# SHRI BHAGUBHAI MAFATLAL POLYTECHNIC

## Computer Engineering Department

# Control Structure Part - III

**Course: Programming in C**

**Course Code: PRC238912**

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**SEMESTER : II**

**DIVISION : A**

https://www.javatpoint.com/do-while-loop-in-c

https://www.javatpoint.com/while-loop-in-c

# Course Outcome – 2

**Conceptualize loops and control structure**

**Lab Outcome:**

**Student will be able to**

- Conceptualize the concept of while and do-while loops
- Use while and do-while loop in various real life problem statement

# while loop

1. while is a Keyword

2. While loop is also known as a pre-tested loop.

3. In general, a while loop allows a part of the code to be executed multiple times depending upon a given boolean condition.

4. The while loop is mostly used in the case where the number of iterations is not known in advance.

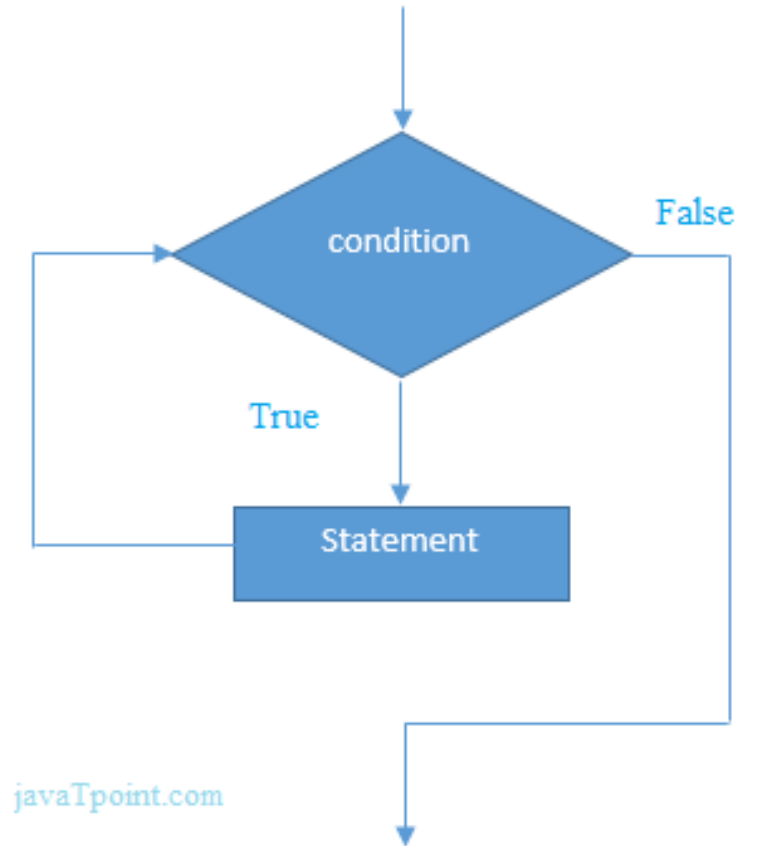# Syntax of while loop in C language

**while**(condition)
{
//code to be executed
}

**Flowchart of while loop in C**



javaTpoint.com

**Example of the while loop in C language**

```c
#include<stdio.h>
void main()
{
int i=1;
while(i<=10)
{
        printf("%d \n",i);
        i++;
}
}
```

**Program to print table for the given number using while loop in C**

```c
#include<stdio.h>
void main()
{
int i=1,number=0,b=9;
printf("Enter a number: ");
scanf("%d",&number);
while(i<=10)
{
        printf("%d \n",(number*i));
        i++;
}
}
```

**Infinitive while loop in C**

**If the expression passed in while loop results in any non-zero value then the loop will run the infinite number of times.**

```c
while(1)
{
//statement
}
```

# do while loop in C

Loops are used to execute repeating activities and boost programming performance. **There are multiple loops in the C programming language, one of which is the "do-while" loop.**

A **"do-while" loop is a form of a loop in C that executes the code block first, followed by the condition.** **If the condition is true, the loop continues to run; else, it stops.** **However, whether the condition is originally true, it ensures that the code block is performed at least once.**

**do while loop syntax**

```
do
{
//code to be executed
}while(condition);
```

- The **do keyword marks the beginning of the Loop.**
- The **code block within curly braces {} is the body of the loop, which contains the code you want to repeat.**
- The **while keyword is followed by a condition enclosed in parentheses (). After the code block has been run, this condition is verified. If the condition is true, the loop continues else, the loop ends.**
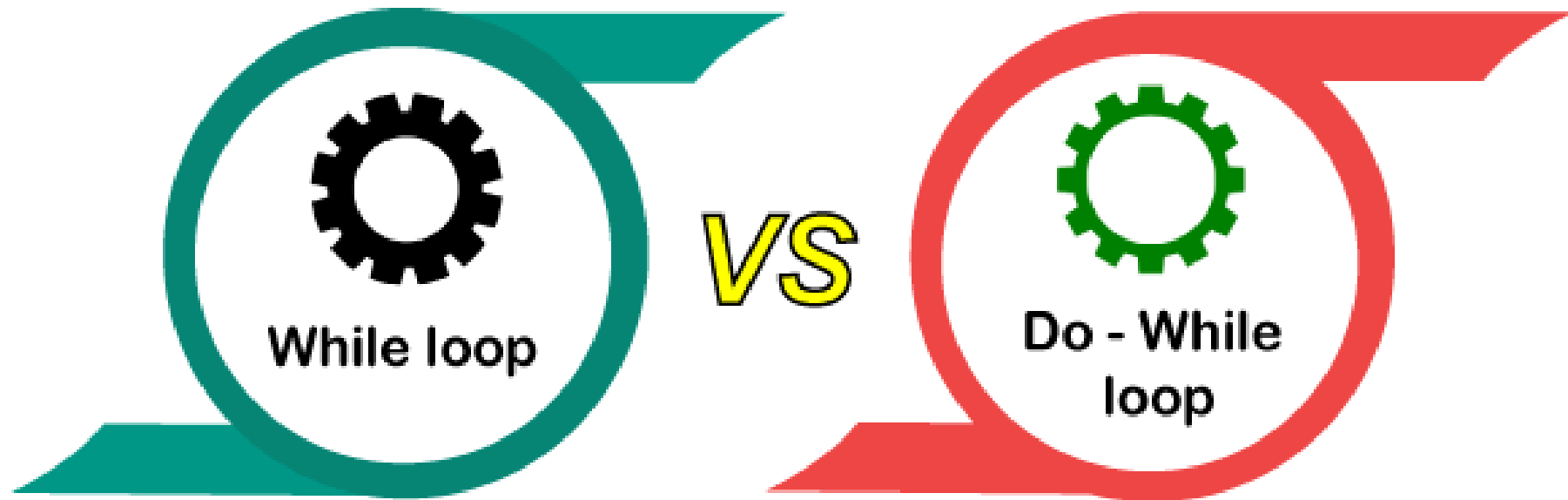
**Example of do while loop in C:**

```c
#include <stdio.h>
void main()
{
inti = 1;
do
{
        printf("%d\n", i);
        i++;
} while (i<= 5);
}
```

**Program to print table for the given number using do while Loop**

```c
#include<stdio.h>
void main()
{
inti=1,number=0;
printf("Enter a number: ");
scanf("%d",&number);
do
{
printf("%d \n",(number*i));
i++;
}while(i<=10);
}
```

# Difference Between while and do-while Loop

**While loop** **VS** **Do - While loop**

| SR. NO | while loop | do-while loop |
|---|---|---|
| 1. | While the loop is an entry control loop because firstly, the condition is checked, then the loop's body is executed. | The do-while loop is an exit control loop because in this, first of all, the body of the loop is executed then the condition is checked true or false. |
| 2. | The statement of while loop may not be executed at all. | The statement of the do-while loop must be executed at least once. |
| 3. | The while loop terminates when the condition becomes false. | As long as the condition is true, the compiler keeps executing the loop in the do-while loop. |
| 4. | In a while loop, the test condition variable must be initialized first to check the test condition in the loop. | In a do-while loop, the variable of test condition Initialized in the loop also. |
| 5 | **Syntax of while loop:**<br>while (condition)<br>{<br>Block of statements;<br>}<br>Statement-x; | **Syntax of do-while loop:**<br>do<br>{<br>statements;<br>} while (condition);<br>Statement-x; |

# Practice Program Questions

◦ Write following program **using while and do-while loops.**

   ◦ **Armstrong number or not**

   ◦ **Strong number or not**

   ◦ **Palindrome or not**

   ◦ **Neon number or not**

   ◦ **Factorial of a number**

   ◦ **Prime number or not**

# Conclusion

- Can you Conceptualize the concept of while and do-while loops ?
- Will you be able to Use while and do-while loop in various real life problem statement?

# THANK YOU !!!!