



# Fundamental Coding with C

Loops 1



# Loops 1

- You may find situations when a block of code needs to be executed several times.
- Programming languages provide various control structures that allow for more complicated execution paths.
- A loop statement allows us to execute a statement or group of statements multiple times.





# Loops 1

- Loops are a segment of code we use to repeat a specific block of code.
- Iteration or looping refers to the specified sequence in which a pattern or a block of code is repeated until the condition becomes no longer true.
- As long as the condition remains to be true, the loop is executed. It is terminated when the condition is false or no longer satisfied.





# Loops 1

- Body of the loop or Iteration

It consists of the content, like the print statement or a fragment of code which we want to run multiple times.

- Control Statement

These statements control the execution of the loop and are important for loop termination.



# Loops 1

- Any programming language provides the following basic types of loops:
  - while
    - Repeats a group of statements while a given condition is true. It tests the condition before executing the loop body.
  - for
    - Executes a sequence of statements multiple times and abbreviates the code of the control statement.
  - do...while
    - It is more like a while statement, except that it tests the condition at the end of the loop body.

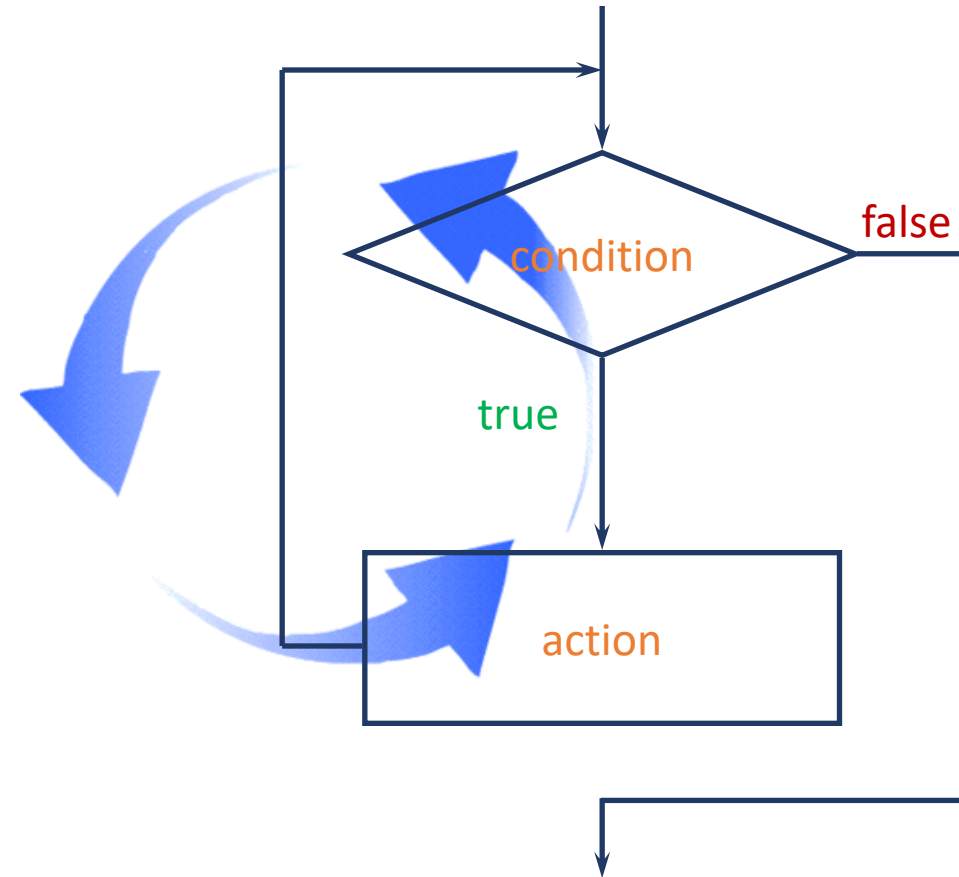


# Loops 1

## while

How it works:

- If the **condition** is **true**, the **action** is executed
- Repeat this process until **condition** is **false**
- **action** is either a single statement or a group of statements.

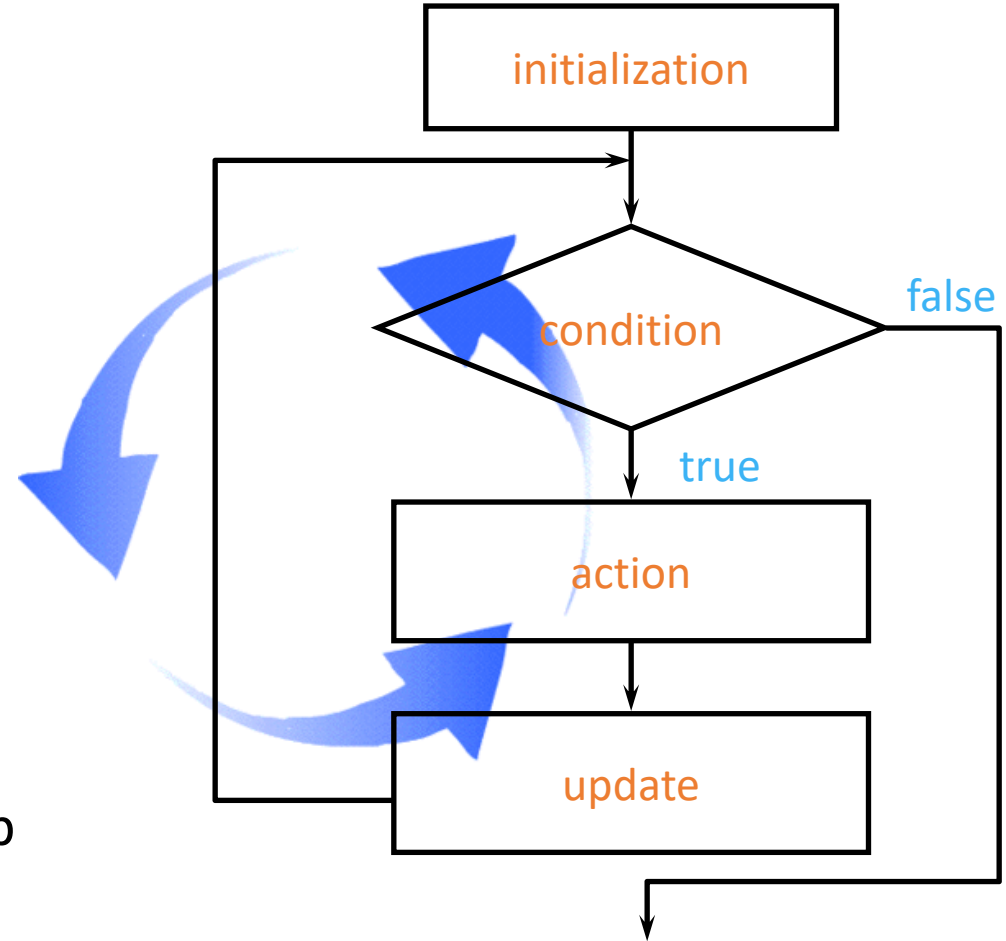




# Loops 1

for

- How it works:
  - Execute **initialization** control statement
  - While **condition** of control statement is **true**:
    - Execute **action**
    - **Update control statement**
    - When the **condition** of the control statement is false, it continues with the rest of the program.
- **action** is either a single statement or a group of statements.





# Loops 1

## do ... while

- How it works:
  - Execute **action**
  - If **condition** is **true**, the **action** is executed again.
  - Repeat this process until **condition** is **false**.
- **action** is either a single statement or a group of statements.

