SOMAIYA VIDYAVIHAR UNIVERSITY
K J Somaiya College of Engineering

# Programming In "C"
## "While and Do While"

By

Dr. Vaibhav P. Vasani

Assistant Professor

Department of Computer Engineering

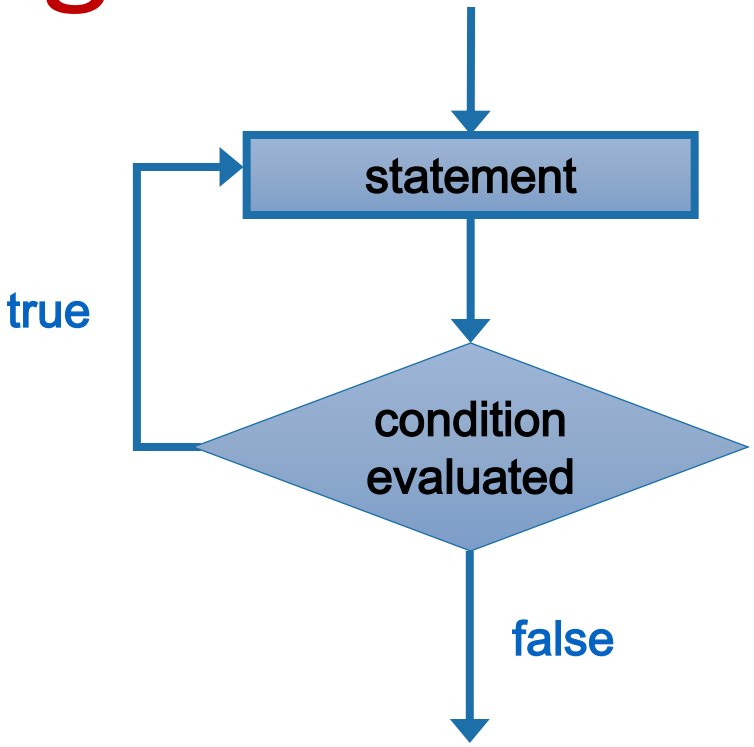
K. J. Somaiya College of Engineering

Somaiya School University

vaibhav.vasani@gmail.com

Somaiya TRUST

# Logic of a do Loop



# The do Statement

- A *do statement* has the following syntax:

```
do
{
    statement;
}
while ( condition );
```

- **The `statement` is executed once initially, and then the `condition` is evaluated**
- **The statement is executed repeatedly until the condition becomes false**

# The do Statement

- An example of a `do` loop:

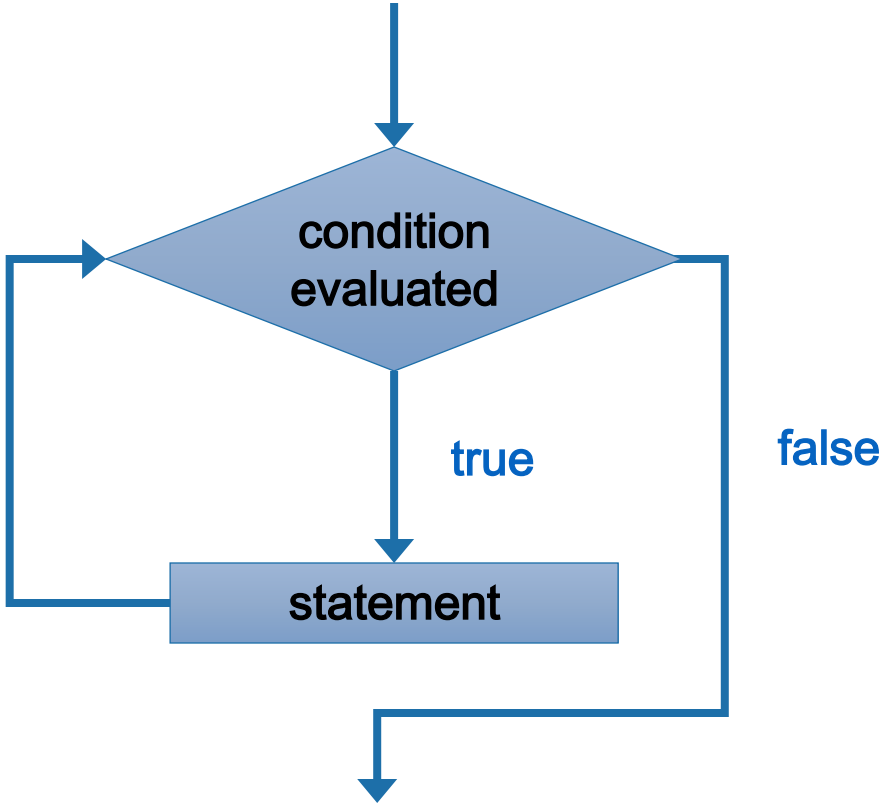
```
int count = 0;
do
{
    count++;
    Cout<<count<<endl;
} while (count < 5);s
```

- **The body of a `do` loop is executed at least once**

# Example: Fixing Bad Keyboard Input

- Write a program that refuses to accept a negative number as an input.
- The program must keep asking the user to enter a value until he/she enters a positive number.
- How can we do this?

# Logic of a while Loop



# The while Statement

- A *while statement* has the following syntax:

```
while ( condition )
    statement;
```

- **If the `condition` is true, the `statement` is executed**
- **Then the condition is evaluated again, and if it is still true, the statement is executed again**
- **The statement is executed repeatedly until the condition becomes false**

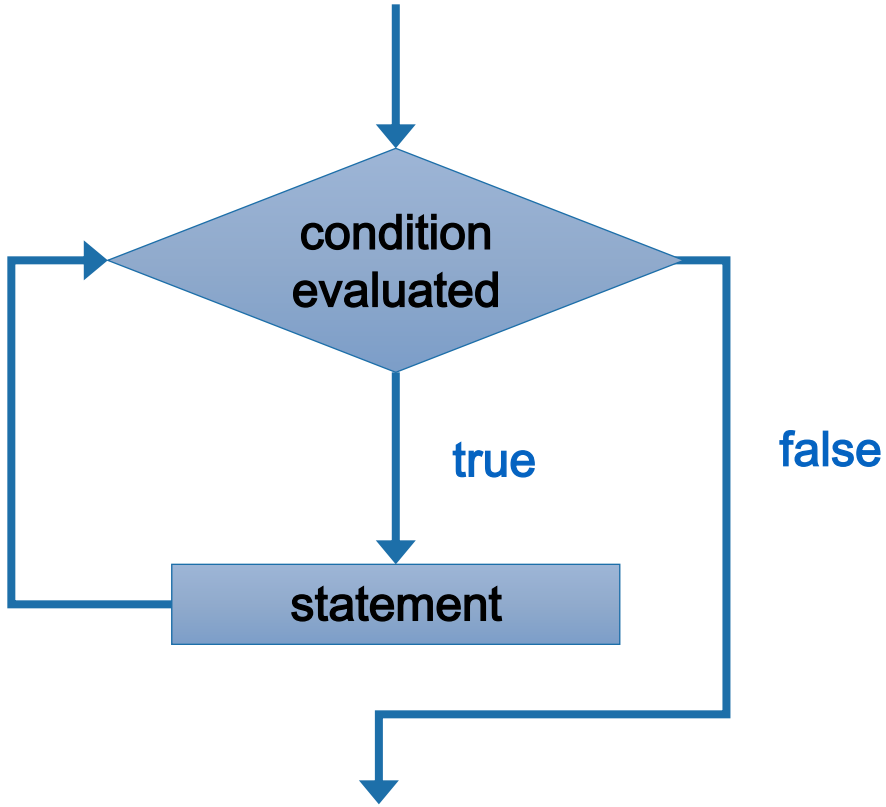
# The while Statement

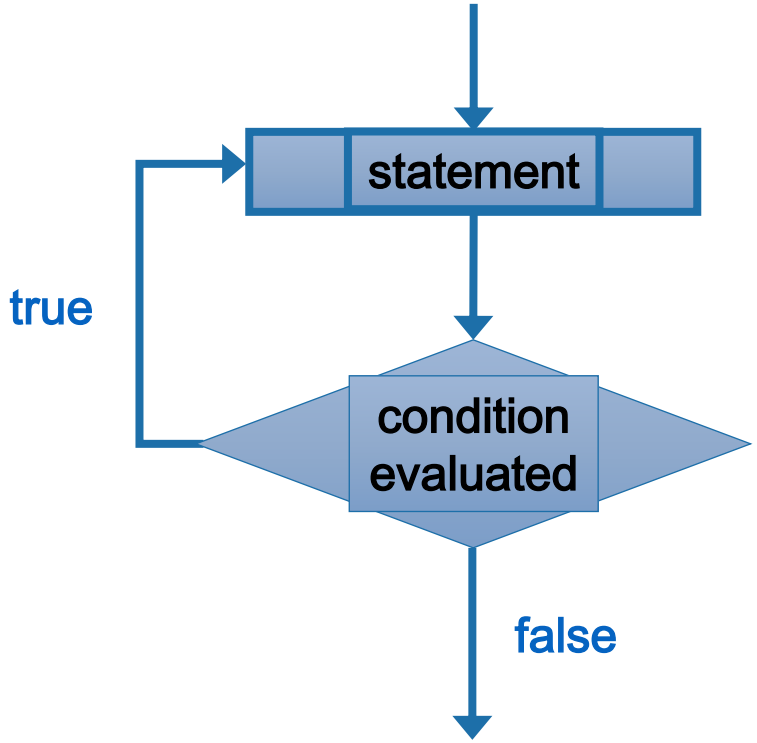
- An example of a while statement:

```
int count = 1;
while (count <= 5)
{
    cout<<count<<;
    count++;
}
```

- **If the condition of a `while` loop is false initially, the statement is never executed**
- **Therefore, the body of a `while` loop will execute zero or more times**

# Comparing while and do




vaibhav.vasani@gmail.com

# WAP to print N natural Number

vaibhav.vasani@gmail.com

# WAP to calculate sum of digits using while loop

vaibhav.vasani@gmail.com

# WAP to calculate sum of digits using while loop

| s= 0 | a = 123 | s=s+(a%10) | a=a/10 |
|---|---|---|---|
| 0 | 123 | 3 | 12 |
| 3 | 12 | 3+2=5 | 1 |
| 5 | 1 | 5+1=6 | 0 |
| stop | | | |

```
#include <iostream>
using namespace std;

int main() {
    int num, sum = 0, digit;

    cout << "Enter a number: ";
    cin >> num;

    while (num > 0) {
        digit = num % 10;   // extract last digit
        sum += digit;       // add digit to sum
        num = num / 10;     // remove last digit
    }

    cout << "Sum of digits = " << sum << endl;

    return 0;
}
```

vaibhav.vasani@gmail.com

# WAP to print Fibonacci Series up to given “range”

vaibhav.vasani@gmail.com

```
#include <iostream>
using namespace std;
int main() {
    int range, a = 0, b = 1, next;

    cout << "Enter the range (maximum value): ";
    cin >> range;

    cout << "Fibonacci Series up to " << range << " is: ";
    cout << a << " " << b << " ";

    next = a + b;
    while (next <= range) {
        cout << next << " ";
        a = b;
        b = next;
        next = a + b;
    }
    cout << endl;
    return 0;
}
```

| a = 0 | b = 1 | c |
|---|---|---|
| 0 | 1 | 1 |
| 1 | 1 | 2 |
| 1 | 2 | 3 |
| 2 | 3 | 5 |
| 3 | 5 | 8 |
| 5 | 8 | 13 |
| 8 | 13 | 21 |
| 13 | 21 | 34 |

output for range = 9?

0 1 1 2 3 5 8

vaibhav.vasani@gmail.com

# WAP to calculate factorial for given input number N using do while.

vaibhav.vasani@gmail.com

```
#include <iostream>
using namespace std;

int main() {
    int n;
    long long factorial = 1;  // Use long long to handle large values
    int i = 1;

    cout << "Enter a number: ";
    cin >> n;

    if (n < 0) {
        cout << "Factorial is not defined for negative numbers." << endl;
    } else {
        // do-while loop for factorial
        do {
            factorial *= i;
            i++;
        } while (i <= n);

        cout << "Factorial of " << n << " = " << factorial << endl;
    }

    return 0;
}
```

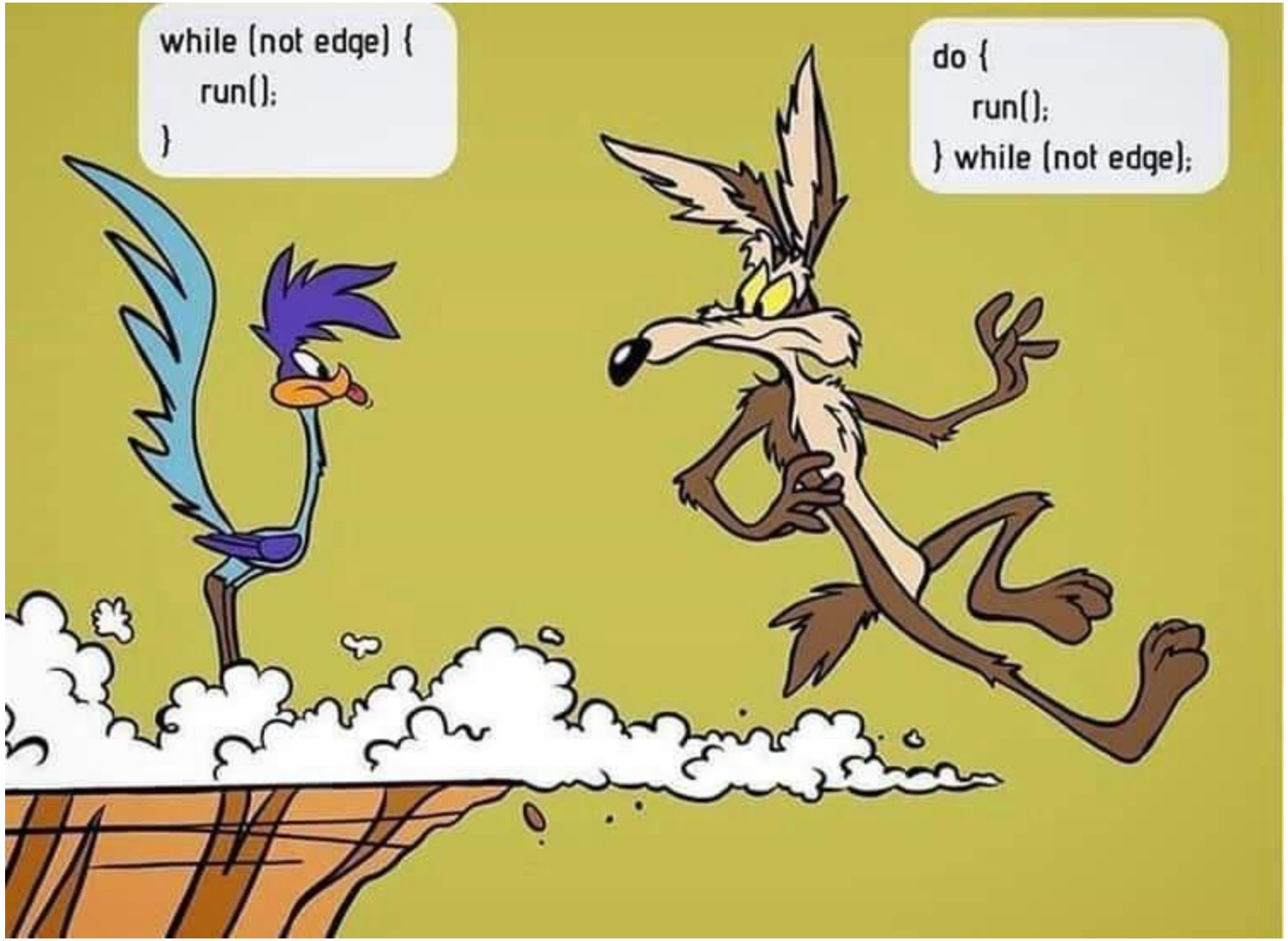
# Write a c code to print the sum of all even and odd numbers up to n.

vaibhav.vasani@gmail.com

```
#include <iostream>
using namespace std;

int main() {
   int n, i = 1;
   int sumEven = 0, sumOdd = 0;

   cout << "Enter the value of n: ";
   cin >> n;

   while (i <= n) {
      if (i % 2 == 0)
         sumEven += i;
      else
         sumOdd += i;
      i++;
   }

   cout << "Sum of even numbers up to " << n << " = " <<
sumEven << endl;
   cout << "Sum of odd numbers up to " << n << " = " << sumOdd
<< endl;

   return 0;
}
```

# Compare while and do While

- Students should discuss


while (not edge) {
run();
}
do {
run();
} while (not edge);

# Contact Details


- vaibhav.vasani@somaiya.edu
- vaibhav.vasani@gmail.com

# Thank you

vaibhav.vasani@gmail.com