IARE

INSTITUTE OF AERONAUTICAL ENGINEERING

(An Autonomous Institute affiliated to JNTUH, Hyderabad)

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LABORATORY WORK BOOK

Name of the Student : MD. Mateen

Class : CSE - C Semester : I

Roll Number									
2	3	9	5	1	A	0	5	5	B

Course Code : ACS D03 Course Name : OOPs JAVA LAB

Name of the Course Faculty : Dr. YR. DCNI Vedi Faculty ID : IARE - 10655

Exercise Number : 11 Week Number : 11 Date : 19/9/2024

S. No.	Exercise Number	EXERCISE NAME	MARKS AWARDED						
			Aim/ Preparation	Algorithm / Procedure / Performance in the Lab		Source Code / Calculations and Graphs	Program Execution / Results and Error Analysis	Viva - Voce	Total
			4	4		4	4	4	20
1	11.1	factorialInt	4	2	2	4	4	4	20
2	11.2	factorialInt.Text							
3	11.3	Trigonometic series							
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10									
11									
12									

Signature of the Student

Signature of the Faculty

START WRITING FROM HERE

(Factorial Int) 11.9

write a program called FactorialInt to list all the factorials that can expressed as int(32 bit)

Code:-

```
Public class FactorialInt {
    public static void main (String args[]){
        int n=1;
        for(i= 1; i<=n; i++){
          int f=1;
        for (int j=1; j<=n; j++){
          if ((Integer.MAX_VALUE/f)<j+1)
          {
          System.out.println (" The factorial of "+n+ " "+"is
              out of range ");
          System.exit(0);
          }
          f* =j;
          }
          System.out.println(" The factorial of "+n+ " is "+f);
             n++;
        }
```

Result:- The factorial 1 is 1
The factorial 2 is 2
The factorial 3 is 6

The factorial 13 is out of range

ROLL NUMBER :

11.10 FactorialInt.txt

```
public class FactorialInt {
public static void main(String[] args) {
int n=1;
for(;;){
 int f=1;
for (int j=1; j<=n; j++){
 if ((Integer.MAX_VALUE/f)<j+1) {
  System.out.println("The factorial of "+n+" "+f+" is out of range");
  System.exit(0);
 }
f*=j;
}
System.out.println("The factorial of "+n+" is "+f);
 n++;
}
}
}
```

Result :

The factorial of 7 is 1

ROLL NUMBER :

11.10 Trigonometic Series

```
Public class TrigonometricSeries{
Public static void main(String[] args){
double[] nums = {0, 0, Math.PI/6, Math.PI/4, MathPI/3, Math.PI/2};
for(double n : nums){
System.out.println("double x: " +n);
System.out.println("my sin: " + sin(n,10));
System.out.println("Math.sin: " + Math.sin(n));
System.out.println("my cos: " + cos(n, 10));
System.out.println("Math.cos: " + Math.cos(n));
System.out.println();
}
}
public static double sin(double x, int numTerms){
double sin = x;
int denom = 3;
for(int i = 2; i<numTerms; i++){
if(i%2==0) sin -= avoidOverflow(x,denom);
else sin+ = avoidOverflow(x,denom);
denom+ = 2;
}
```

```
return sin;
}
Public static double cos(double x, int numTerms){
double cos = 1;
int denom = 2;
for (int i = 2; i <= numTerms; i++){
if (i%2 == 0) cos -= avoidOverflow(x, denom);
else cost = avoidOver-flow (x, denom);
denom += 2;
}
return += 2;
}
private static double avoidOverflow(double x, int num){
double ans = 1;
for (int n = num; n >= 1; n--){
ans *= (double) x / (double) n;
}
return ans;
}
}
```

Result :

double x : 0.0

my sin : 0.0

Math.Sin : 0.0

my cos : 1.0

Math.cos : 1.0

double x : 4.0

my sin : -0.7568025787396139

Math.sin : -0.7568024953079282

my cos : -0.6536440575891616

Math.cos : -0.6536436208636119

double x : 0.5235987755982988

my sin : 0.4999999999999994

Math.sin : 0.4999999999999994

my cos : 0.8660254037844386

Math.cos : 0.8660254037844387

double x : 0.7853981633974483

my sin : 0.7071067811865475

Math.Sin : 0.7071067811865475

my cos : 0.7071067811865475

Math.cos : 0.7071067811865476

ROLL NUMBER :

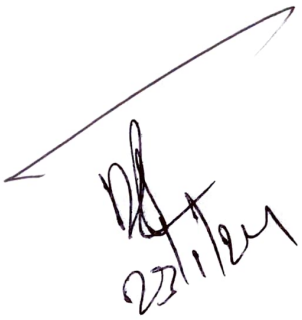
double x: 1.5707963267948966

my sin : 1.0

Math.sin : 1.0

my cos : -3.37366560890028 1E-15

Math.cos : 6.123233995736766E-17.



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