Cheatography

CS50 Cheat Sheet

by Ruan via cheatography.com/126499/cs/24505/

Project base

```
// include Standard Input and
Output
#include <st dio.h>
// include CS 50 helper
#include <cs 50.h >
int main(void)
{
       // Asks for the user name
        string name = get_st -
rin g("What is your name? ");
       // Print the message
        pri ntf ("hello, %s.\n",
name);
}
```

Declaring variables

```
// Variables declaration
// The structure to declare
variables is:
// type variab le_ name;
int my_int eger;
char my_sin gle _char;
bool true_o r_f alse;
string a_long _st ring;
float price;
// you can also declare multiple
vars of the same type in one
line
string first, last, full;
int total, a, b;
// assign " =" values to a
variable
my_integer = 10;
my_sin gle _char = 'A';
true_o r_false = true;
```

Declaring variables (cont)

```
> a_long_string = "A really long text";
price = 1.25;
// note: When working with strings the value
needs to be under double quotes "
// When working with chars the value needs
to be under single quotes '
// intialization
int my_age = 30;
float product_price = 123.45;
string message = "thank you";
char letter = 'A';
```

Conditional statements

```
if (boolean-expression)
{
       // code if true
}
// ------
if (boole an- exp res sion)
{
       // code if true
}
else
{
        //code if false
}
// ------
if (boole an- exp res sion)
{
```

Conditional statements (cont)

```
>     // code if true
}
else if (another-boolean-expression)
{
    //code if first is false but second is true
}
else
{
    //code if all are false
}
//--
// Example ok ?: use
int x;
if (boolean-expression)
{
    x = 5;
}
else
{
    x = 10;
}
// this is a short form of the same code
above
int x = boolean-expression ? 5 : 10;
//--------
int my_number = 10;
switch(my_number)
{
    case 1:
```

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Published 28th September, 2020.
Last updated 28th September, 2020.

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Conditional statements (cont)

```
>       printf("Number is 1");
        break;
    case 10:
        printf("Number is 10");
        break;
    default:
        printf("Number is invalid");
}
```

Loops

```
while (boolean-expression)
{
        // code will be executed
while the boolea n-e xpr ession
is true
}
do
{
        // do-while will always
execute at least once.
        // code will be executed
while the boolea n-e xpr ession
is true
}
while (boole an- exp res sion);
for (initi liz ation ; boolea n-
e xpr ession ; increment)
{

}
for (int index = 0 ; index < 20
; index ++)
{

}
```

Data Types

int	Integers - 4 bytes (32 bits)
char	Single characters - 1 byte (8 bits)
float	Real numbers - 4 bytes (32 bits)
double	Double precision for floats
void	Is a type but not a Data Type. Used in functions to say that params or returns are not required
CS50 ones	
bool	Boolean value (true or false)
string	Serie of characters (words, sentences, etc)

Arithmetic Operators

+	Sum (add)
-	Subtraction
*	Multiplication
/	Division
%	Module, gets the remainder (15 % 7 == 1)
x++	x = x + 1
x--	x = x - 1
x += 5	x = x + 5
x *=5	x = x * 5

Boolean expressions

Boolean expression is used in C to compare values.
There are just two possible values for it **true** or **false**.
On boolean expressions, anything other than **false, 0 or NULL** is considered as **true**.
Logical operators:
&& - **AND** is true only if both operands are true, otherwise false
|| - **OR** is false only if both operands are false, otherwise true
! - **NOT** inverts the value of its operand.
Relational operators
== - **EQUAL** is true only if both operands are equal.
!= - **NOT EQUAL** is true if the operands are not equal.
< - **LESS THAN** is true if the left operand is less than the one in the right.
> - **GREATER THAN** is true if the left operand is greater than the one in the right.
>= - **GREATER THAN OR EQUAL TO** is true if the left operand is greater than or equal to the one in the right.
<= - **LESS THAN OR EQUAL TO** is true if the left operand is less or equal than the one in the right.

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cs50.h Functions

get_char("MESSAGE")	prompts user for a char
get_double("MESSAGE")	prompts user for a double
get_float("MESSAGE")	prompts user for a float
get_int("MESSAGE")	prompts user for an int
get_long("MESSAGE")	prompts user for an long
get_string("MESSAGE")	prompts user for a string

Truth table

	AND &&	
x	y	(x && y)
true	true	true
true	false	false
false	true	false
false	false	false
	OR ||	
x	y	(x || y)
true	true	true
true	false	true
false	true	true
false	false	false

Linux commands

make file_name	Complile the code
./file_name	Execute a compiled file
cd folder_name	Change directory
cd	Go back to the home folder (~)
cp original_file copied_file	Copy file
ls	List files
mkdir name_of_the_folder	Create a folder
pwd	show the current path
rm file_name	Remove a file
rm -R folder	Remove a folder recursively
touch file_name	Create a file
mv original_file renamed_file	Rename or move a file

String scapes

\n	New line
\r	Return
\t	Tab
\"	Double quote
\\	Backslash

more http://www.lix.polytechnique.fr/libert-i/public/computing/prog/c/C/FUNCTIONS/escape.html

Format String

%c	Char
%s	String
%d || %i	Int
%f	Double or float
%.#f	Float (limit the output to # decimal places)
%%	%

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