بسم الله الرحمن الرحيم

Compiling C/C++ Programs in Linux

Lab 02

loop.cpp

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Lab Objective

- To practice writing and compiling C/C++ programs in Linux

C programs

- Three things are necessary for creating C programs:
- a *text editor,*
- a compiler
- a *C standard library*.

A text editor

- A text editor is needed to create the *source code* for a program in C or in any other language.
- A text editor is a program for writing and editing plain text.
- It differs from a word processor in that it does not manage document formatting (e.g., typefaces, fonts, margins and italics) or other features commonly used in desktop publishing.

A text editor

- C programs can be written using any of the many text editors that are available for Linux, such as *vi*, *gedit*, *kedit* or *emacs*.
- At least one text editor is built into every Unix-like operating system, and most such systems contain several.

A text editor

- To see if a specific text editor exists on the system, all that is necessary is to type its name on the *command line* (i.e., the all-text user interface) and then press the ENTER key.
- For example, to see if vi is on the system (it or some variation of it almost always is), all that is necessary is to type the following command and press the ENTER key: vi

A text editor

- If it exists, the editor will appear in the existing window if it is a command line editor, such as *vi*.

- It will open in a new window if it is a GUI (graphical user interface) editor such as *gedit*.

  Example: gedit file.cpp

A compiler

- A compiler is a specialized program that converts source code into *machine language* (also called *object code* or *machine code*) so that it can be understood directly by a CPU.
- An excellent C compiler is included in the *GNU Compiler Collection* (GCC), one of the most important components of most modern Linux distributions.

A compiler

- GNU is an on-going project by the Free Software Foundation (FSF) to create a complete, Unix-compatible, high performance and freely distributable computing environment.
- All that is necessary to see if the GCC is already installed and ready to use is to type the following command and press the ENTER key: gcc

What is gcc/ g++?

- **gcc** and **g++** are part of the GNU Compiler Collection (GCC)
- **gcc** is the "GNU" C Compiler, and **g++** is the "GNU C++ compiler
- **gcc** and **g++** are command line compilers; that is; they do not have a GUI.
- A compiler is a program that translates human readable source code into computer executable machine code.

Installing g++

```
sudo apt-get update
sudo apt-get –f install
sudo apt-get install g++
```

- To double-check:

```
g++ --version
```

C library

- A library is a collection of subprograms that any programmer can employ to reduce the amount of complex and repetitive source code that has to be written for individual programs.
- Every Unix-like operating system requires a C library.

Practice ...

- Write the following program using any text editor and save it in a file called `salam.cpp`

```
#include <iostream>
int main()
{
      std::cout<<"Assalmo Alikom\n";
      return 0;
}
```

Scanner

output

يأخذ من اليوزر

cin >>

Note: C++ source code should be given one of the valid C++ file extensions '.cc', '.cpp', '.cxx' or '.C'

… Practice

- The standard way to compile this program is with the following command:

```
$ g++ salam.C -o salam
```

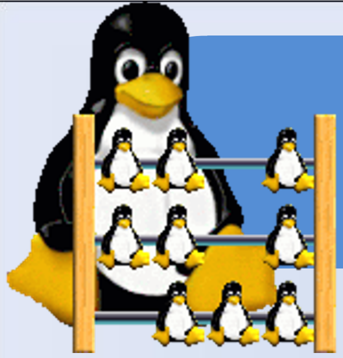
اسم الفايل .cpp

output

فايل الثاني من غير امتداد

- This command compiles `salam.cpp` into an executable program called `salam` that you run by typing the following at the command line:

```
$ ./salam
```



Exercise

1) Execute the previous program
2) Write and compile another program, name it `loop.cpp` that only has an infinite loop like the following:

```
for(;;)
{// loop body
}
```

3) Execute the `loop` program in the ***background***.
4) List all current processes and their assigned ID (PID). Write down the PID of the `loop` program.
5) Kill the `loop` program.

Useful Reference

- https://www.w3schools.com/cpp/default.asp

??? ANY QUESTIONS ???
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