

Tutorial 1: Hello World

Programming Lab (Using C)

XU Silei

slxu@cse.cuhk.edu.hk

Outline

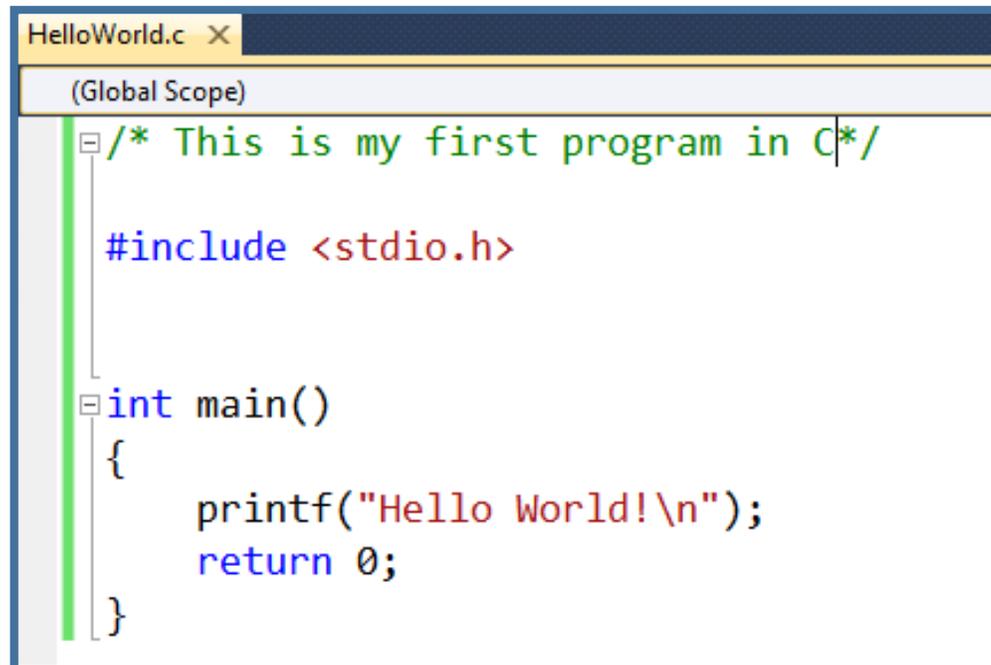
- Write your first program in C
 - Create a C project in Visual Studio 2010
 - First program: Hello World!
 - Compile your program in Visual Studio 2010
- Try another one?
 - Multiplication Calculator
- Get your hands dirty
 - Calculator

Write your first program in C

- Create a C project in Visual Studio 2010
 - Hint:
 - Visual Studio 2010 is not free, you can try Visual C++ 2010 Express Edition in your personal computers or laptops
 - Procedure
 - File -> New -> Project (Ctrl + Shift + N)
 - Visual C++ -> Win32 Console Application -> Enter your project Name -> Select the location of your project -> OK
 - Next -> Console application -> Empty project -> Finish
 - Right Click "Resource Files" -> Add -> New Item -> Visual C++ -> C++ File -> Enter your file name end with ".c" -> Add
 - ***Demo***

Write your first program in C

- First program: Hello World!

A screenshot of a code editor window titled 'HelloWorld.c'. The editor shows the following C code:

```
/* This is my first program in C*/  
  
#include <stdio.h>  
  
int main()  
{  
    printf("Hello World!\n");  
    return 0;  
}
```

The code is color-coded: comments are green, preprocessor directives are blue, and function names and return values are black. The editor has a light blue header bar with the title and a close button, and a light gray status bar below it.

Write your first program in C

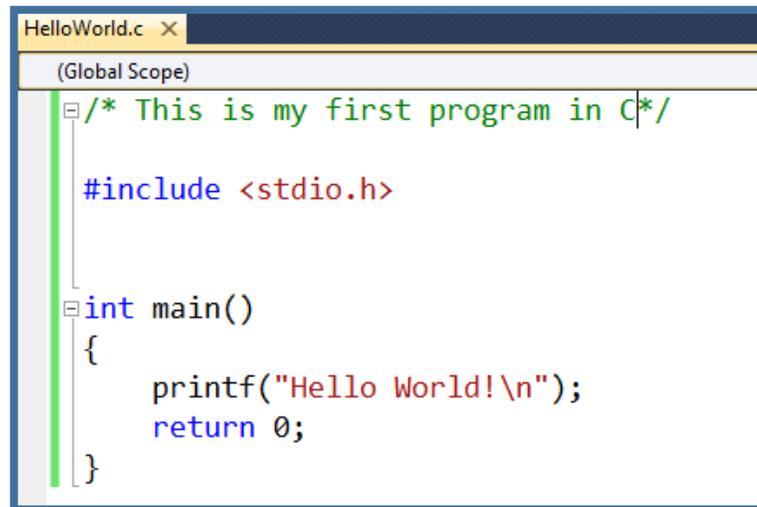
- Summary of “Hello World!”
 - Comments
 - Text surrounded `/*` and `*/` will be ignored by computer
 - `#include <stdio.h>`
 - Preprocessor directive which tells computer to load contents of a certain file
 - `stdio.h`: a header file allows standard io operations
 - `int main()`
 - C programs contain one or more functions, exactly one of which is the `main` function
 - Parentheses indicate a function
 - `int` means that `main` returns an integer value
 - The content of a function must be contained in braces (`{` and `}`)

Write your first program in C

- Summary of “Hello World!”
 - `printf(“Hello World!\n”);`
 - Print the string of characters within quotes (“ ”) on console screen.
 - Entire line is called a statement
 - All statements must end with a semicolon (;)
 - `\n`: Newline character
 - `return 0;`
 - A way to exit a function

Write your first program in C

- First program: Hello World!

A screenshot of a code editor window titled "HelloWorld.c" showing the source code for a C program. The code is as follows:

```
/* This is my first program in C */  
  
#include <stdio.h>  
  
int main()  
{  
    printf("Hello World!\n");  
    return 0;  
}
```

The code is color-coded: comments are green, preprocessor directives are blue, and function declarations and return values are blue. The main function body contains a printf statement and a return statement.

- Compile your program in Visual Studio 2010
 - *Demo*

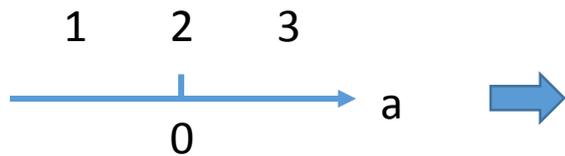
Try Another One

- Multiplication Calculator
 - Print the *absolute value* of the product of two input integers
- Hints
 - Variable Declaration
 - `int a;`
 - `int` means variable `a` can hold integers (float, char, ...), `a` is the name of the variable
 - *Whenever you want to use a variable, double check whether the variable is declared and assigned with a value you want*
 - All the local variable declarations in C must appear immediately after the opening braces {

Try Another One

- Hints

- `if(a<0) {a = -a;}`
- if control structure
 - Only If the condition is true, the content inside the braces will be executed
 - 0 is false, non-zero is true
 - `if...{else if...} else...`



```
if(a>0) {a=3;}  
else if(a==0) {a=2;}  
else {a=1;}
```

- Remember: “==” and “=” is different!

Try Another One

- Hints

- Input/Output of a Variable

- `scanf("%d", &a);`

- The program will be suspended and wait for keyboard inputs

- %d: the input should be a decimal integer

- &a: assign the input integer to variable a

- `printf("%d", a);`

- %d: the output should be a decimal integer

- a: the value of variable a will be output on the console screen

- ***Demo***

Get Your Hands Dirty

- Calculator

- Input: An Integer, an operator(+, -, *, /), Another Integer
 - Example: 5 * 4 (separated by space)
 - Hint: use “%c” instead of “%d” to input/output the operator (char variable)
 - Hint: use “if... else if...”
- Output: the result of the input formula
- Try division like “3 / 2”, check your output.
- Try to go on another one after one calculation rather than exit. (loop)
- ***Demo***

Q&A

Thanks