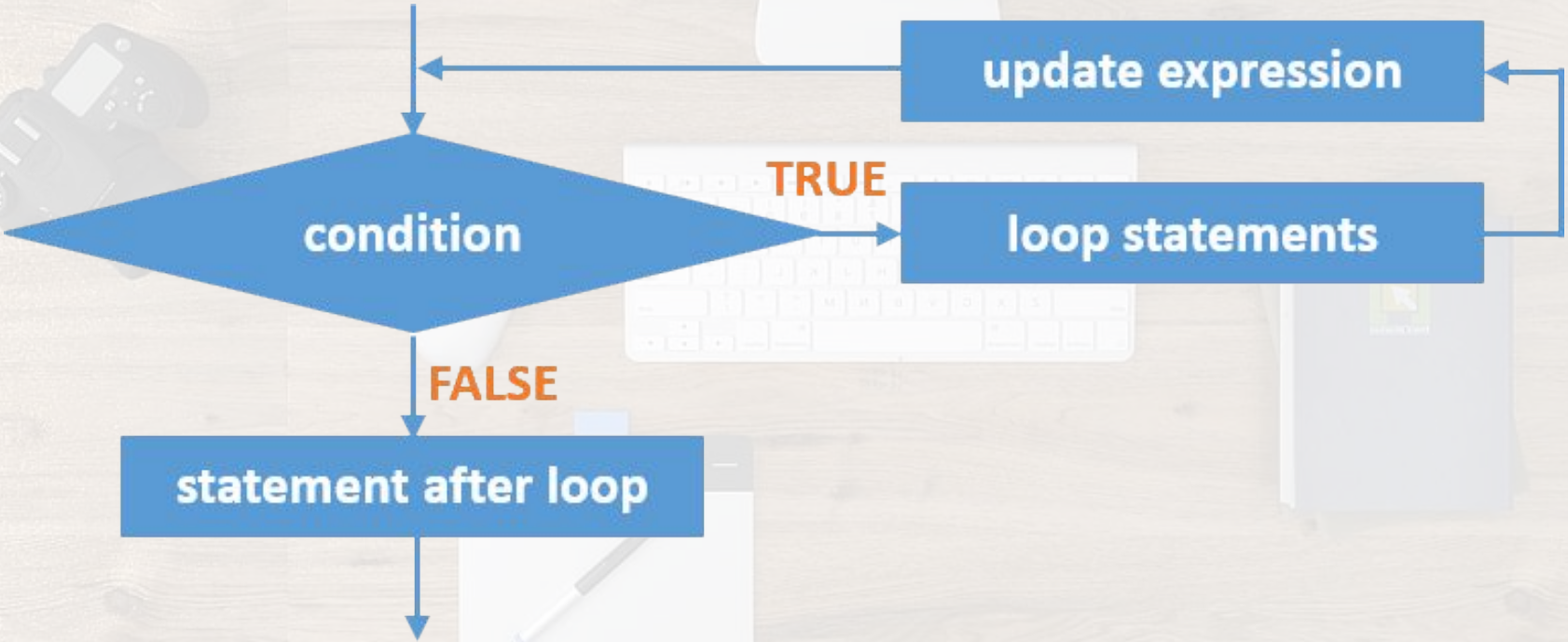
While Loop Statements

- A **while** loop is usually used to repeatedly execute a statement/block of statements as long as a given condition is TRUE (nonzero).
- Syntax:

```
while (condition)
{
    // body statements
}
```

Flowchart


update expression
condition
TRUE
loop statements
FALSE
statement after loop

Order of operations

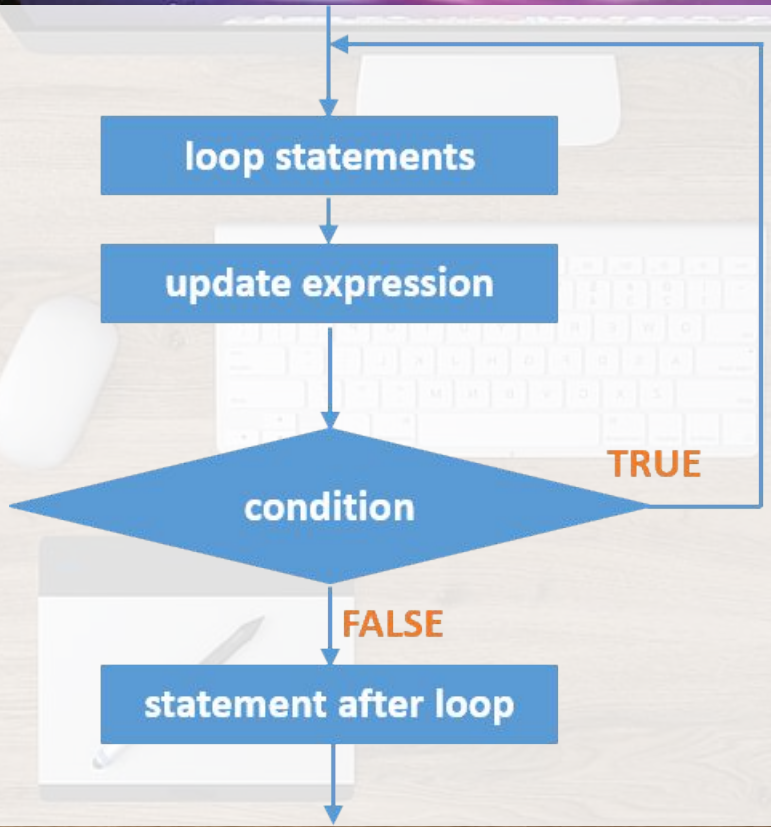
1. The **condition** is evaluated. The **condition** may be a direct integer value, a variable, or an expression.
   a. Any nonzero value is considered TRUE.
   b. If the **condition** contains a variable, the variable must be initiated before it is used.
   c. If the condition is TRUE, the statements within the loop will be executed including the update expression.
   d. If the condition is FALSE, the loop statements will not be executed. Program control jumps to the next statement after **while** loop.
2. The condition is evaluated again. Step 2 is repeated until the condition becomes false or loop is terminated using break statement.

Do While Loop

- A **do-while** loop is usually used to repeatedly execute a statement/block of statements as long as a given condition is TRUE (nonzero).
- The **condition** is tested after execution of the **do-while** loop's body
  - A statement/block of statements within the **do-while** loop will be executed at least one time.
- Syntax:

```
do {
    // body statements
} while (condition);
```

Flowchart


loop statements
update expression
condition
TRUE
FALSE
statement after loop

Order of Operations

1. Statements, including the update expression, within **do** block are executed.
2. The **condition** is evaluated. The **condition** may be a direct integer value, a variable, or an expression.
   a. Any nonzero value is considered TRUE.
   b. If the **condition** contains a variable, the variable must be initiated before it is used.
   c. If the condition is TRUE, the statements within the loop will be executed again, including the update expression.
   d. If the condition is FALSE, the program control jumps to the next statement after **do-while**
   e. loop.