Program

1.write a program to find the number of and sum of all integer number that is greater than 100 and less than 200 that are divisible is 7.

Code:

```
class test
{
        public static void  main(String[] args)
       {
                int count=0,sum=0,i;
                for(i=101;i<200;i++)
                {
                        if(i%7==0)
                        {
                          count++;
                          sum=sum+i;
                        }
                        System.out.println("the tital elements are:"+count);
                        System.out.println("the sum of elements is:"+sum);
        }
}
```

2.write a program to print first n Fibonacci number

```
class test
{
        public static void  main(String[] args)
       {
                int n,a=0,b=1,c,i;
                n=Integer.parseInt(args[0]);
                System.out.println("Fibonacci number are:");
                for(i=1;i<=n;i++)
                {
                        c=a+b;
                        System.out.println(" "+a);
                        a=b;
                        b=c;
                }
        }
}
```

3.write a program that create and initializes a four integer element array. Calculate and display the average of its values.

Code:

```
class test
{
        public static void  main(String[] args)
```

```
    {
            int a={10,20,30,40};
            double sum=0,avg;
            for(int i=0;i<4;i++)
            {
                    sum=sum+a[i];
            }
            avg=sum/4;
            System.out.println("sum= "+sum +"avg="+avg);
     }
}
```

4.Write a program to count occurrence of character in a string.

```
class CountChar
{
        public static void main(String[] args)
        {
                String S="javaisplatformindependent";
                int l=S.length();
                int count=0; char
                c;
                for(int i=0; i<l;i++)
                {
                        c=S.charAt(i);
                        if(c=='a'||c=='A')
                        {
                                count++;
                        }
                }
                System.out.println("The Occurrence of 'a' is: "+count);
        }
}
```

5.Write a program to check the given string is palindrome or not.

Code:

```
import java.util.*;
class test
{
        public static void main(String s[])
        {
                String str,rev="";
                Scanner sc=new Scanner(System.in);
                str=sc.nextLine();
                int n=str.length();
                for(int i=n-1;i>=0;i--)
                {
                        rev=rev+str.charAt(i);
                }
                if(str.equals(rev))
                {
```

```
                System.out.println("the string is palindrom");
            }
            else
            {
                System.out.println("the string is not palindrom");
            }
        }
}
```

6.Write a program to read a line from command line and print that line in reverse.

Code:

```
class test
{
    public static void main(String args[])
    {
        String str="",rev="";
        int i;
        for(i=0;i<args.length;i++)
        {
            str=str+args[i];
        }
        int n=str.length();
        for(i=n-1;i>=0;i--)
        {
            rev=rev+str.charAt(i);
        }
        System.out.println(rev);
    }
}
```

7) write a program to create circle class with area function to find area of circle.

Code:

```
class circle
{
    double ar,r;
    circle(double x)
    {
        r=x;
    }
    void area()
    {
        ar=3.14*r*r;
        System.out.println("area of circle="+ar);
    }
```

```
}
class test
{
        public static void main(String args[])
        {
                circle c1=new circle(5);
                c1.area();
        }
}
```

8) Design a class named Fan to represent a fan. The class contains:

- Three constants named SLOW, MEDIUM and FAST with values 1, 2 and 3 to denote the fan speed.

- An int data field named speed that specifies the speed of the fan (default SLOW).

- A boolean data field named f_on that specifies whether the fan is on (default false).

- A double data field named radius that specifies the radius of the fan (default 4).

- A data field named color that specifies the color of the fan (default blue).

- A no-arg constructor that creates a default fan.

- A parameterized constructor initializes the fan objects to given values.

- A method named display() will display description for the fan. If the fan is on, the display() method displays speed, color and radius. If the fan is not on, the method returns fan color and radius along with the message "fan is off". Write a test program that creates two Fan objects. One with default values and the other with medium speed, radius 6, color brown, and turned on status true. Display the descriptions for two created Fan objects.

Code:

```
class fan
{
        final int slow=1;
        final int medium=2;
        final int fast=3;
        int speed;
        boolean f_on;
        double radius;
        String color;
        fan()
        {
                speed=slow;
                f_on=false;
                radius=4;
                color="blue";
        }
        fan(int s,booleanf,doubler,String s1)
```

```
	{
		speed=s;
		f_on=f;
		radius=r;
		color=s1;
	}
	void show()
	{
		if(f_on)
		{
			System.out.println("FAN IS ON");
			System.out.println(speed);
			System.out.println(radius);
			System.out.println(color);
		}
		else
		{
			System.out.println("FAN IS OFF");
			System.out.println(radius);
			System.out.println(color);
		}
	}	}
class test
{
	public static void main(String s[])
	{
		fan f1=new fan();
		fan f2=new fan(2,true,6,"brown");
		f1.show();
		f2.show();
	}
}
```

9) Define the Rectangle class that contains:

Two double fields x and y that specify the center of the rectangle, the data field width and height, A no-arg constructor that creates the default rectangle with (0,0) for (x,y) and 1 for both width and height. 2 A parameterized constructor creates a rectangle with the specified x,y,height and width.

-A method getArea() that returns the area of the rectangle.

-A method getPerimeter() that returns the perimeter of the rectangle.

-A method contains(double x, double y) that returns true if the specified point (x,y) is inside this rectangle.

Write a test program that creates two rectangle objects. One with default values and other with user specified values. Test all the methods of the class for both the objects.

```
class rectangle
{
	double cx,cy,height,width,xleft,xright,yup,ydown;
```

```
	rectangle()
	{
		cx=0;
		cy=0;
		height=1;
		width=1;
	}
	rectangle(double x,doubley,doubleh,double w)
	{
		cx=x;
		cy=y;
		height=h;
		width=w;
	}
	double getarea()
	{
		return (height*width);
	}
	double getperimeter()
	{
		return (2*(height+width));
	}
	boolean contains(double x,double y)
	{
		xleft=(cx-(width/2));
		xright=(cx+(width/2));
		yup=(cy+(height/2));
		ydown=(cy-(height/2));
		if((x>xleft&& x<xright) && (y<yup && y>ydown))
		{
			return true;
		}
		else
		{
			return false;
		}

	}
}
class test
{
	public static void main(String s[])
	{
		rectangle r1=new rectangle();
		rectangle r2=new rectangle(10,30,10,20);
		System.out.println(r1.getarea());
		System.out.println(r2.getarea());
		System.out.println(r1.getperimeter());
		System.out.println(r2.getperimeter());
```

```
                if(r1.contains(0,0))
                {
                        System.out.println("point is inside the rectangle");
                }
                else
                {
                        System.out.println("point is outside the rectangle");
                }
                if(r2.contains(250,310))
                {
                        System.out.println("point is inside the rectangle");
                }
                else
                {
                        System.out.println("point is outside the rectangle");
                }
        }
}
```

Output:

```
1.0
200.0
4.0
60.0
point is inside the rectangle
point is outside the rectangle
```

10) Declare a class called coordinate to represent 3 dimensional Cartesian coordinates(x, y, and z) define following method.

- Constructor

- Display to print values of members

- Add_coordinates, to add three such coordinates object to produce a resultant coordinates object. Generate and hendle exception if x,y and z coordinates of the result are zero

- Main , to show use of above method

Code:

```
class  coordinate extends Exception
{
        double x,y,z;
        coordinate()
        {
                x=0;
                y=0;
                z=0;
        }
        coordinate(double a,double b,double c)
        {
                x=a;
                y=b;
```

```
                z=c;
        }
        void  display()
        {
                System.out.println("X="+x);
                System.out.println("Y="+y);
                System.out.println("Z="+z);
        }
coordinate add_coordinates(coordinate obj1,coordinate obj2,coordinate obj3) throws coordinate
        {
                coordinate obj4=new coordinate();
                obj4.x=obj1.x+obj2.x+obj3.x;
                obj4.y=obj1.y+obj2.y+obj3.y;
                obj4.z=obj1.z+obj2.z+obj3.z;
                if(obj4.x==0 || obj4.y==0 || obj4.z==0)
                {
                        throw new coordinate();
                }
          return obj4;
        }
}
class test
{
        public static void  main(String[] args)
      {
                coordinate c1= new  coordinate();
                coordinate c2= new  coordinate(1,2,3);
                coordinate c3= new  coordinate(4,5,6);
                coordinate c4= new  coordinate(7,8,9);
                try
                {
                        c1=c1.add_coordinates(c2,c3,c4);
                        c1.display();
                }
                catch(coordinate c)
                {
                        System.out.println("exception for zero value");
                }
        }
 }
```

11) Define time class with hour and minute. Also define addition method to add two time objects.

Code:

```
class time
{
        int hour,minute;
        time()
        {
```

```
                hour=0;
                minute=0;
        }

        time(int a,int b)
        {
                hour=a;
                minute=b;
        }
        void add(time obj1,time obj2)
        {
                hour=obj1.hour+obj2.hour;
                minute=obj1.minute+obj2.minute;

                hour=hour+(minute/60);
                minute=minute%60;
        }
        void show()
        {
                System.out.println("hour="+hour);
                System.out.println("minute="+minute);
        }
}
class test
{
        public static void main(String args[])
        {
                time t1=new time(10,20);
                time t2=new time(100,300);
                time t3=new time();
                t3.add(t1,t2);
                t3.show();
        }
}
```

12) It is required to compute SPI (semester performance index) of n students of your college for their registered subjects in a semester.
Declare a class called student having following data members: id_no, no_of_subjects_registered, subject_code, subject_credits, grade_obtained and spi.
- Define constructor and calculate_spi methods.
- Define main to instantiate an array for objects of class student to process data of n students to be given as command line arguments.

Code:

```
import java.util.Scanner;
class Student
{
        int id_no;
        int no_of_subjects_registered;
        int total_credit=0;
```

```
int sub_code[]=new int[10];
int sub_credit[]=new int[10];
int temp[]=new int[10];
int g_point[]=new int[10];
String grade_obtained;
String grade_obt[]=new String[10];
float spi=0;
Student(int id, int no_sub)
{
        id_no=id;
        no_of_subjects_registered=no_sub;
}
void get_subdata(int n,int s_code,int s_credit,String g_obt)
{
        sub_code[n]=s_code;
        sub_credit[n]=s_credit;
        grade_obt[n]=g_obt;
        if(grade_obt[n].equals("AA"))
        {
                g_point[n]=10;
        }
        else if(grade_obt[n].equals("AB"))
        {
                g_point[n]=9;
        }
        else if(grade_obt[n].equals("BB"))
        {
                g_point[n]=8;
        }
        else if(grade_obt[n].equals("BC"))
        {
                g_point[n]=7;
        }
        else if(grade_obt[n].equals("CC"))
        {
                g_point[n]=6;
        }
        else if(grade_obt[n].equals("CD"))
        {
                g_point[n]=5;
        }
        else if(grade_obt[n].equals("DD"))
        {
                g_point[n]=4;
        }
        else if(grade_obt[n].equals("FF"))
        {
                g_point[n]=0;
        }
```

```
	}
	void student_details()
	{
		System.out.println("");
		System.out.println("Student id:"+id_no);
		System.out.println("");
		System.out.println("No of Subjects:"+no_of_subjects_registered);
		System.out.println("\tSub Code\tSub Credit\tGrade obtained");

		for(int i=0;i<no_of_subjects_registered;i++)
		{

	System.out.println("\t"+sub_code[i]+"\t\t"+sub_credit[i]+"\t"+grade_obt[i]);
		}
	}

	void count_spi()
	{
		int ans=0;
		for(int i=0;i<no_of_subjects_registered;i++)
		{
			temp[i]=sub_credit[i]*g_point[i];
			ans=ans+temp[i];
			total_credit=sub_credit[i]+total_credit;
		}

	spi=ans/total_credit;
	System.out.println(ans+""+total_credit);
	System.out.println("Congratulations Your SPI is: "+spi);
	System.out.println("");
	System.out.println("");
	}
}

class test
{
	public static void main(String[] args)
	{
		int num=Integer.parseInt(args[0]);
		Student s[]=new Student[num];
		Scanner sc=new Scanner(System.in);
		for(int i=0;i<num;i++)
		{
			int z=i+1;
			System.out.println("");
			System.out.println("Enter the Details for Student num:"+z);
			System.out.println("");
			System.out.println("Enter Student ID:");
			int id=sc.nextInt();
```

```
                System.out.println("Enter Number of Subjects:");
                int sub=sc.nextInt();
                s[i]=new Student(id,sub);
            for(int j=0;j<sub;j++)
            {
                System.out.println("");
                int y=j+1;
                System.out.println("For Subject"+y); System.out.println("");
                System.out.println("Enter Subject Code:");
                int s_cod=sc.nextInt();
                System.out.println("Enter Subject Credit:");
                int s_cre=sc.nextInt();
                sc.nextLine();
                System.out.println("Enter Grade:");
                String s_gra=sc.next();
                s[i].get_subdata(j,s_cod,s_cre,s_gra);
            }
            s[i].student_details();
            s[i].count_spi();
            }
        }
}
```