Conditionals

This lesson will teach you how to execute code selectively based on specified conditions by introducing the if, else if, else statements and the conditional operator.

We'll cover the following

One of the most important constructs in programming is the ability to execute (or not execute) pieces of code, or execute different pieces of code, depending on the outcome of some decision or question about data. The if-else construct lets us execute code selectively in C based on conditions defined by us.

If Statement

The basic if statement looks like this:

```
if (conditional_expression) {
   program_statements;
}
```

The `program_statements` are **only** executed if the `conditional_expression` returns a non-zero value, i.e. if it returns a value that is **not FALSE** (FALSE = zero).

For example, here is a simple program that loops through the integers between 1 and 10 and prints to the screen the integers that are odd (that are not divisible by 2 with zero remainder):

```
#include <stdio.h>

int main() {
  int i;
  for (i=1; i<=10; i++) {
    if ((i % 2) != 0) {
      printf("%d is odd\n", i);
```

```
    }
  }
}
```




Else

We can add an **else** to our if statement, to execute a different code block if the value of the `conditional_expression` is zero:

```
#include <stdio.h>

int main() {
  int i;
  for (i=1; i<=10; i++) {
    if ((i % 2) != 0) {
      printf("%d is odd\n", i);
    }
    else {
      printf("%d is even\n", i);
    }
  }
}
```



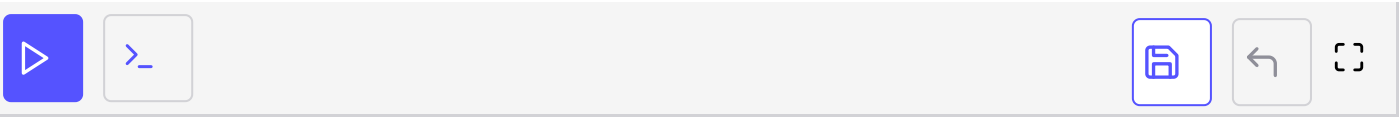

Else If

You can string together several conditional tests and execute different pieces of code by using the `else if` construct. Here is a simple program that asks the user to enter an integer, and prints to the screen whether that integer is positive, negative, or zero:

```
#include <stdio.h>

int main() {
    int number;
    printf("enter an integer: ");
    scanf ("%i", &number);
    if (number < 0) {
        printf("the integer %d is negative\n", number);
    }
    else if (number > 0) {
        printf("the integer %d is positive\n", number);
    }
    else if (number == 0) {
        printf("the integer %d is zero\n", number);
    }
    else {
        printf("this statement should never be executed!\n");
```

```
    }
}
```



The Conditional Operator

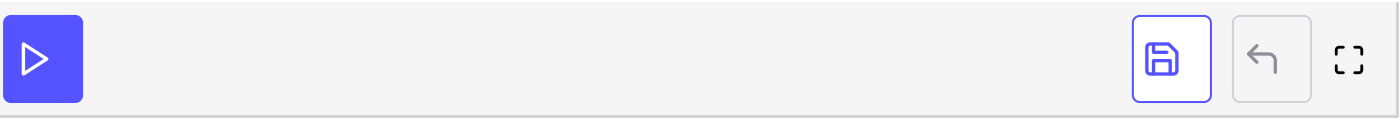
There is a convenient shorthand for simple if-else constructs, using the **conditional operator**:

```
condition ? expression1 : expression2
```

It enables you to shorten your code a bit, but that's all. It doesn't give you any additional functionality; it's just a shorthand:

```
#include <stdio.h>

int main() {
  int i;
  for (i=1; i<=10; i++) {
    (i % 2) ? printf("%d is odd\n", i) : printf("%d is even\n", i);
  }
}
```



A substitute for `if` and the conditional operator is a `switch` statement. Find out more in the next lesson.