

Variables and Constants declaration

1. Type: int, float, char, bool
2. Name: which must start with a letter but can then contain any alphanumeric character or underscores, and can be of any length
3. Equal sign
4. Variable's value
5. Semicolon

Mathematical and logical expressions

Mathematical expressions (*, +, -, /, ++, --):

The operations valid on all numerical types (including char, which stores characters as numbers as described)

Logical expressions (&&, ||, >, <, ==, !=)

Conditions

If Statement

The **if** statement first *evaluates* an expression within **()**, and then runs the code between **{}** if and only if that expression evaluated is true. If it didn't, it checks the expression in the **else if**—of which there can be any number, including none at all—before finally resorting to the optional **else** code if that wasn't true either.

The expressions inside the **()** must be any expression that evaluates to a **bool** (true/false) value, which includes any comparison using **<, >, <=, >=, ==, and !=** .

Switch:

switch (variable name)

```
{    case value1:
        .....;
    case value2:
        .....;
}
```

Loops

For loop:

A **for** loop requires a loop index variable which is first set to a starting value. Then so long as the expression following it is true, the code inside the **{}** will be run and at the end of that code the value of the index will be modified according to the last statement `index++` in the for loop.

i.e. `for (index=...; index<x; index++){.....};`

While loop:

While loop will not even run once if its condition is false from the start.

i.e. `while (condition) {.....};`

Do while loop:

Do while loop will run the code once before checking the condition.

i.e. `do {.....} while (condition);`