Assignment 2

1. Create a class named 'student' with String variable 'name' and integer variable 'roll_no'. Assign the value of roll_no as '2' and the name as 'John' by creating an object of the class student.

```
public class Student
{
String name;
int Roll_no;

student()
{  Name = John;
   Roll_no = 2;
}
void display()
{  System.out.println("Name =" + Name);
   System.out.println("Roll_no=" + Roll_no);
};
public static void main(String args[])
{
Student S = new student();
S.display();
}
}
```

```
Name = John
Roll_no = 2
```

2 Assign and print the Roll.no, phone-no and address of two student having comes "Sam" and 'John' respectivly by creating two object of class student.

```
public class student {
int phone_no, int Roll_no;
string address;

void getdata (int x, int y, string z)
{
 phone_no = x;
 Roll_no  = y;
 address  = z;
};
void putdata()
{
 System.out.println ("phone_no = " + phone_no
 \n " Roll_no = " + Roll_no \n "address ="
 + address );
};
public static void main (String args[])
{
 student s = new student (0123456789, 2, 'Kalyr');
 student s1 = void  s.getdata();
                    s.putdata();
 student s1 = new student (0987654321, 3, 'Nilangal');
  s1.getdata();
  s1.putdata();
 }
```

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

```
import java.util.*;
class Triangle
{
int a, b, c;
public double getArea()
{
double s= (a+b+c) / 2.0;
return = Math.pow(s*(s-a)*(s-b)*(s-
                  5);
}
public double getparameter()
{
  return (a+b+c)/2.0;
}
}
class Ans{
public static void main(String args[])
{
Triangle t1 = new triangle();
  t1.a = 3;
  t1.b = 4;
  t1.c = 5;
System.out.println("Area of triangle is :
  + t1.getArea();
```

```
    System.out.println("parimeter of triangle
    is :" t1.getparameter());
    }}
```

4) write a program to print area and perimeter of triangle having size of 3, 4 and 5 units by creating a class name 'Triangle' with constructor having three sizes as it's parameter

```
import java.util.*;
public class triangle
{
void area(int a, int b, in c)
{
float S = ((a+b+c)/2);
float A = sqrt(S*(S-a)*(S-b)*(S-c));

System.out.println("Area of triangle is"+
A "sq.units");
}
void perimeter (int a, int b, int c)
{
System.out.println(" parimeter of a triangle
is" +a+b+c "units\n");
}
public static void main (String args[])
{
 int side1=3, side2=4, side3=5;
Triangle t1 = new triangle();
T1.area(side1, side2, side3);
T1. parimeter (side1, side2, side3); }}
```

5] write a program to print area of rectangle having sides (4,5) & (5,8) respectively by creating a class name 'Rectangle' with method name 'Area' with return the area and length and breadth passed as parameter to its constructor.

```
class Rectangle
{
int length, breadth;
public rectangle (int a, int b){
length = a;
breadth = b;
}
public int getArea()
{
return (length * breadth);
}
public int getparameter()
{
return 2*(length + breadth);
}
}
class Test
{
public static void main (String args[])
{
rectangle a = new rectangle (4,5);
rectangle b = new rectangle (5,8);
```

```
System.out.println("Area " + a.getArea() +
    "perimeter is " + a.getparameter())

System.out.println("Area " + a.getarea() +
    perimeter is " + a.getperimeter());
}
}
```

6] Write a program to print area of rectangle by creating a class name 'Area' having two methods. First method name as 'setDim' takes length and breadth of rectangle as parameter and the second method named as 'getArea' return the area of the rectangle are entered through Keyboard:

```
import java.util.scanner;
class Area
{
int length, breadth;
void setdim(int l, int b)
{
length = l;
breadth = b;
}
int getarea(){
return (length * breadth); }}
class A
{
```

```
public void main (string args[])
{
Area a= new area()
Scanner s= new Scanner (System.in)
System.out.println ("enter length");
int l = s.nextInt();
System.out.println ("enter breadth");
int b= s.nextInt();
System.out.println("area of rectangle=" a
        getarea());
}}
```

8) print the avrage of three numbers entered by user by creating a classnamed "Average" having a method to calculate and print.

```
import java.util.Scanner;
public class Average
{
public static void main (string args[])
void getdata () {
Scanner in = new scanner (System.in);
System.out.println("Input the first number");
double x = in.nextdouble();
System.out.println("Input the IInd number");
double y = in.nextdouble();
System.out.println("Input the 3rd number");
double z = in.nextdouble()
System.out.println("Average value"
        + average (x,y,z) + "\n");
```

```
void calculate ()
{
 return (x+y+z) / 3;
System.out.println (" average ="
}
};
public static void main (String args [])
{
 Average A = new Average ();
 A.getdata ();
 A.Calculate ();
}
}
```

8) Write a program to print the area of rectangle by creating a class named 'Area' taking the value of it's length and breadth as parameters of it's constructor and having a method named 'return Area' which returns the area of rectangle. length and breadth of rectangle are entered through the keyboard.

```
import java.util.Scanner.*;
class Area
{
 int length;
 int breadth;
 public Area (int l, int b)
 {
  length = l;
  breadth = b; }
```

```
public int return Area ()
{
return ( length * breadth );
}
public static void main ( String args [])
{
Scanner s = new Scanner ( System.in);
int l, b;
System. out. println ("Enter length");
l = s. nextInt;
System. out. println (" Enter breadth ");
  b = s. nextInt ();
Area  a = new  Area (l, b)
System.out.println (" Area of reclangle :" + a.
      getreturnArea());
}
}
```

o/p :

```
Enter length : 4
Enter breadth : 5
Area of rectangle 20
```

g) print the sum, diffrense and product of two complex number by creating a class named 'Complex' with seprate methods for each operation whose real and imaginary parts are entered by user.

```
class Complex
{
 int real;
 int imag;
 public complex (int r, int i) {
 real = r;
 imag = i;
 }
 public static complex Add (complex a, Complex b)
 return new Complex ((a.real + b.real).
      (a.imag + b.imag));
 }

 public static complex diff (Complex a, Complex b)
 {
  return new Complex ((a.real - b.real). (a.imag -
    b.imag));
 }
  public static complex produd (complex a,
          complex b) {
 return new complex (((a.real * b.real) -
 (a.imag * b.imag)). ((a.real * b.imag) +
   (a.imag * b.real)));
 }
  public void printcomplex () {
  IF (real == 0 && imag != 0) {
  System.out.println (imag + "i");
 }
```

```
else
{
System.out.println(real + " + " imag + " i");
}
}
}

Class Comp {
public static void main (String args[]) {
Complex c = new Complex(4,5);
Complex d = new complex(9,4);
Complex e = complex.add(c,d);
Complex f = Complex.diff(c,d);
Complex g = Complex.product(c,d)
e.printComplex();
f.printComplex();
g.printComplex();
}
}
```

10. write a program that would print the information (name, year of joining, salary, address) of three employee by creating a class named 'employee'. The output follow.

Name	Year of joining	Address
Rebert	1994	64C-wallsstreat
Sam	2000	68D-wallsstreat
John	1999	26B-Wallsstreat

```
class Employee {
private string name,address;
private int year, Salary;
public employes ( String n, int y, int Sal,
    String add ) {
name = n;    year = y;
Salary = Sal ;
address = add;
}
public String getNam() {
 return name;
}
 public int getYear() {
 return year.
}
public int getSalary(){
return Salary.
}
 public String getAddress() {
 return address;

 }
 }
 class E {
 public static void main ( String args [])
{
Employee e1 = new Employee ("Robert", 1994,
              500000, "64C- WallsStreet");
```

```
Employee e2 = new employee ("Sam", 2000,
                >40000, "68d-wallsstreet");
employee e3 = new employee ("John", 1999, 50000
                "26B- wallsstreet");
System.out.println ("Name\t Year of joining
                Salary \t address");

System.out.println (e1.getname()+"\t" e1.
getyear()+"\t\t\t  " + e1.getSalary() +
  "\t" + e1.getaddress());

System.out.println("e2.getname() +"\t" e2.
getyear() + "\t\t\t" + e2.getSalary ()
"\t" + e2.getaddress());

System.out.println (e3.getname() +"\t"
e2.getyear() + "\t\t\t" + e3.getsalary()
"\t" e3.getaddress ());
}
}
```

Add two distances in inch-feet by creating a class named "AddDistance".

```
import java.util.*;
class AddDistance
{
  private int feet;
  private int inches;
```

```
public void getDistance()
{
 Scanner sc = new Scanner(System.in);
 System.out.printf(" Enter feet ");
 feet = sc.nextInt();
 System.out.println(" Enter inches :");
 inches = sc.nextInt();
 }
 public void showDistance()
{
 System.out.println(" Feet :" + Feet + "\t Inches"
        + Inches);
}
public void add distance()
{
  inches = D1.inches + D2.inches;
  feet = D1.feet + D2.feet + (inches/12);
  inches = inches % 12;
 }
}
public class AddTwoDistance
{
 public static void main (String args[])
 {
  try
  {
     Distance D1 = new Distance();
     Distance D2 = new Distance();
     Distance D3 = new Distance();
```

```
System.out.println("Enter first distance");
D1.getDistance();

System.out.println("Enter second distance");
D2.getDistance();

D3.addDistance(D1, D2);
System.out.println("Total distance is ");
 D3.showDistance();
 }
 Catch (Exception e)
{
  System.out.println("Exception occurred:"
          + e.toString());
```

2 write a program by creating an employee class having the following method and print the final salary.

1. 'getInfo()' which takes the salary, number of hours of work per day of employee as parameter.
2. 'AddSal()' which adds $10 to salary of the employee if it is less than $500
3. 'AddWork()' which adds $5 to salary of employee if the number of houre of work per day is more than 6 ~~hor~~ hours

```
import java.util.*;
class Employee{
private String name;
private float salary, hours;

public employee detail(){
name = " ";
Salary = 0;
hours = 0;
}
public void getInfo (String n, float sal,
  float hr){
name = n;
Salary = sal;
hours = hr;
}
public float AddSal(){
if (Salary < 500){
Salary = salary + 10;
}
return salary;
}
public float AddWork(){
if (hours > 6){
Salary = salary + 5;
}
return salary;
}
}
```

```
class TestEmployee {
Float Salary;
public TestEmployee (float Sal) {
Salary = sal;
}
public Void printsal () {
System. out. println (" salary " + salary)
}
}
class Emp
{
public static void main (String args[])
{
Employeedetail emp = new Employeedetail()
Scanner sc = new Scanner (System
System. out. println (" Enter name");
String name = sc. nextline();
System. out. println (" Enter Salary");
sc. nextline()
System. out. println (" Enter salary")
float salary = sc. nextFloat();
System. out. println (" Enter no. of hours
float hours = sc. nextFloat();
emp. getInfo (name, salary, hours);
Salary = emp. AddSal();
emp. getInfo (name, salary, hours);
Salary = emp. addwork();
Test employee Test = new testEmployee (Sal
test. printSal();
}
```

3) Create a class called 'Matrix' containing constructor that initialize the number of rows and number of column of a new Matrix object. The Matrix class has the following information
1. number of rows of Matrix
2. number of columns of Matrix
3. element of Matrix in the form of 2D array

```
class Matrix
{
private double [][] Mat;
 int row, column;
 Matrix()
 {
 row=0;
 column=0;
 }
int row, column;
 Matrix()
 {
 row=0
 column=0;
 }
 Matrix (int r, int c)
 {
 row=r;
 column=c;
 mat= new
 double [row][column];
 {
```

```
public Void get_input()
{
 Scanner s = new Scanner (System.in);
 int i=0 ; j=0;
System.out.println("Enter the Matrix elements(row
for (i=0; i<row; i++) {
for (j=0; j<column; j++) {
Mat[i][j]= s.nexDouble(); } }}
public void print_Matrix() {
int i=0,  j=0;
System. out. println ("the Matrix is >>");
for (i=0; i<row; i++) {
System.out.println(" " +mat[i][j]);
} } } }
class Test
{

private static matrix m1, m2, m3 ;
public static void main (String args[])
{
 int i=0; j=0; r=0, c=0;
Scanner  s = new scanner (System.in);
System.out.println (" Enter no. of rows");
r = s. nextInt ();
System.out.println ("Enter no. of column
c = s. nextInt ();
System.out.println (" Enter first matrix
m1. new Matrix (r, c);
m1. getinput ();
m1. print Matrix();
}
}
```

14. The Matrix class has Method for each of the following

1. get the number of rows
2. get the number of ~~rows~~ columns
3. set the element of the matrix at given position (i,j)
4. adding Two matrices. If the matrices are not adable, "Matrices cannot be added" will be displayed.
5. Multiply two Matrix

```
class Matrix
 int row;
 int column;
 int [][] a;
 public Matrix (int r, int c)
 {
 row = r;
 column = c;
 a = new int [row][column];
 }
 public int getRows() {
 return row;
 }
  public int getcolumn() {
  return column;
 }
 public int getElement [int r, int c)
  {
   return a[r][c]; }
```

```
Matrix m1 = new Matrix (x.row, y.colu
for (int j=0; j<x.row; j++)
{
int for (int i=0; i<y.column; i++)
{
intsum = 0;
for (int k=0; k<x.column; k++)
{
  sum = sum + (x.getElement (j,k) * y.
    getElement (k,i); }
m.setElement (j, i, sum); }}
  return m; }
public void printMatrix() {
System.out.println ("Matrix is:");
  for (int i=0; i<row; i++) {
for (int j=0; i<column; j++)
{
System.out.println ( a[i][j]+"\t
}
System.out.println ("\n");
} }
  }
class Test {
public static void main (String args[])
{
Matrix m = new matrix (3,3);
Matrix n = new matrix (3,3);
int k=1;
for (int i=0; i<3; i++)
{
```

```
for (int j=0; j<3; j++) {
 m. setElement (i, j, k);
 k++;
 n. SetElement (i, j, k);
 k ++;
}
}

m. printMatrix ();
 n. printMatrix ();
 Matrix o = matrix.odd (m, n);
  o. printmatrix ();
Matrix p = matrix. product (m, n);
  p. print Matrix ();
}
}
```