1)
Write a program to check if a number is a palindrome number or not

```
class A1{

    public static void main(String S[])
    {
        int n=1001,a=0,b=0;
        int temp=n;

        while(n>0)
        {
            a=n%10;
            b=(b*10)+a;
            n=n/10;
        }

        if(b==temp)
        System.out.println("PALLINDROME NUMBER");
        else
        System.out.println("NOT A PALLINDROME NUMBER");

    }
}
```

OUTPUT

```
PS C:\Users\Lloyd\Desktop\OOPJ> cd "c:\Users\Lloyd\Desktop\OOPJ\" ; if ($?) { javac A5.java } ; if ($?) { java A5 }
A=1
B=2
C=3
PS C:\Users\Lloyd\Desktop\OOPJ> cd "c:\Users\Lloyd\Desktop\OOPJ\" ; if ($?) { javac A1.java } ; if ($?) { java A1 }
PALLINDROME NUMBER
PS C:\Users\Lloyd\Desktop\OOPJ>
```

2)
Write a program to find sum of digits of a multidigit number

```
class A2{
    public static void main(String S[])
    {
        int n=1111,sum=0,a;
        int temp=n;

        while(n>0)
        {
            a=n%10;
            sum=sum+a;
            n=n/10;
        }
        System.out.println("Sum="+sum);
    }
}
```

OUTPUT

```
PS C:\Users\Lloyd\Desktop\OOPJ> cd "c:\Users\Lloyd\Desktop\OOPJ\" ; if ($?) { javac A2.java } ; if ($?) { java A2 }
Sum=4
PS C:\Users\Lloyd\Desktop\OOPJ>
```

3)

Write a program to create a class called shape, create a default constructor for this class, write overloaded methos to calculate area of different shapes.

```
class shape{
   int l,b;
    shape()
    {
        l=0;
        b=0;
    }

    int area(int l,int b)
    {
        return(l*b);
    }

    int area(int l)
    {
        return(l*l);
    }

}

class A3{
    public static void main(String S[])
    {
        shape x=new shape();
        System.out.println("AREA OF RECTANGLE="+x.area(2,3));
        System.out.println("AREA OF SQUARE="+x.area(2));

    }
}
```

OUTPUT

```
PS C:\Users\Lloyd\Desktop\OOPJ> cd "c:\Users\Lloyd\Desktop\OOPJ\" ; if ($?) { javac A3.java } ; if ($?) { java A3 }
AREA OF RECTANGLE=6
AREA OF SQUARE=4
PS C:\Users\Lloyd\Desktop\OOPJ>
```

4)

Write a program to create a class bicycle which has to attributes, gear and speed, write a parameterized constructor for this class let this class have 3 methos
1) Applybrake: reduces the speed accordingly
2) SpeedUp: Increases the speed accordingly
3) NoOfGreas: display no of gears and the speed

Write another class called mountain bike which extends class bicycle and has a field called seat height, implement a constructor to initiate the 3 parameters also write a method that allows you to set the seat height to a new value

```
class Bicycle{
    int gear;
    float speed;
    Bicycle(int a, float b)
    {
        gear=a;
        speed=b;
    }

    void Apply_brake(float a)
    {
        speed=speed-a;
    }

    void Speed_up(float a)
    {
        speed=speed+a;
    }

    void No_of_gears()
    {
        System.out.println("NO OF GEARS="+gear+"\nSPEED="+speed);
    }
}

class Mountain_bike extends Bicycle{
    float Seat_height;

    Mountain_bike(float speed,int gear, float seatH)
    {
        super(gear,speed);
        Seat_height=seatH;
    }

    void setH(float a)
    {
        Seat_height=Seat_height-a;
    }
}

class A4{

    public static void main(String S[])
    {
    Mountain_bike x=new Mountain_bike(5.5f,5,1.2f);
    x.Apply_brake(1.0f);
    x.Speed_up(3.0f);
    x.No_of_gears();
    }
}
```

OUTPUT

```
PS C:\Users\Lloyd\Desktop\OOPJ> cd "c:\Users\Lloyd\Desktop\OOPJ\" ; if ($?) { javac A4.java } ; if ($?) { java A4 }
NO OF GEARS=5
SPEED=7.5
PS C:\Users\Lloyd\Desktop\OOPJ>
```

5)

Write a program to implement class X which has variable a, write a constructor to initialize this value. Write a class Y which has the variable b and write a constructor to initialize it. Write a class Z which has variable c and write a constructor to initialize it.

```
class X{
    int A;
    X(int a)
    {
        A=a;
    }
}

class Y extends X{
    int B;
    Y(int a,int b)
    {
        super(a);
        B=b;
    }
}

class Z extends Y{
    int C;
    Z(int a, int b,int c)
    {
        super(a,b);
        C=c;
    }
}

class A5{
    public static void main(String s[])
    {
        Z obj=new Z(1,2,3);
        System.out.println("A="+obj.A);
        System.out.println("B="+obj.B);
        System.out.println("C="+obj.C);

    }
}
```

OUTPUT

```
PS C:\Users\Lloyd> cd "c:\Users\Lloyd\Desktop\OOPJ\" ; if ($?) { javac A5.java } ; if ($?) { java A5 }
A=1
B=2
C=3
PS C:\Users\Lloyd\Desktop\OOPJ>
```