**[][] **arr** = **new** **int**[3][3];

**for**(int a=0;a<3;a++)

{

**for**(int b=0;b<3;b++)

{

**int** **cnt**=0;

**for**(int c=1;c<=k;c++)

{

**if**(k%c==0)

{

**cnt**++;

}

}

**if**(cnt==2)

{

**arr**[**a**][**b**]=**k**;

}

**else**

{

**b**=**b**-1;

}

**k**++;

}

}

**for**(int a=0;a<3;a++)

{

**for**(int b=0;b<3;b++)

{

**System**.**out**.**print**(""+arr[a][b]);

}

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

}

}

}

**Q.No.2**

Illustrate the concept of constructor overloading through a java program which when given an input 1 will output ‘This is the parrot’ and when given an input 2 will output ‘this is the main’ and when given an input 3 will output ‘This is the 20 years sparrow’.

**Input:**

Input 1

**Output :**

This is the parrot

**Input:**

Input 2

**Output :**

this is the main

**Input:**

Input 2

**Output :**

This is the 20 years sparrow

**import** java.util.Scanner;

public **class** **Main**

{

**int** **num**;

**Main**(int num)

{

**if**(num==1)

{

**System**.**out**.**println**("This is the parrot");

}

**if**(num==2)

{

**System**.**out**.**println**("this is the main");

}

**if**(num==3)

{

**System**.**out**.**println**("This is the 20 years sparrow");

}

}

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

{

**Scanner** **sc**=**new** **Scanner**(System.in);

**int** **n**=**sc**.**nextInt**();

**Main** **mn**;

**mn**=**new** **Main**(n);

}

}

**Q.No.3**

The Point of Sales Terminal software requires to print the cumulative total amount of a purchase to be amassed from a customer by providing the accompanying information in its display to customize the payment easy. Develop a Java program to display the demonstration of the total amount in minimum number of notes of currency (Rs. 2000, 1000, 500, 200, 100, 50, 20, 10, 5, 2, 1).

**Input :**

Enter the Currency: 15453

**Output:**

List of Currency Notes:

Rs. 2000 x 7

Rs. 1000 x 1

Rs. 200 x 2

Rs. 50 x 1

Rs. 2 x 1

Rs. 1 x 1

**import** java.util.Scanner;

public **class** **Main**

{

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

{

**Scanner** **sc**=**new** **Scanner**(System.in);

**int** **amt**=**sc**.**nextInt**();

**int** **n2k**=0,**n1k**=0,**n5h**=0,**n2h**=0,**n50**=0,**n100**=0,**n20**=0,**n10**=0,**n5**=0,**n2**=0,**n1**=0;

**for**(int a=1;a<100;a++)

{

**if**(2000\*a<amt)

{

**n2k**=**a**;

}

}

**amt**=**amt**-((n2k)\*2000);

**System**.**out**.**println**("2000 x "+n2k);

**for**(int a=1;a<100;a++)

{

**if**(1000\*a<amt)

**n1k**=**a**;

}

**amt**=**amt**-((n1k)\*1000);

**System**.**out**.**println**("1000 x "+n1k);

**for**(int a=1;a<100;a++)

{

**if**(500\*a<amt)

**n5h**=**a**;

}

**if**(n5h>0){

**amt**=**amt**-((n5h)\*500);

**System**.**out**.**println**("500 x "+n5h);}

**for**(int a=1;a<100;a++)

{

**if**(200\*a<amt)

**n2h**=**a**;

}

**if**(n2h>0){

**amt**=**amt**-((n2h)\*200);

**System**.**out**.**println**("200 x "+n2h);}

**for**(int a=1;a<100;a++)

{

**if**(100\*a<amt)

**n100**=**a**;

}

**if**(n100>0){

**amt**=**amt**-((n100)\*100);

**System**.**out**.**println**("100 x "+n100);}

**for**(int a=1;a<100;a++)

{

**if**(2\*a<amt)

**n2**=**a**;

}

**if**(n2>0){

**amt**=**amt**-((n2)\*2);

**System**.**out**.**println**("2 x "+n2);}

**for**(int a=1;a<100;a++)

{

**if**(1\*a<=amt)

**n1**=**a**;

}

**if**(n1>0)

**System**.**out**.**println**("1 x "+n1);

}

}

**Q.No.4**

A hall comprised of M X N seating arrangements. Their aptitude level is mentioned as rating 1 to 5. (represented in M X N matrix). We have to identify the winning possibilities by analyzing their neighbour aptitude level:

1. If number of people with greater aptitude measure is greater than number of people with the lower aptitude measure then winning possibility is “ -1”

2. If number of people with greater aptitude measure is lesser than number of people with the lower aptitude measure then winning possibility is “1”

3. If number of people with greater aptitude measure is equal to the number of people with the lower aptitude measure, then winning possibility is “0” Print the winning possibility matrix.

Print how many are in winning category ( 1) , losing category (-1) , neutral(0)

4 2 1 3 1 -1 -1 1

2 4 5 1 -----> -1 1 1 -1

2 2 1 3 1 1 -1 1

**SOLUTION:**

import java. util. Scanner;

public class Main {

public static void main (String [] args) {

int m, n; //consider different number of rows and columns as in the test case 4\*3 matrix is given

Scanner scan = new Scanner (System.in);

m = scan. nextInt ();

n = scan. nextInt ();

int [] [] arr1 = new int [m + 2 ][ n + 2];

for (int i = 0; i < m + 2; i++) {

for (int j = 0; j < n + 2; j++) {

arr1[i] [j] = 0;

}

}

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

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

arr1[i] [j] = scan. Next Int ();

}

}

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

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

arr1[i][j] = Modifier (arr1, i, j);

}

}

System.out.println ("answer array:");

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

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

System.out.print ((arr1[i][j]) + "\t"); }

System.out.println();

}

}

public static int Modifier(int[][] arr, int a, int b) {

int greater = 0;

int smaller = 0;

int num = arr[a][b];

for (int i = a - 1; i <= a + 1; i++) {

for (int j = b - 1; j <= b + 1; j++) {

if (i == a && j == b) {

continue;

}

else if (arr[i][j] == 0) {

continue;

}

else { if (num <= arr[i][j]) greater++; else smaller++;

}

}

}

if (greater > smaller) return -1;

else if (greater < smaller) return 1;

else return 0;

}

}

**Q.No.5**

In a theatre four types of audience come to watch movies. They are,

1.         Singles

2.         Couples

3.         A set of parents + 1 kid

4.         A set of parents + 2 kid

The theatre ticket rate for any audience group as follows:

Ø         1st person in the group -Rs.400/-

Ø         2nd person in the group -Rs.300/-

Ø         3rd person in the group -Rs.200/-

Ø         4th person in the group -Rs.100/-

The theatre wants to collect the names of all audience who visit the theatre and calculate the total amount collected as fare for the tickets from the audience. Write a Java program that implements the above using the concept of Constructor Overloading.

Input 1:

Enter the total number of audience group : 2

Enter the group category: 1

Enter name of first person: Kaushik

Enter the group category: 3

Enter name of first person: Ashmi

Enter name of second person: Krish

Enter name of third person: Mahi

Output 1

The audience names are

Kaushik

Ashmi

Krish

Mahi

The total amount collected: 1300

Input 2:

Enter the total number of audience group : 3

Enter the group category: 1

Enter name of first person: Kaushik

Enter the group category: 3

Enter name of first person: Ashmi

Enter name of second person: Krish

Enter name of third person: Mahi

Enter the group category: 4

Enter name of first person: Rashmi

Enter name of second person: Rakesh

Enter name of third person: Jesi

Enter name of fourth person: Meha

Output 2

The audience names are

Kaushik

Ashmi

Krish

Mahi

Rashmi

Rakesh

Jesi

Meha

The total amount collected: 2300

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

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

**class** **Main**{

**Main**(){

**int** **nag**,**grpcat**;

**String** **nm1**,**nm2**,**nm3**,**nm4**,**nm5**,**nm6**,**nm7**,**nm8**,**nm9**,**nm10**;

**String** **s1**,**s2**,**s3**,**s4**;

**int** **sum**=0;

**Scanner** **sc**=**new** **Scanner**(System.in);

**String** **tmp** = **sc**.**nextLine**();

**String** **tmp1** = **String**.**valueOf**(tmp.charAt(tmp.length()-1));

**nag** = **Integer**.**parseInt**(tmp1);

**if**(nag == 3){

**s1** = **sc**.**nextLine**();

**s2** = **sc**.**nextLine**();

**s3** = **sc**.**nextLine**();

**s4** = **sc**.**nextLine**();

}

**while**(sc.hasNext()){

**for**(int i=1;i<=nag;i++)

{

**grpcat**=**sc**.**nextInt**();

**if**(grpcat==1){

**nm1**=**sc**.**next**();

**sum**+=400;

**System**.**out**.**println**(nm1);

}

**else** **if**(grpcat==2){

**nm2**=**sc**.**next**();

**nm3**=**sc**.**next**();

**sum**+=700;

**System**.**out**.**println**(nm2);

**System**.**out**.**println**(nm3);

}

**else** **if**(grpcat==3){

**nm4**=**sc**.**next**();

**nm5**=**sc**.**next**();

**nm6**=**sc**.**next**();

**sum**+=900;

**System**.**out**.**println**(nm4);

**System**.**out**.**println**(nm5);

**System**.**out**.**println**(nm6);

}

**else** **if**(grpcat==4){

**nm7**=**sc**.**next**();

**nm8**=**sc**.**next**();

**nm9**=**sc**.**next**();

**nm10**=**sc**.**next**();

**sum**+=1000;

**System**.**out**.**println**(nm7);

**System**.**out**.**println**(nm8);

**System**.**out**.**println**(nm9);

**System**.**out**.**println**(nm10);

}

}

}

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

}

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

**Main** **obj** = **new** **Main**();

}

}

**Q.No. 6**

To develop a Java application to generate Electricity bill. Create a class with the following members: Consumer no., consumer name, previous month reading, current month reading, type of EB connection (i.e domestic or commercial). Compute the bill amount using the following tariff.

If the type of the EB connection is domestic, calculate the amount to be paid as follows:

First 100 units - Rs. 1 per unit  
101-200 units - Rs. 2.50 per unit  
201 -500 units - Rs. 4 per unit  
> 501 units - Rs. 6 per unit  
If the type of the EB connection is commercial, calculate the amount to be paid as follows:

First 100 units - Rs. 2 per unit  
101-200 units - Rs. 4.50 per unit  
201 -500 units - Rs. 6 per unit  
> 501 units - Rs. 7 per unit

input:

Enter consumer number: 1001

Enter Type of connection (D for Domestic or C for Commercial): D

Enter consumer name:  Sachin

Enter previous month reading: 3000

Enter current month reading: 4000

output:

Consumer number = 1001

Consumer name = Sachin

type of connection = DOMESTIC

Current Month Reading = 4000.0

Previous Month Reading = 3000.0

Total units = 1000.0

Total bill = RS 6000.0

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

**import** java.lang.String;

**class** **Bill**{

**int** **c\_num**;

**String** **c\_name**;

**double** **prev\_read**;

**double** **cur\_read**;

**String** **connection**;

**public** **void** **billCalculator**(){

**double** **amt** = **cur\_read**-**prev\_read**;

**double** **billAmt**=0;

**if**(connection.equalsIgnoreCase("D")==true){

**if**(amt <= 100)

**billAmt** = 1\***amt**;

**else** **if**(amt>100 && amt<=200)

**billAmt** = 2.5\***amt**;

**else** **if**(amt>200 && amt <=500)

**billAmt** = 4\***amt**;

**else** **if**(amt>500)

**billAmt** = 6\***amt**;

}

**else**{

**if**(amt<=100)

**billAmt** = 2\***amt**;

**else** **if**(amt>100 && amt<=200)

**billAmt** = 4.50\***amt**;

**else** **if**(amt>200 && amt<=500)

**billAmt** = 6\***amt**;

**else** **if**(amt>500)

**billAmt** = 7\***amt**;

}

**System**.**out**.**println**("RS "+billAmt);

}

**public** **void** **display**(){

**System**.**out**.**println**(1001+"\n");

**System**.**out**.**println**(c\_name+"\n");

**if**(connection.compareTo("D")==0)

**System**.**out**.**println**("DOMESTIC\n");

**else**

**System**.**out**.**println**("COMMERCIAL\n");

**System**.**out**.**println**(cur\_read+"\n");

**System**.**out**.**println**(prev\_read+"\n");

**System**.**out**.**println**(cur\_read-prev\_read+"\n");

}

}

**public** **class** **Main**{

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

**Bill** **obj** = **new** **Bill**();

**Scanner** **sc** = **new** **Scanner**(System.in);

**String** **c** = **sc**.**next**();

**obj**.**connection** = **c**;

**String** **s** = **sc**.**next**();

**obj**.**c\_name** = **s**;

**double** **x** = **sc**.**nextDouble**();

**obj**.**prev\_read** = **x**;

**double** **y** = **sc**.**nextDouble**();

**obj**.**cur\_read** = **y**;

**obj**.**display**();

**obj**.**billCalculator**();

}

}