Java Programming Assignment 1

Instructions:

1. Print 'Hello' and Your Name

Write a Java program to print 'Hello' on the screen and then print your name on a separate line.

Expected Output:

Hello

Alexandra Abramov

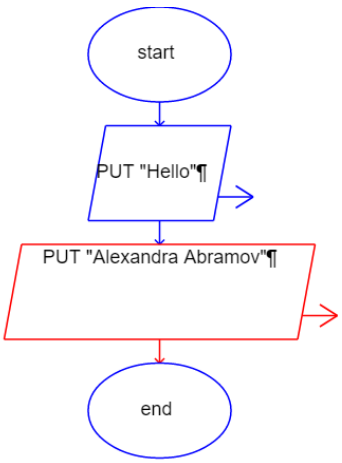
Input:

```
class Hello{
        public static void main(String args[]){
                System.out.println("Hello");
                System.out.println("Alexandra Abramov");
        }
}
```

Output:

```
D:\cdac\PG-DAC\assignment\Day 1\program>javac Hello.java

D:\cdac\PG-DAC\assignment\Day 1\program>java Hello
Hello
Alexandra Abramov

D:\cdac\PG-DAC\assignment\Day 1\program>
```

Flowchart:



2. Sum of Two Numbers

Write a Java program to print the sum of two numbers.

Test Data: 74 + 36

Expected Output:

110

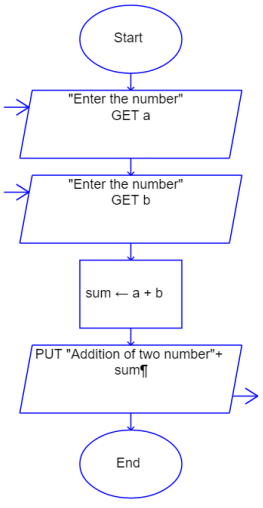
Input:

```
class Add{
	public static void main(String args[]){
		int sum = 74 + 36;
		System.out.println("Sum of two number is : " + sum);
	}
}
```

Output:

```
D:\cdac\PG-DAC\assignment\Day 1\program>javac Add.java

D:\cdac\PG-DAC\assignment\Day 1\program>java Add
Sum of two number is : 110

D:\cdac\PG-DAC\assignment\Day 1\program>
```

Flowchart:



3. Divide Two Numbers

Write a Java program to divide two numbers and print the result on the screen.

Test Data: 50 / 3

Expected Output:

16

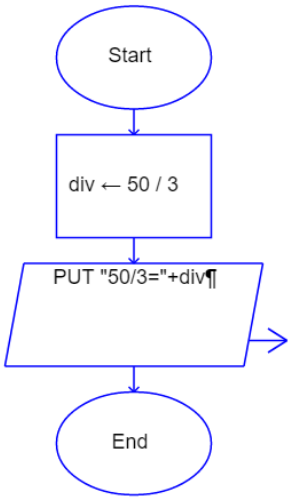
Input:

```
class Divide{
	public static void main(String args[]){
		int div = 50/3;
		System.out.println("50/3= " + div);
	}
}
```

Output:

```
D:\cdac\PG-DAC\assignment\Day 1\program>javac Divide.java

D:\cdac\PG-DAC\assignment\Day 1\program>java Divide
50/3= 16

D:\cdac\PG-DAC\assignment\Day 1\program>
```

Flowchart:



4. Perform Arithmetic Operations

Write a Java program to print the result of the following operations.

Test Data:

a. -5 + 8 * 6

b. (55 + 9) % 9

c. 20 + -3 * 5 / 8

d. 5 + 15 / 3 * 2 - 8 % 3

Expected Output:

43

1

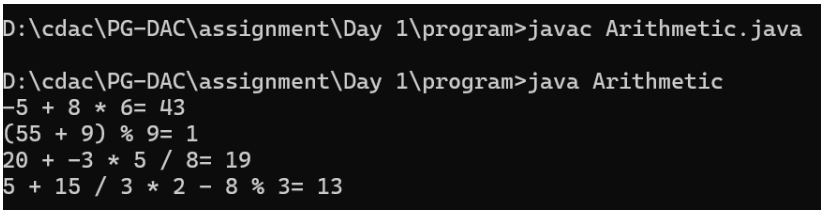
19

13

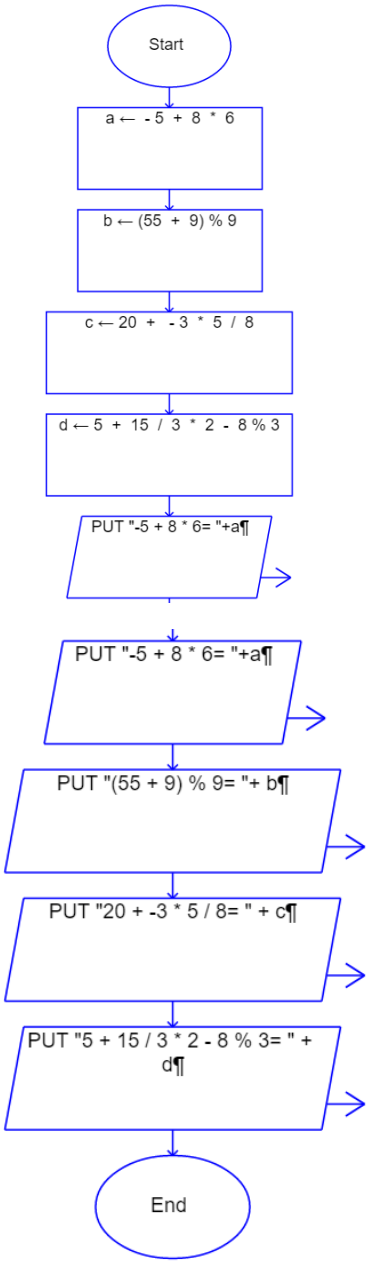
Input:

```
class Arithmetic{
	public static void main(String args[]){
		int a,b,c,d;
		a= -5 + 8 * 6;
		b= (55 + 9) % 9;
		c= 20 + -3 * 5 / 8;
		d= 5 + 15 / 3 * 2 - 8 % 3;
		System.out.println("-5 + 8 * 6= " + a);
		System.out.println("(55 + 9) % 9= " + b);
		System.out.println("20 + -3 * 5 / 8= " + c);
		System.out.println("5 + 15 / 3 * 2 - 8 % 3= " + d);
	}
}
```

Output:



Flowchart:



5. Multiply Two Numbers

Write a Java program that takes two numbers as input and displays the product of the two numbers.

Test Data:

 Input first number: 25

 Input second number: 5

Expected Output:

25 x 5 = 125

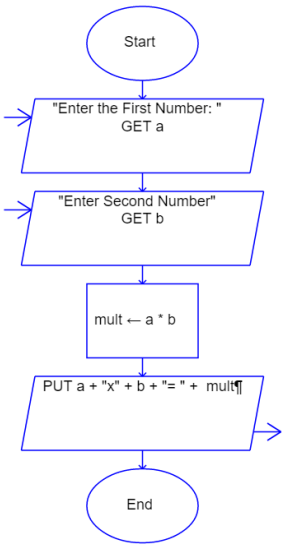
Input:

```
import java.util.Scanner;
class Multiply{
	public static void main(String args[]){
		Scanner input = new Scanner(System.in);
		int a,b,mult;
		System.out.println("Enter two number");
		a = input.nextInt();
		b = input.nextInt();
		mult= a*b;
		System.out.println("25 x 5 = "+ mult);
	}
}
```

Output:

```
D:\cdac\PG-DAC\assignment\Day 1\program>java Multiply
Enter two number
25
5
25 x 5 = 125

D:\cdac\PG-DAC\assignment\Day 1\program>
```

Flowchart:



6. Basic Arithmetic Operations

Write a Java program to print the sum, multiplication, subtraction, division, and remainder of two numbers.

Test Data:

 Input first number: 125

 Input second number: 24

Expected Output:

125 + 24 = 149

125 - 24 = 101

125 x 24 = 3000

125 / 24 = 5

125 mod 24 = 5

Input:

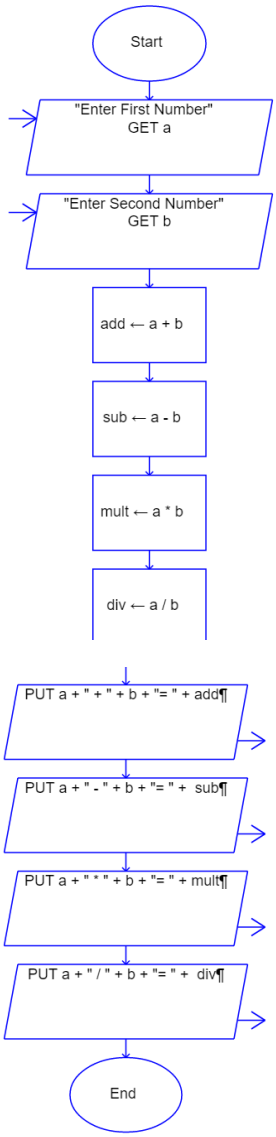
```
import java.util.Scanner;
class Basic{
	public static void main(String args[]){
		Scanner input = new Scanner(System.in);
		int a,b,add,sub,mult,div,rem;
		System.out.println("Enter two number");
		a = input.nextInt();
		b = input.nextInt();
		add=a+b;
		sub=a-b;
		mult= a*b;
		div= a/b;
		rem= a%b;
		System.out.println(a+ " + " + b +"= "+ add);
		System.out.println(a+ " - " + b +"= "+ sub);
		System.out.println(a+ " x " + b +"= "+ mult);
		System.out.println(a+ " / " + b +"= "+ div);
```

```
            System.out.println(a+ " mod " + b +"= "+ rem);
        }
}
```

Output:

```
D:\cdac\PG-DAC\assignment\Day 1\program>javac Basic.java

D:\cdac\PG-DAC\assignment\Day 1\program>java Basic
Enter two number
125
24
125 + 24= 149
125 - 24= 101
125 x 24= 3000
125 / 24= 5
125 mod 24= 5
```

Flowchart:



7. Multiplication Table

Write a Java program that takes a number as input and prints its multiplication table up to 10.

Test Data:

 Input a number: 8

Expected Output:

8 x 1 = 8

8 x 2 = 16

8 x 3 = 24

8 x 4 = 32

8 x 5 = 40

8 x 6 = 48

8 x 7 = 56

8 x 8 = 64

8 x 9 = 72

8 x 10 = 80

Input:

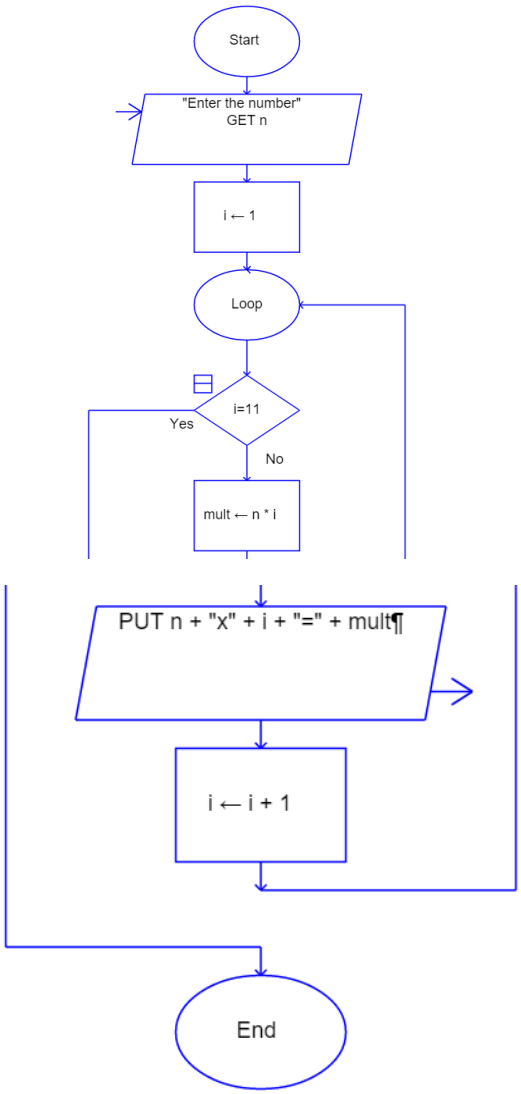
```
import java.util.Scanner;
class Table{
	public static void main(String args[]){
		Scanner input = new Scanner(System.in);
		int a,mult;
		System.out.println("Enter the number");
		a = input.nextInt();
		for(int i=1; i<=10; i++){
			mult=a*i;
			System.out.println(a+ " x " + i +"= "+ mult);
		}

	}
```

}

Output:

```
D:\cdac\PG-DAC\assignment\Day 1\program>javac Table.java

D:\cdac\PG-DAC\assignment\Day 1\program>java Table
Enter the number
8
8 x 1= 8
8 x 2= 16
8 x 3= 24
8 x 4= 32
8 x 5= 40
8 x 6= 48
8 x 7= 56
8 x 8= 64
8 x 9= 72
8 x 10= 80
```

Flowchart:



8. Swap Two Numbers

Write a Java program to swap the values of two variables without using a third variable.

Test Data:

 Input first number: 10

 Input second number: 20

Expected Output:

Before swapping:

First number: 10

Second number: 20

After swapping:

First number: 20

Second number: 10

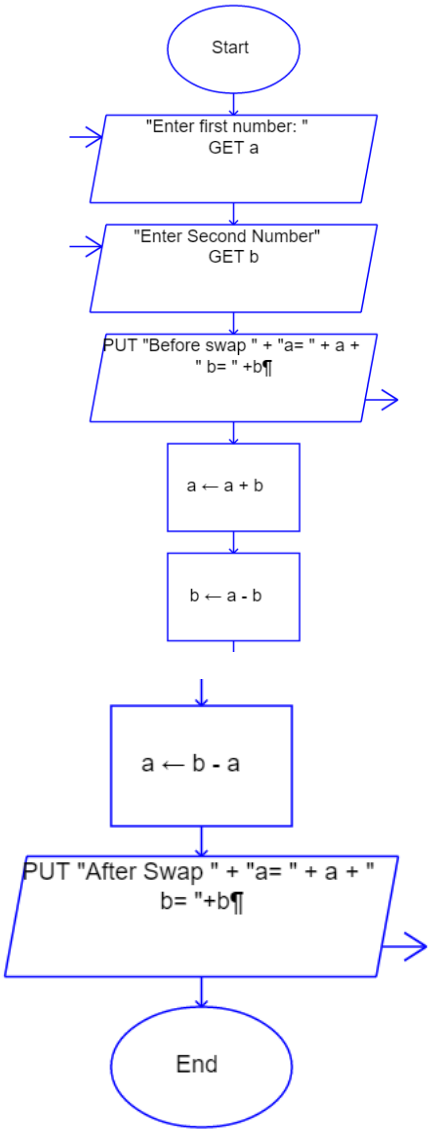
Input:

```
import java.util.Scanner;


class Swap{
   public static void main(String args[]) {
      Scanner input = new Scanner(System.in);
      System.out.println("Enter two numbers:");
      int a = input.nextInt();
      int b = input.nextInt();
         System.out.println("Before swapping: a = " + a + ", b = " + b);
      a = a + b;
      b = a - b;
      a = a - b;
      System.out.println("After swapping: a = " + a + ", b = " + b);
   }
}
```

Output:

```
D:\cdac\PG-DAC\assignment\Day 1\program>javac Swap.java

D:\cdac\PG-DAC\assignment\Day 1\program>java Swap
Enter two numbers:
10
20
Before swapping: a = 10, b = 20
After swapping: a = 20, b = 10

D:\cdac\PG-DAC\assignment\Day 1\program>
```

Flowchart:



9. Calculate the Area of a Circle

Write a Java program that calculates the area of a circle.

Test Data:

 Input the radius: 7

Formula: Area = π * radius²

Expected Output:

Area of the circle: 153.93804

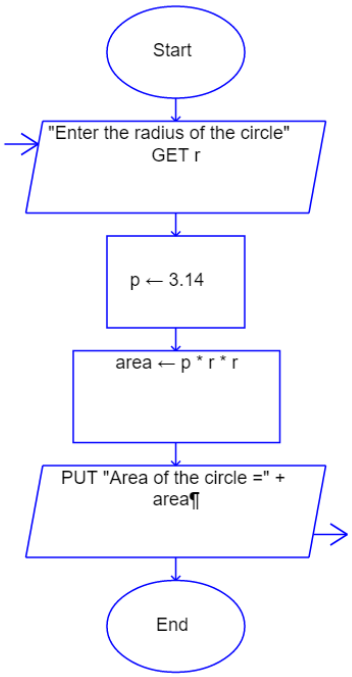
Input:

```
import java.util.Scanner;

class Area{

	public static void main(String args[]){

		Scanner input = new Scanner(System.in);

		System.out.println("Enter the radius of the circle:");

		int r = input.nextInt();

		int area = 3.14*r*r;

		System.out.println("Area of the circle: "+area);

	}

}
```

Output:

```
D:\cdac\PG-DAC\assignment\Day 1\program>javac Area.java

D:\cdac\PG-DAC\assignment\Day 1\program>java Area
Enter the radius of the circle:
7
Area of the circle: 153.86
```

Flowchart:



10. Check If a Number Is Even or Odd

Write a Java program that checks if a number is even or odd.

Test Data:

 Input a number: 15

Expected Output:

The number 15 is Odd.

Input:

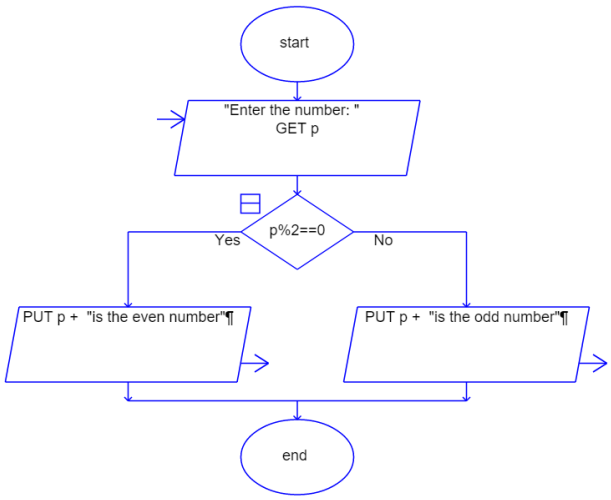
```
import java.util.Scanner;


class Even{
   public static void main(String args[]) {
      Scanner input = new Scanner(System.in);
      System.out.println("Enter the number :");
      int n = input.nextInt();
         if(n%2 == 0){
                  System.out.println(n+" is even number");
         }
         else{
```

```
                System.out.println(n+" is odd number");
        }
    }
}
```

Output:

```
D:\cdac\PG-DAC\assignment\Day 2\Assignment 1\program>javac Even.java

D:\cdac\PG-DAC\assignment\Day 2\Assignment 1\program>java Even
Enter the number :
24
24 is even number
```

Flowchart:



11. Find the Largest of Three Numbers

Write a Java program that takes three numbers as input and finds the largest of the three.

Test Data:

 Input first number: 12

 Input second number: 45

 Input third number: 22

Expected Output:

The largest number is 45.

Input:

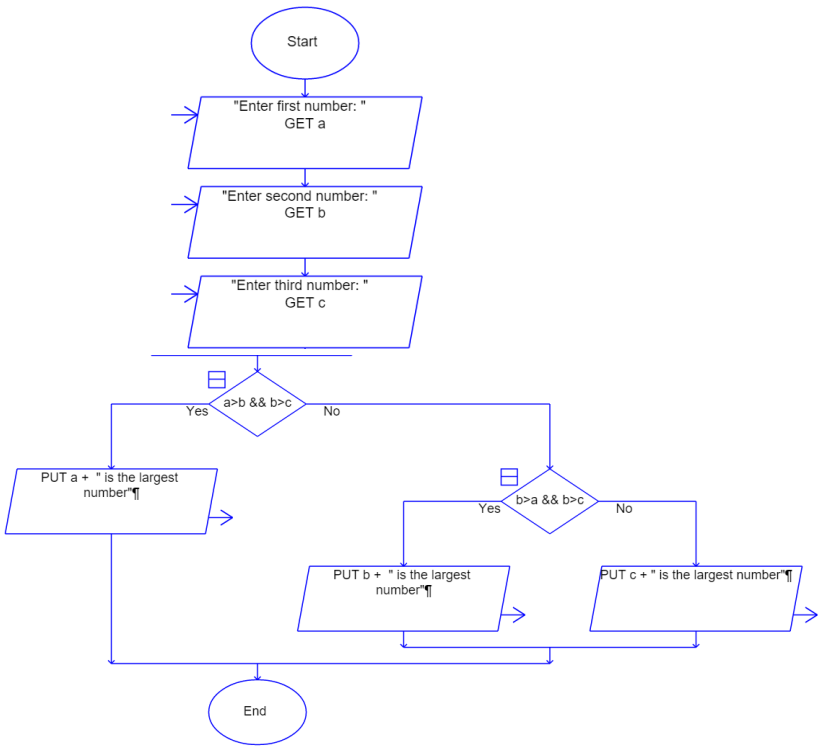
import java.util.Scanner;

```
class Largest{
    public static void main(String args[]) {
        Scanner input = new Scanner(System.in);
        System.out.println("Enter three numbers");
        int a= input.nextInt();
        int b= input.nextInt();
        int c= input.nextInt();
        if(a>b && b>c)
        {
            System.out.println(a+" is the greatest");
        }
        else if(a<b && b>c)
        {
            System.out.println(b+" is the greatest");
        }
        else
        {
            System.out.println(c+" is the greatest");
        }
    }
}
```

Output:

```
D:\cdac\PG-DAC\assignment\Day 1\program>javac Largest.java

D:\cdac\PG-DAC\assignment\Day 1\program>java Largest
Enter three numbers
12
45
22
45 is the greatest
```

Flowchart:



12. Reverse a Number

Write a Java program that takes a number as input and prints the reverse of that number.

Test Data:

 Input number: 12345

Expected Output:

The reverse of 12345 is 54321.

Input:

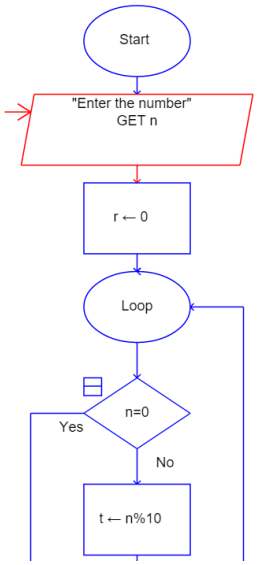
```
import java.util.Scanner;


public class Reverse{
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);
      System.out.println("Enter the number: ");
      int num = scanner.nextInt();
         int reverse = 0;
      while (num != 0) {
```

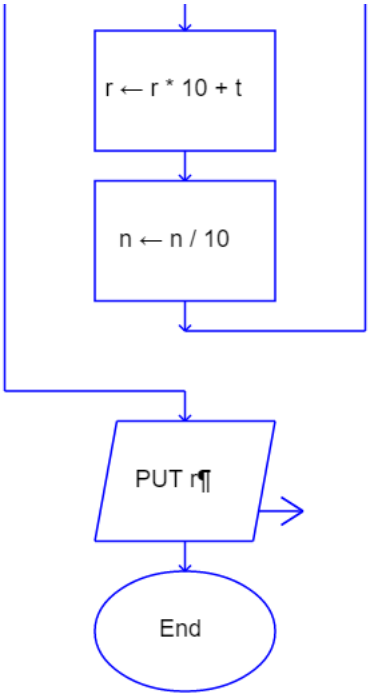
```
            int digit = num % 10;
            reverse = reverse * 10 + digit;
            num /= 10;
        }
        System.out.println("The reverse of the number is " + reverse);
    }
}
```

Output:

```
D:\cdac\PG-DAC\assignment\Day 1\program>javac Reverse.java

D:\cdac\PG-DAC\assignment\Day 1\program>java Reverse
Enter the number:
12345
The reverse of the number is 54321
```

Flowchart:





13. Calculate the Average of Three Numbers

Write a Java program to calculate the average of three numbers.

Test Data:

 Input first number: 20

 Input second number: 40

 Input third number: 60

Expected Output:

The average is: 40.0

Input:

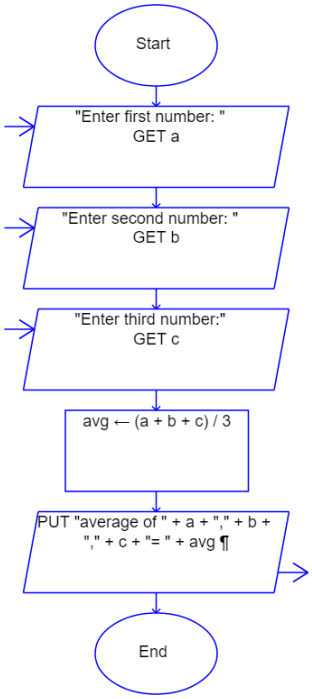
```
import java.util.Scanner;


public class Average{
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);
      System.out.println("Enter Three number: ");
      int a = scanner.nextInt();
         int b = scanner.nextInt();
         int c = scanner.nextInt();
```

```
        double avg=(a+b+c)/3;
      System.out.println("The average of"+a+b+c+" number is " + avg);
   }
}
```

Output:

```
D:\cdac\PG-DAC\assignment\Day 1\program>javac Average.java

D:\cdac\PG-DAC\assignment\Day 1\program>java Average
Enter Three number:
20
40
60
The average of204060 number is 40.0
```

Flowchart:



14. Print the Fibonacci Series

Write a Java program to print the Fibonacci series up to the 10th number.

Expected Output:

0 1 1 2 3 5 8 13 21 34

Input:

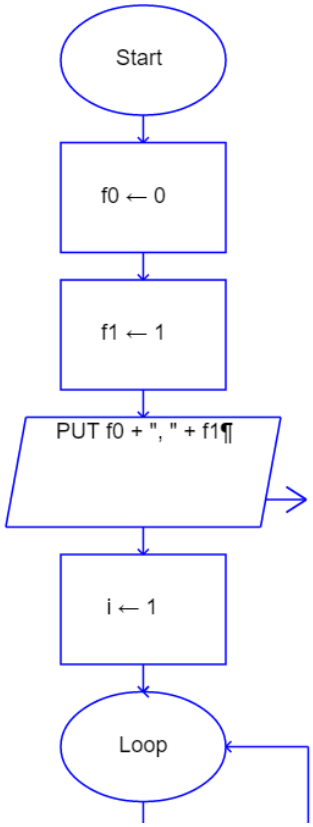
```
public class Fibonacci{
   public static void main(String[] args) {
      int f0 = 0;
```

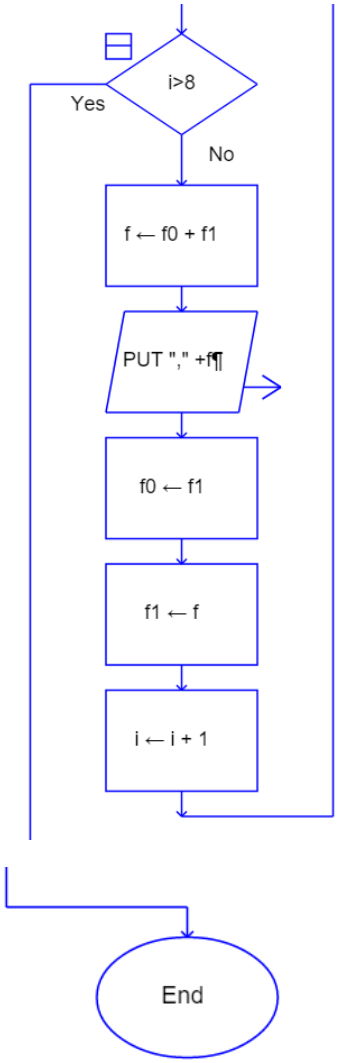
```
        int f1 = 1;
        System.out.print(f0 +","+ f1);
        for(int i=1;i<=8;i++){
            int f=f0+f1;
            System.out.print(","+ f);
            f0=f1;
            f1=f;
        }
    }
}
```

Output:

```
D:\cdac\PG-DAC\assignment\Day 1\program>javac Fibonacci.java

D:\cdac\PG-DAC\assignment\Day 1\program>java Fibonacci
0,1,1,2,3,5,8,13,21,34
```

Flowchart:





15. Find the Factorial of a Number

Write a Java program to find the factorial of a number.

Test Data:

 Input a number: 5

Expected Output:

Factorial of 5 is 120.

Input:

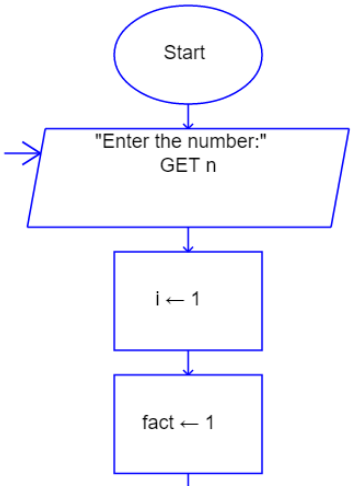
```
import java.util.Scanner;

public class Factorial{

    public static void main(String[] args) {

        Scanner input = new Scanner(System.in);

        System.out.println("Enter a number to find factorial: ");
```

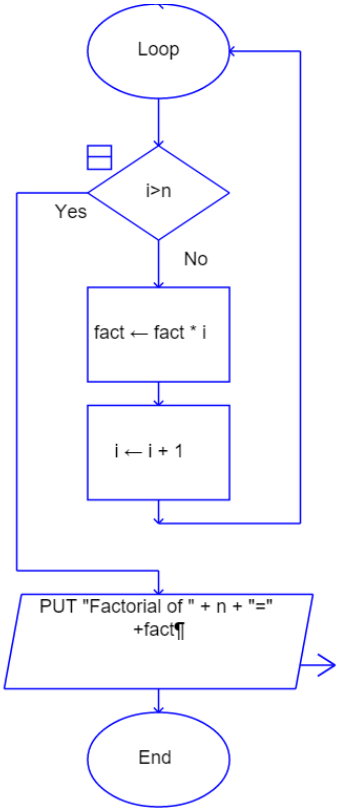
```
        int num = input.nextInt();
        int fact=1;
        for(int i=1;i<=num;i++)
        {
            fact=fact*i;
        }
        System.out.println(fact + " is the factorail of the number " + num);
    }
}
```

Output:

```
D:\cdac\PG-DAC\assignment\Day 1\program>javac Factorial.java

D:\cdac\PG-DAC\assignment\Day 1\program>java Factorial
Enter a number to find factorial:
5
120 is the factorail of the number 5
```

Flowchart:





16. Check Whether a Number Is Prime

Write a Java program to check whether a number is prime or not.

Test Data:

 Input number: 17

Expected Output:

The number 17 is Prime.

Input:

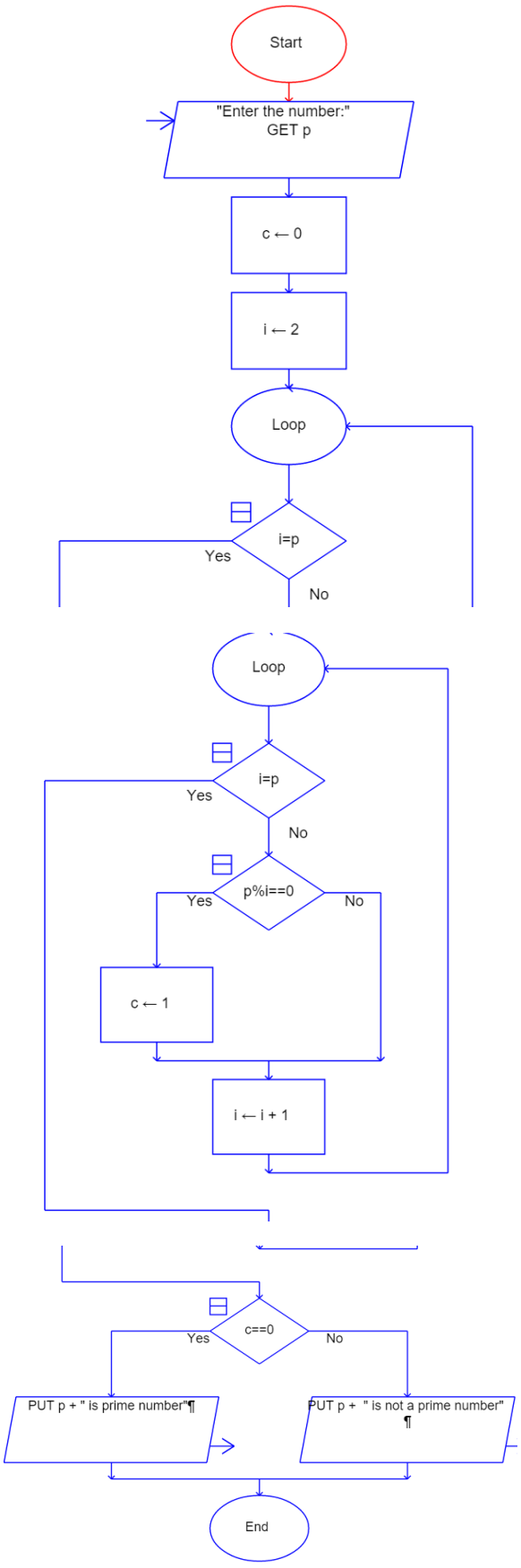
```
import java.util.Scanner;


public class Prime{
   public static void main(String[] args) {
      Scanner input = new Scanner(System.in);
      System.out.println("Enter the number");
      int n = input.nextInt();
      int c = 0;
```

```
        if (n <= 1)
        {
           c = 1;          }
        else
        {
           for (int i = 2; i <= n / 2; i++)
           {
              if (n % i == 0)
              {
                 c = 1;


                    }
           }
        }


        if (c == 0) {
           System.out.println(n + " is a prime number");
        } else {
           System.out.println(n + " is not a prime number");
        }
     }
}
```

Output:

```
D:\cdac\PG-DAC\assignment\Day 1\program>javac Prime.java

D:\cdac\PG-DAC\assignment\Day 1\program>java Prime
Enter the number
17
17 is a prime number
```

Flowchart:


Start
"Enter the number:"
GET p
c ← 0
i ← 2
Loop
i=p
Yes
No
Loop
i=p
Yes
No
p%i==0
Yes
No
c ← 1
i ← i + 1
c==0
Yes
No
PUT p + " is prime number"¶
PUT p + " is not a prime number"
¶
End

17. Print the First N Natural Numbers

Write a Java program to print the first N natural numbers, where N is provided by the user.

Test Data:

 Input a number: 6

Expected Output:

1 2 3 4 5 6

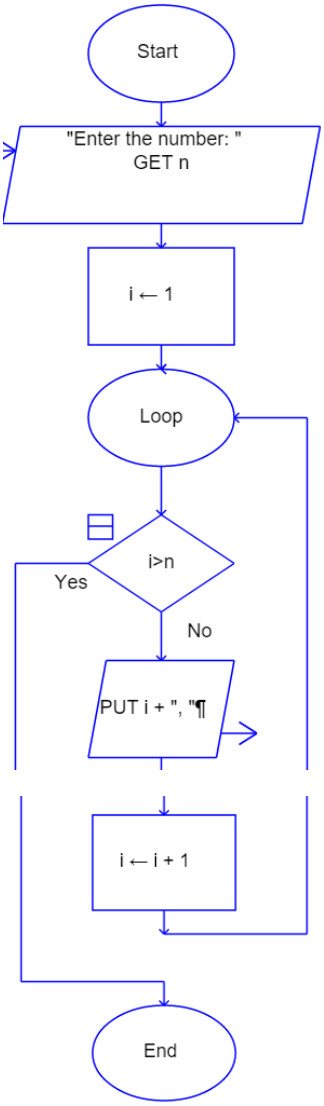
Input:

```
import java.util.Scanner;
public class NaturalNumbers {
   public static void main(String[] args) {
      Scanner input = new Scanner(System.in);
      System.out.print("Enter a number: ");
      int n = input.nextInt();
      for (int i = 1; i <= n; i++)
         {
         System.out.print(i + " ");
      }
   }
}
```

Output:

```
D:\cdac\PG-DAC\assignment\Day 1\program>javac NaturalNumbers.java

D:\cdac\PG-DAC\assignment\Day 1\program>java NaturalNumbers
Enter a number: 6
1 2 3 4 5 6
```

Flowchart:



18. Convert Celsius to Fahrenheit

Write a Java program to convert a temperature from Celsius to Fahrenheit.

Test Data:

 Input temperature in Celsius: 25

Formula: Fahrenheit = (Celsius * 9/5) + 32

Expected Output:

25°C is equal to 77.0°F

Input:

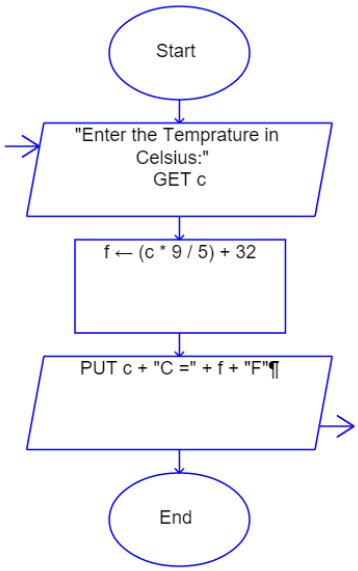
```
import java.util.Scanner;
public class Temp{
    public static void main(String[] args) {
```

```
        Scanner input = new Scanner(System.in);
        System.out.print("Enter the temperature in celsius: ");
        int celsius = input.nextInt();
        double fahrenheit=(celsius*9/5)+32;
           System.out.print(celsius+ " C = "+ fahrenheit +"F");
           }
}
```

Output:

```
D:\cdac\PG-DAC\assignment\Day 1\program>javac Temp.java

D:\cdac\PG-DAC\assignment\Day 1\program>java Temp
Enter the temperature in celsius: 25
25 C = 77.0F
```

Flowchart:



19. Calculate the Power of a Number

Write a Java program that calculates the power of a number. Take two numbers as input: the base and the exponent, and compute the result of base raised to the power of exponent.

Test Data:

 Input base number: 3

 Input exponent number: 4

Expected Output:

3 raised to the power 4 is 81

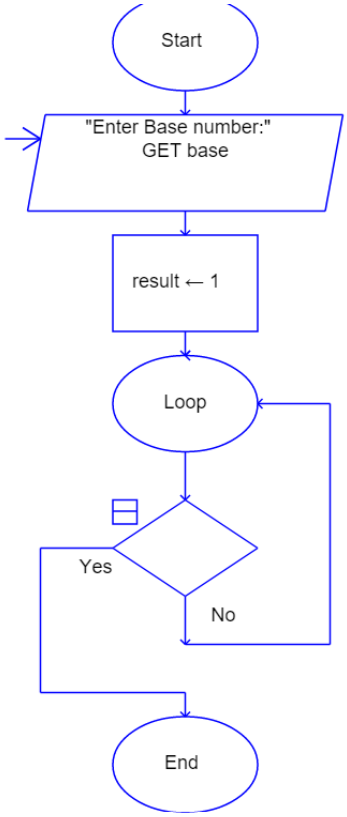
Input:

```
import java.util.Scanner;


public class Power {
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        System.out.print("Input base number: ");
        int base = input.nextInt();
        System.out.print("Input exponent number: ");
        int exponent = input.nextInt();
        int result = 1;
        for (int i = 0; i < exponent; i++)
            {
            result *= base;
        }
        System.out.println(base + " raised to the power " + exponent + " is " + result);
    }
}
```

Output:

```
D:\cdac\PG-DAC\assignment\Day 1\program>javac Power.java

D:\cdac\PG-DAC\assignment\Day 1\program>java Power
Input base number: 3
Input exponent number: 4
3 raised to the power 4 is 81
```

Flowchart:



20. Count the Number of Digits in a Number

Write a Java program that counts the number of digits in a given number.

Test Data:

 Input number: 123456

Expected Output:

The number 123456 has 6 digits.

Input:

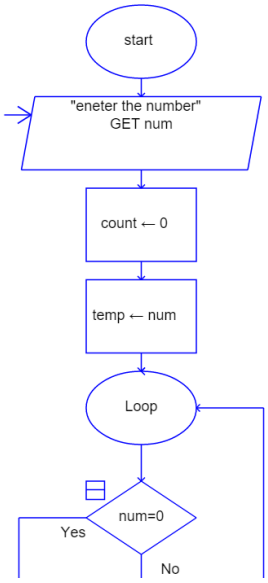
```
import java.util.Scanner;


public class Counter {
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        System.out.print("Input number: ");
        int number = input.nextInt();
        int count = 0;
        int temp = number;
```

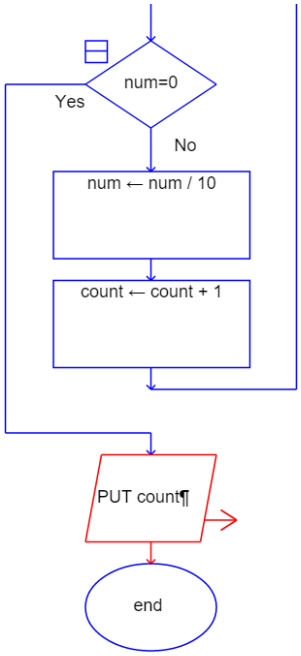
```
        while (number != 0) {
            number /= 10;
            count++;
        }
        System.out.println("The number " + temp + " has " + count + " digits");
    }
}
```

Output:

```
D:\cdac\PG-DAC\assignment\Day 1\program>javac Counter.java

D:\cdac\PG-DAC\assignment\Day 1\program>java Counter
Input number: 123456
The number 123456 has 6 digits
```

Flowchart:





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