ASSIGNMENT – 1 Dt. 04/08/2022

Q1.) Write a program to find sum of digits and the reverse of the given number (Take input using command line arguments)

CODE:

```
class MyFirstProg {
    public static void main (String[] args)
    {
        int a = Integer.parseInt(args[0]);
        int b = 0, ans = 0;
        while (a != 0)
        {
            int temp = a % 10;
            b = 10 * b + temp;
            ans += temp;
            a /= 10;
        }
        System.out.println("Sum = " + ans); System.out.println("Reversed = " +
b);
    }
}
```

OUTPUT:

```
PS D:\java> java MyFirstProg 5678
Sum = 26
Reversed = 8765
```

Q2.) Write a program to find real roots of the quadratic equation $ax^2 + bx + c$, where a, b, c are constants

CODE:

```
import java.lang.Math;
class MyFirstProg {
    public static void main(String[] args)
    {
        int a = Integer.parseInt(args[0]), b = Integer.parseInt(args[1]), c =
Integer.parseInt(args[2]);
        double ans1 = 0.0D, ans2 = 0.0D;
        int d = b * b - 4 * a * c;
        if (d < 0)
        {
            System.out.println("Imaginary roots");
        }
        else if (d == 0)
        {
            ans1 = -1.0D * b / 2 * a;
            System.out.println("Roots are equal. Root =\n" + ans1);
        }
        else
        {
            ans1 = (-1.0D + Math.sqrt(d)) / 2 * a; ans2 = (-1.0D -
Math.sqrt(d)) / 2 * a;
            System.out.println("Roots =\n" + ans1 + "\n" + ans2);
        }
    }
}
```

OUTPUT:

```
PS D:\java> java MyFirstProg 1 5 5
Roots =
0.6180339887498949
-1.618033988749895
```

Q3.) Write a program to determine sum of the following series for given value of n (Take input using command line arguments).

1 + 1/2 + 1/3 + 1/4 + … + 1/n

CODE:

```
class MyFirstProg {
    public static void main(String[] args)
    {
        int n = Integer.parseInt(args[0]);
        double ans = 0.0D;
        while (n > 0)
        {
            ans += (1.0D / n); n--;
        }
        System.out.println("Sum = " + ans);
    }
}
```

OUTPUT:

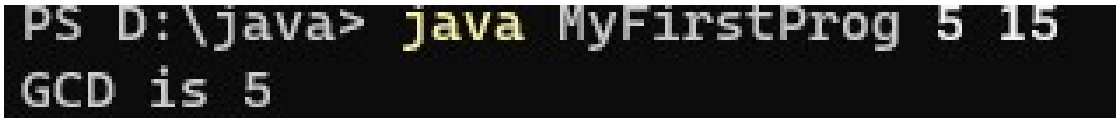
```
PS D:\java> java MyFirstProg 5
Sum = 2.283333333333333
```

Q4.) Write a program to calculate the GCD of 2 integers.

CODE:

```
class MyFirstProg {
    public static void main(String[] args)
    {
        int a = Integer.parseInt(args[0]), b = Integer.parseInt(args[1]);
        while(true)
        {
            if (a % b == 0)
            {
                System.out.println("GCD is " + b);
                break;
            }
            else
            {
                int temp = b; b = a % b;
                a = temp;
            }
        }
    }
}
```

OUTPUT:



ASSIGNMENT 2

Q1.) Write a program to find surface area and volume of cylinder using constructors by taking command line arguments

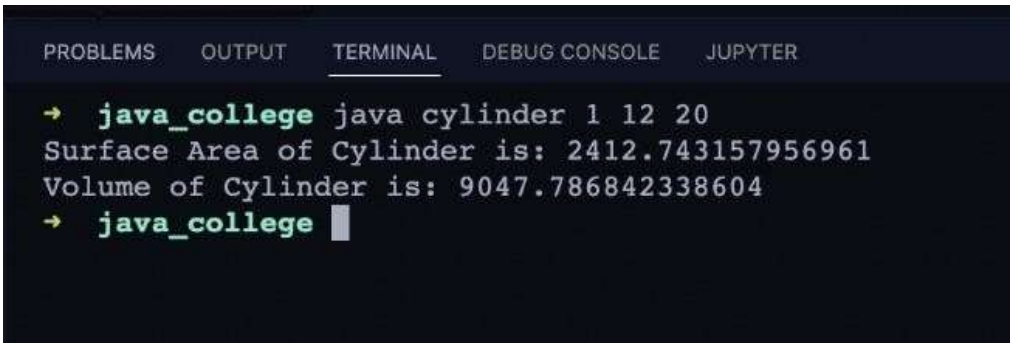
CODE:

```
class AreaVolume
{
    int radius;
    int height;
    double area;
    double volume;
    AreaVolume(int radius, int height)
    {
        this.radius = radius;
        this.height = height;
    }
    void getSurfaceArea()
    {
        area = 2 * Math.PI * radius * (radius + height);
    }
    void getVolume()
    {
        volume = Math.PI * radius * radius * height;
    }
    void display()
    {
        System.out.println("Surface Area of Cylinder is: " + area);
System.out.println("Volume of Cylinder is: " + volume);
    }
}
class cylinder{
    public static void main(String[] args)
    {
        int radius = Integer.parseInt(args[0]);
        int length = Integer.parseInt(args[1]);

        AreaVolume c = new AreaVolume(radius, length);

        c.getSurfaceArea();
        c.getVolume(); c.display();
    }
}
```

Output:


PROBLEMS
OUTPUT
TERMINAL
DEBUG CONSOLE
JUPYTER
→ java_college java cylinder 1 12 20
Surface Area of Cylinder is: 2412.743157956961
Volume of Cylinder is: 9047.786842338604
→ java_college

Q!.) Create a class named First ,make instance variable int x, instance method void show() and put main method inside that class and use the instance variable and method from main

CODE:

```java
class Main
{
    int x;

    Main(int x)
    {
        this.x = x;
    }

    void show()
    {
        System.out.println("x is: " + x);
    }
}


class ExMain {
    public static void main(String[] args)
    {
        Main p = new Main(Integer.parseInt(args[0]));
        p.show();
    }
}
```

OUTPUT:

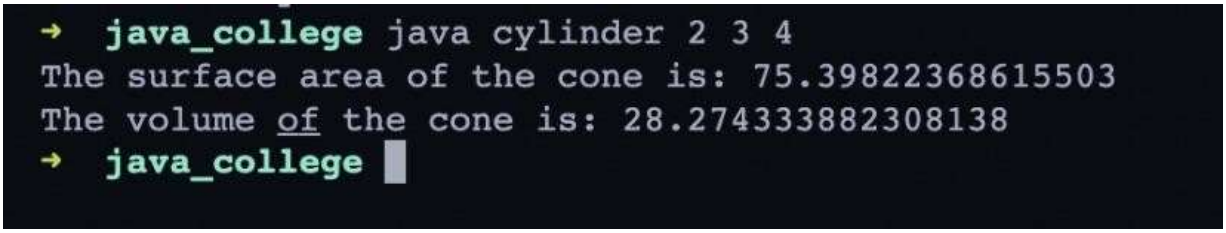
Write a program to find surface area and volume of cone using constructors by takingcommand line arguments

CODE:

```
class AreaVolume
{
    int radius;
    int height;
    double area;
    double volume;
    double slant;
    AreaVolume(int radius, int height)
    {
        this.radius = radius;
        this.height = height;
    }
    void calculate()
    {
        slant=Math.sqrt(radius*radius+height*height);
        area = Math.PI * radius * (radius + slant);
        volume = Math.PI * radius * radius * (height/3);
    }
    void display()
    {
        System.out.println("The Surface Area of the cone is: " + area);
System.out.println("The Volume of the cone is: " + volume);
    }
}
class cone
{
    public static void main(String[] args)
    {
        int radius = Integer.parseInt(args[0]);
        int length = Integer.parseInt(args[1]);

        AreaVolume c = new AreaVolume(radius, length);
        c.calculate();
        c.display();
    }
}
```

OUTPUT



ASSIGNMENT 3

Q1.) Write a program to swap call

by value.

CODE:

```
class Prog
{
    static void swap(int x,int y)
    {
        int t; t=x;x=y;y=t;
    }
    public static void main(String[] args)
    {
        int a,b; a=Integer.parseInt(args[0]);
        b=Integer.parseInt(args[1]);
        System.out.println("Values before swap\t"+"a="+a+"\t"+"b="+b);

        swap(a,b);
        System.out.println("Values after swap\t"+"a="+a+"\t"+"b="+b);
    }
}
```

OUTPUT:

```
PS C:\Users\Debashis\Onedrive\Desktop> javac Prog.java
PS C:\Users\Debashis\Onedrive\Desktop> java Prog 10 11
Values before swap      a=10    b=11
Values after swap       a=10    b=11
PS C:\Users\Debashis\Onedrive\Desktop>
```

Q2.)Write a Program to swap using call by reference.

CODE:

```
public class Swap
{
    public static void main(String[] args)
    {
        IntWrapper a = new IntWrapper(25);
        IntWrapper b = new IntWrapper(30);
        System.out.println("Before swapping, a = " + a.a + " and b = "+
b.a);
        swapFunction(a, b);
        System.out.println("After swapping, a = " + a.a + " and b is "+
b.a);
    }
    public static void swapFunction(IntWrapper a, IntWrapper b)
    {
        IntWrapper c = new IntWrapper(a.a);
        a.a = b.a;
        b.a = c.a;
    }
}
    class IntWrapper
    {
        public int a;
        public IntWrapper(int a){ this.a = a;}
    }
```

OUTPUT:

```
PS C:\Users\Debashis\Onedrive\Desktop> javac Swap.java
PS C:\Users\Debashis\Onedrive\Desktop> java Swap
Before swapping, a = 25 and b = 30
After swapping, a = 30 and b is 25
```

Q3.) Develop a method in java to show how a method returns an object.

CODE:

```
class Flag {
    public static void main(String[] args)
    {
        int a = Integer.parseInt(args[0]);
        int b = Integer.parseInt(args[1]);
        Animal y = new Animal();
        Animal x = set(y, a, b);
        System.out.println("The age is" + " " + x.age);
        System.out.println("The weight is" + " " + x.weight);
    }

    static Animal set(Animal d, int a, int b)
    {
        Animal c = new Animal();
        c = d;
        c.age = a;
        c.weight = b;
        return c;
    }
}

class Animal
{
    int age, weight;
}
```

OUTPUT:

```
PS C:\Users\Debashis\Onedrive\Desktop> javac Flag.java
PS C:\Users\Debashis\Onedrive\Desktop> java Flag 10 80
The age is 10
The weight is 80
```

Q4.) Write a java program to make a student class attributes like roll,name,college,grade now construct 2 students and show their information.

CODE:

```
public class Deba {
    public static void main(String[] args) {
        Student student = new Student(10, "Debashis", "IEM", "A");
        Student student2 = new Student(11, "Aman", "IEM", "B");
        student.display();
        student2.display();
    }
}

class Student {
    int roll;
    String name, college, grade;

    Student(int roll, String name, String college, String grade) {
        this.roll = roll;
        this.name = name;
        this.college = college;
        this.grade = grade;
    }

    void display() {
        System.out.println("Roll of the student is" + this.roll);
        System.out.println("Name of the student is" + this.name);
        System.out.println("College name of student is" + this.college);
        System.out.println("The grade obtained by the student is" +
this.grade);
    }

}
```

OUTPUT:

```
PS C:\Users\Debashis\Onedrive\Desktop> javac Deba.java
PS C:\Users\Debashis\Onedrive\Desktop> java Deba
Roll of the student is10
Name of the student isDebashis
College name of student isIEM
The grade obtained by the student isA
Roll of the student is11
Name of the student isAman
College name of student isIEM
The grade obtained by the student isB
```