

# C Programming I

Alexander B. Pacheco LTS Research Computing April 28, 2015

## Outline

- Introduction
- 2 Basic Syntax
- Program Structure
- 4 Data Types, Variables and Constants
- 5 Control Structures: for, if & switch



# What is the C Language?

- A general-purpose, procedural, imperative computer programming language.
- Developed in 1972 by Dennis M. Ritchie at the Bell Telephone Laboratories to develop the UNIX operating system.
- The UNIX operating system, the C compiler, and essentially all UNIX applications programs have been written in C.
- C is the most widely used computer language.
  - Easy to learn
  - Structured language
  - Produces efficient programs
  - Handles low-level activities
  - Can be compiled on a variety of computer plaforms
- Most of the state-of-the-art softwares have been implemented using C.
- Today's most popular Linux OS and RBDMS MySQL have been written in C.

# What do you need to learn C?

### C Compiler

- What is a Compiler?
  - A compiler is a computer program (or set of programs) that transforms source code written in a programming language (the source language) into another computer language (the target language, often having a binary form known as object code).
- How does a compiler do?
  - Translate C source code into a binary executable
- List of Common Compilers:
  - GCC GNU Project (Free, available on most \*NIX systems)
  - Intel Compiler
  - Portland Group (PGI) Compiler
  - Microsoft/Borland Compiler
  - IBM XL Compiler

### Text Editor

- Emacs
- VI/VIM
- Notepad++ (avoid Notepad if you will eventually use a \*NIX system)
- Integrated Development Environment: Eclipse, Visual Studio, etc

# My First C Code

Simple Hello World Code

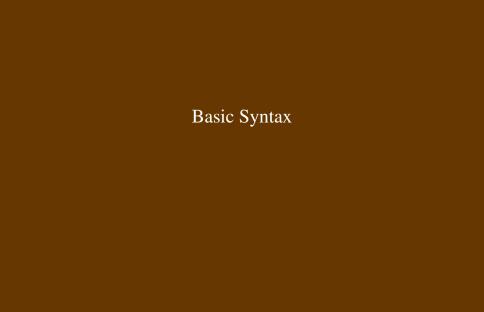
```
#include <stdio.h>
int main ()
{
   printf("Hello World!\n");
   return 0;
}
```

• Compile using GCC compiler or any other compiler that you prefer

```
dyn100077: Exercise apacheco$ gcc hello.c
```

• Run the compiled binary, a.out

```
dyn100077:Exercise apacheco$ ./a.out
Hello World!
```





# Data Types, Variables and Constants

Control Structures: for, if & switch