WHILE LOOP

ITERATION STATEMENT

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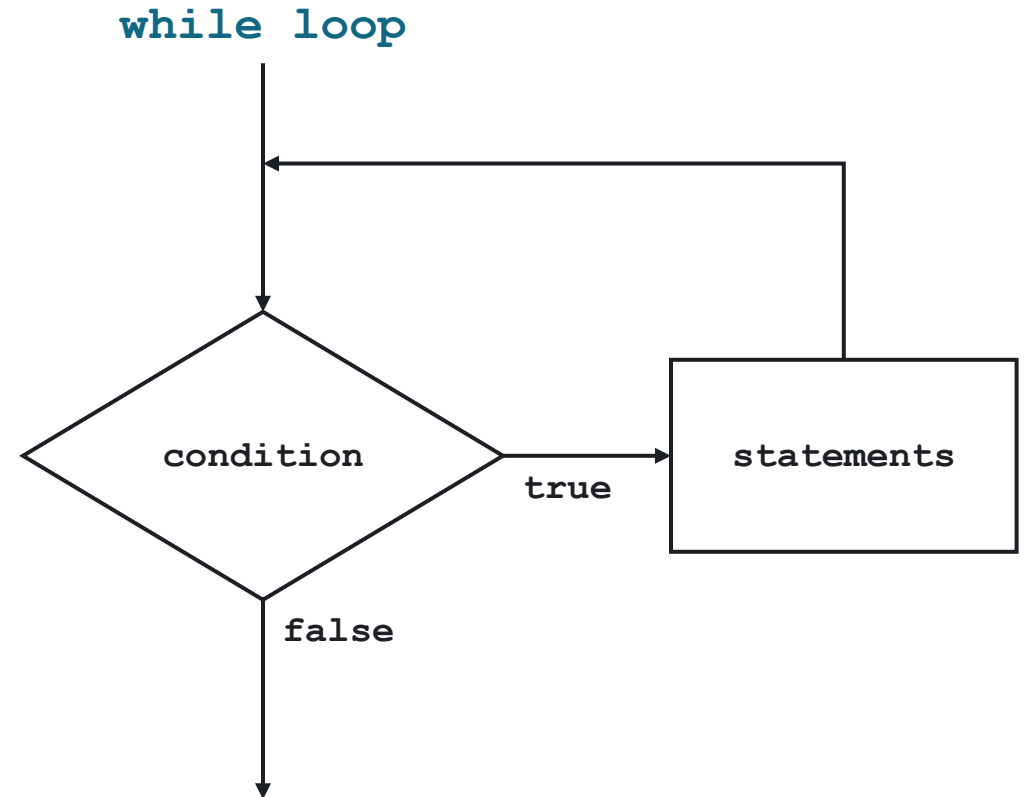
TOPIC OUTLINE

`while` Loop
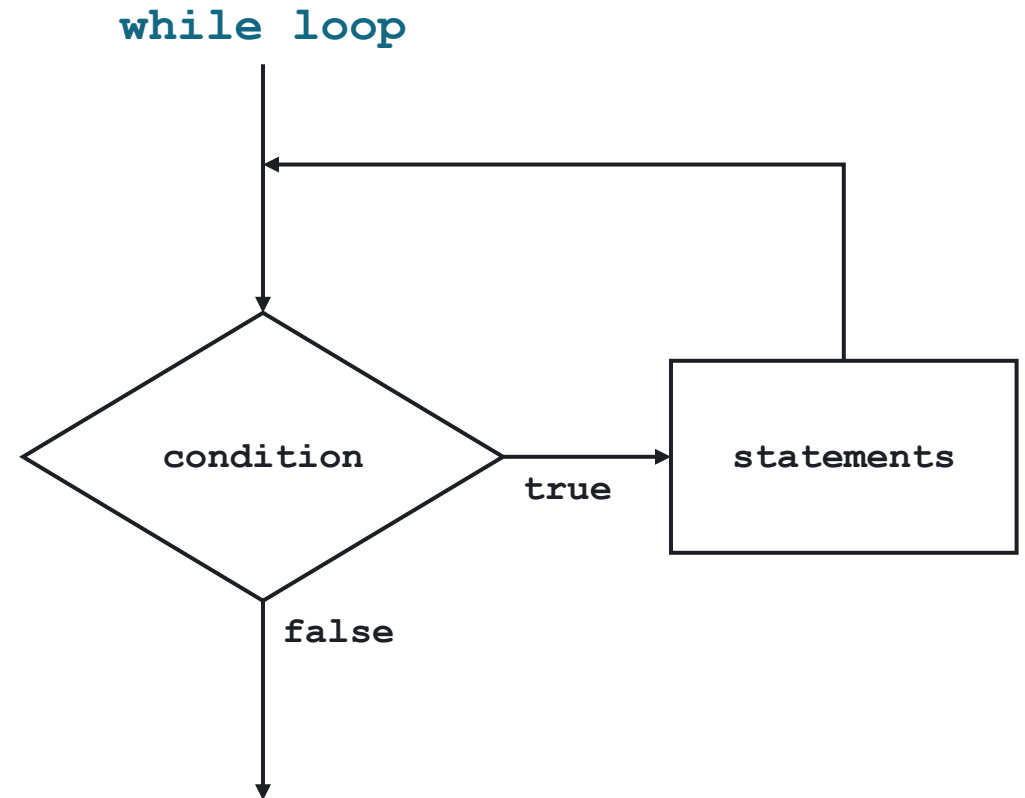
WHILE LOOP

WHILE LOOP

A **while** loop is a control flow statement that allows code to be executed **repeatedly** while the given Boolean condition is **true**. The loop can be thought of as a repeating **if** statement.

```
while loop

        │
        ▼
    ◄───────────────────┐
    │                   │
    ▼                   │
 ╱condition╲   true  ┌──────────┐
 ╲         ╱────────►│statements│
    │                └──────────┘
  false
    │
    ▼
```
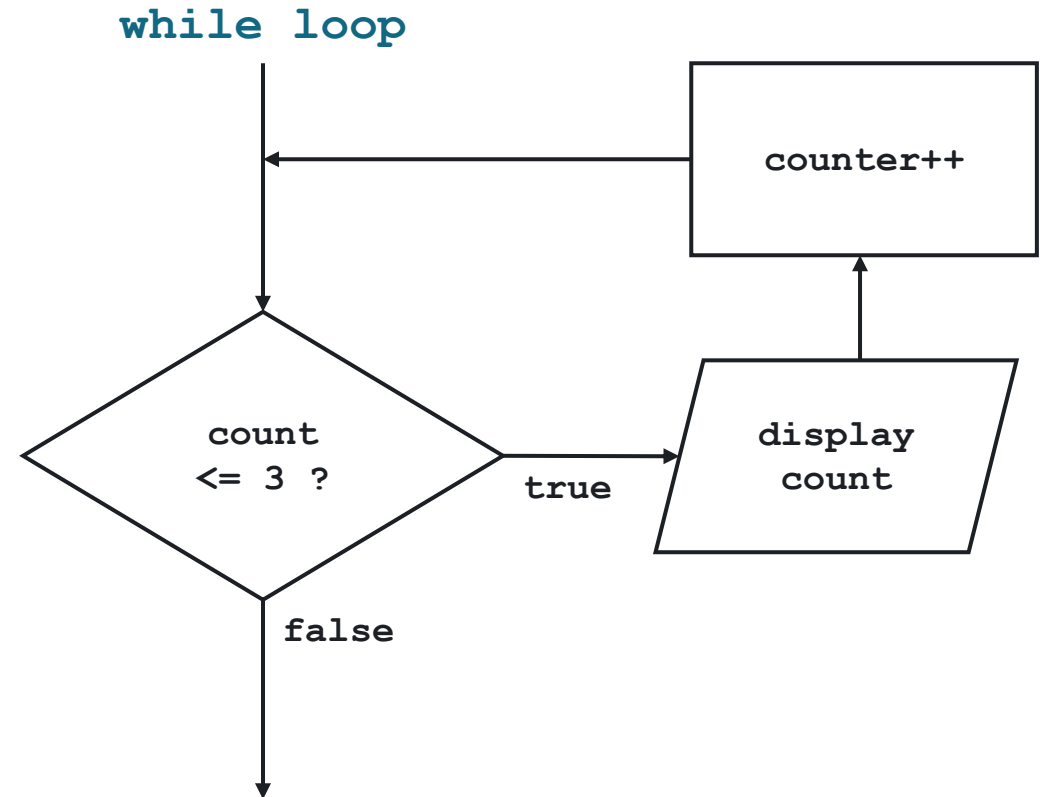
WHILE LOOP

while loop

Syntax of the **while** loop statement:

```cpp
while(condition){
    // repeat code while the
    condition is true

}
```

EXERCISE

```
int count = 0;

while(count <=3 ){

    cout << count

    count++;

}
```

while loop

INIFINITE LOOP

An **infinite loop** occurs if the condition **never** becomes **false**. For example:

```
while(1==1){
    // This loop will run forever
}
```

Key Points:

1. **Initialization**: Ensure that the loop control variable (e.g., count) is properly initialized before the loop starts.

2. **Condition**: The loop continues as long as the condition is `true`. Be careful to avoid infinite loops where the condition never becomes `false`.

3. **Update**: Make sure to update the loop control variable within the loop body to ensure that the loop will eventually terminate.

EXERCISE

Determine the output of this code snippet:

```cpp
int a = 1;

while(a <= 5){

    cout << a;

}
```

output:

Determine the output of this code snippet:

```cpp
int y = 5;

while(y > 0) {

    cout << y << " ";

    y--;

}
```

output:

EXERCISE

Determine the output of this code snippet:

```cpp
int z = 10;

while(z >= 0){

    cout << z << " ";

    z = z - 2;

}
```

output:

Determine the output of this code snippet:

```cpp
int z = 10;

while(z >= 0){

    cout << z << " ";

    z -= 2;

}
```

output:

EXERCISE

Determine the output of this code snippet:

```cpp
int b = 0;

while(b <= 10){

    cout << b << "\n";

    b = b + 2;

}
```

output:

Determine the output of this code snippet:

```cpp
int b = 0;

while(b <= 10){

    cout << b << "\n";

    b += 2;

}
```

output:

EXERCISE

Determine the output of this code snippet:

```cpp
int a = 1;

while(a <= 10){

    if(a % 2 == 0){

        cout << a <<"\t";

    }

    a++;

}
```

output:

Determine the output of this code snippet:

```cpp
int a = 1;

while(a <= 10){

    if(a % 2 == 0){

        cout << a <<"\r";

    }

    a++;

}
```

output:

LABORATORY