Code at Random (OPC) PVT. LTD.

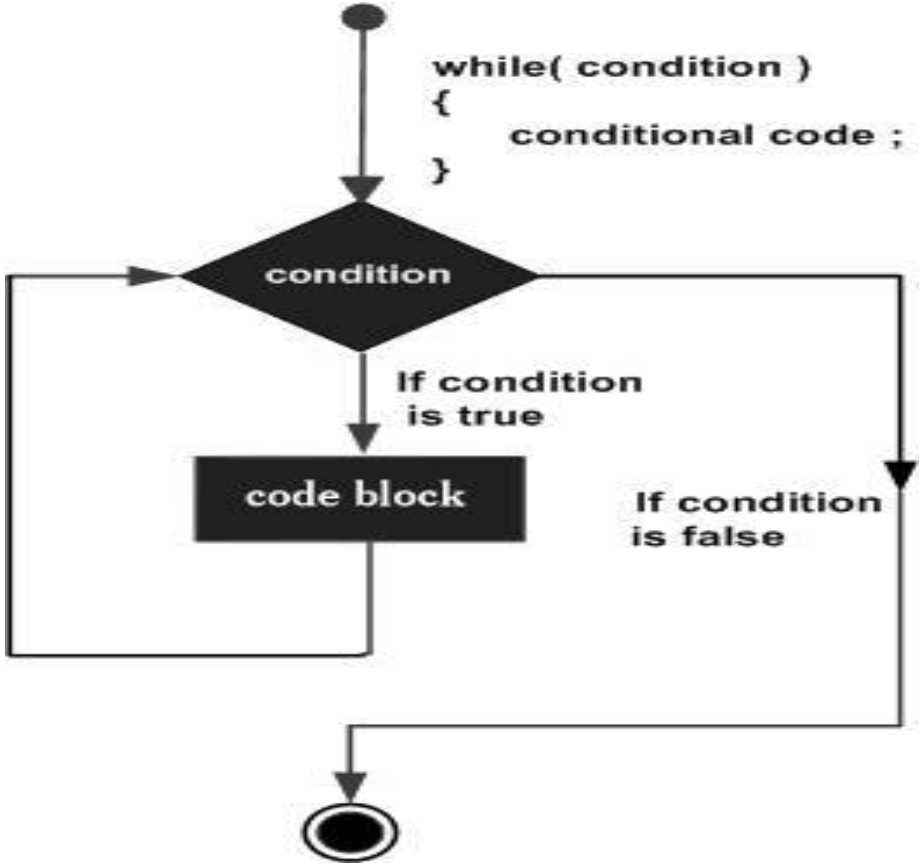
Module 5:
Introduction to While Loop

WHILE LOOP

- It is an Iterative Construct used to execute set of statements repeatedly.
- It is used when number of iterations are not fixed.
- In this initialization, condition and iterative statements are scattered.
- **Syntax:-** while(Boolean_expression) {

```
// Statements
}
```

HOW WHILE LOOP WORKS??

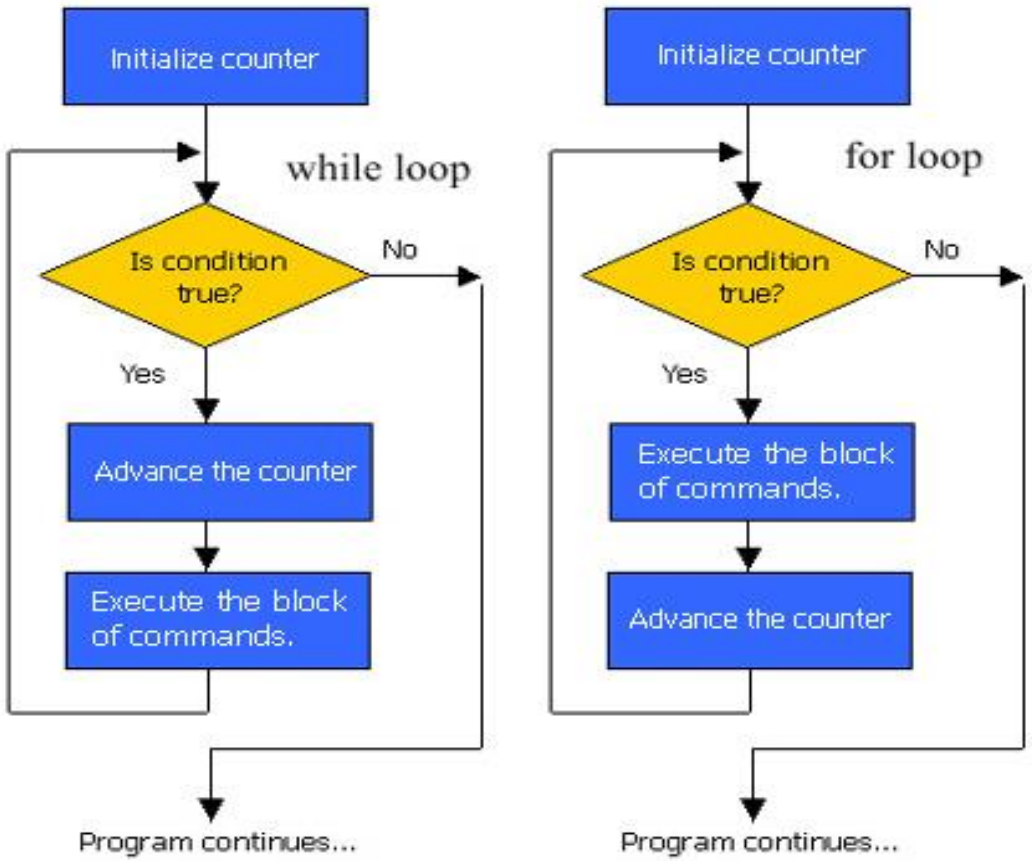



```
public class Test {

   public static void main(String args[]) {
      int x = 10;

      while( x < 20 ) {
         System.out.print("value of x : " + x );
         x++;
         System.out.print("\n");
      }
   }
}
```

FOR VS WHILE


Initialize counter
while loop
Is condition true?
No
Yes
Advance the counter
Execute the block of commands.
Program continues...
Initialize counter
for loop
Is condition true?
No
Yes
Execute the block of commands.
Advance the counter
Program continues...

FOR VS WHILE

For Loop	While/Do-While Loop
• It is used when the number of iterations are fixed.	• It is used when number of iterations are not fixed
• In this, initialization, condition and iteration statement are placed together.	• In this, initialization, condition and iteration statement are not placed together.
• Syntax: for(i=1;i<=n;i++){ code----}	• i=1 while (i<=n){ code-- }

APPLICATIONS OF WHILE LOOP

- **Finding The Digits In A Number**

  - To get the last digit of a number, simply divide a number by 10 and store it's remainder
  - For Example:- Let's n=89 ; Divide it by 10, we will get the remainder 9
  - This 9 will be stored in a separate variable where you have to store the digits of number.
  - Now for the next digit, now divide the number by 10 again and store in same variable n.
  - For Example:- n=n/10; n= 89/10 then n= 8 because we are dividing integer on integer.

WAP TO INPUT A NUMBER & PRINT THE TOTAL NUMBER OF DIGITS PRESENT IN IT.

```
class digits
{
    public static void main(String[] Args)
    {
        int n,d,c=0;
        Scanner sc= new Scanner(System.in);
        System.out.println("Enter a number");
        n=sc.nextInt();
while(n>0)
        {
            c++;
            n=n/10;
        }
        System.out.println("Number of digits in
this number is "+c);
    }
}
```

PRACTICE PROGRAMS

1. WAP to input a number & print the sum of its digit.
2. WAP to input a number & print the product of its digit.
3. WAP to input a number & print all the even digits.
4. WAP to input a number & print its maximum digit.

Solutions to above questions

```
1. import java.util.*;
class sum {
   public static void main(String[] Args)    {
      int n,d, s=0;
      Scanner sc= new Scanner(System.in);
      System.out.println("Enter a number");
      n=sc.nextInt();
      while(n>0)       {
        d=n%10;
          s=s+d;
          n=n/10;
      }
      System.out.println("Sum of digits is "+s);
   }
 }
```

```
1. import java.util.*;
class sum {
   public static void main(String[] Args)    {
      int n,d, p=1;
      Scanner sc= new Scanner(System.in);
      System.out.println("Enter a number");
      n=sc.nextInt();
      while(n>0)       {
        d=n%10;
          p=p*d;
          n=n/10;
      }
      System.out.println(“product of digits is "+p);
   }
 }
```

Solutions to above questions

3.
```
import java.util.*;
class even {
    public static void main(String[] Args)    {
        int n,d;
        Scanner sc= new Scanner(System.in);
        System.out.println("Enter a number");
        n=sc.nextInt();
        while(n>0)        {
            d=n%10;
            if(d%2==0)
            {
                System.out.println(d);
            }
            n=n/10;
        }
    }
```

4.
```
import java.util.*;
class maximum {
    public static void main(String[] Args)    {
        int n,d,max=0;
        Scanner sc= new Scanner(System.in);
        System.out.println("Enter a number");
        n=sc.nextInt();
        while(n>0)        {
            d=n%10;
            if(d>max)
            {
                max=d;
            }
            n=n/10;
        }
        System.out.println("Maximum digit is "+max);
    }
}
```