CMAKE

Step 1 Installation :

CMake can be installed in various ways depending on your operating system.

Windows

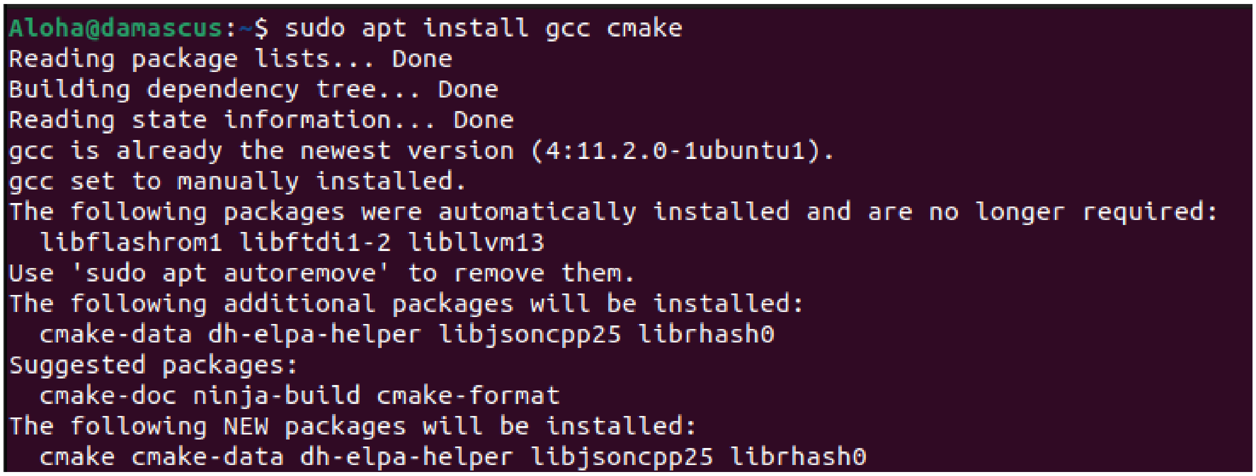
Download the installer from the official CMake website and run it.

macOS

CMake can be installed using Homebrew with the command `brew install cmake`.

Linux

On Debian-based systems, use `sudo apt-get install cmake`. On Red Hat-based systems, use `sudo dnf install cmake`



```
Aloha@damascus:~$ sudo apt install gcc cmake
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
gcc is already the newest version (4:11.2.0-1ubuntu1).
gcc set to manually installed.
The following packages were automatically installed and are no longer required:
  libflashrom1 libftdi1-2 libllvm13
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  cmake-data dh-elpa-helper libjsoncpp25 librhash0
Suggested packages:
  cmake-doc ninja-build cmake-format
The following NEW packages will be installed:
  cmake cmake-data dh-elpa-helper libjsoncpp25 librhash0
```

CMake is a cross-platform free and open-source software tool for managing the build process of software using a compiler-independent method. It is designed to support directory hierarchies and applications that depend on multiple libraries. It is used in conjunction with native build environments such as make, Apple's Xcode, and Microsoft

Visual Studio. It has minimal dependencies, requiring only a C++ compiler on its own build system.

Step 2 : Making Cmake and Executable file :

To create a new file named "CMakeLists.txt", use the `touch` command in your terminal as follows:

```
touch CMakeLists.txt
```

After running this command, a new file named "CMakeLists.txt" will be created in your current location.

To create a CMake file and an executable file for a project, follow these steps:

1. **Create a CMakeLists.txt file**: This file is used by CMake to handle the build process. You can create it in the root directory of your project. Below is a simple example of a CMakeLists.txt file for a project that includes a single c++ file.

```
cmake_minimum_required(VERSION 3.10)
project(your_project_name)
add_executable(your_project_name main.cpp)
```

In this file, replace `your_project_name` with the name of your project and `main.cpp` with your source file.

1. **Generate the build files**: Navigate to your project directory in the command line and create a new directory, usually named "build". Navigate into this new directory and run the command `cmake ..` This will generate the build files in the build directory.
2. **Compile the project**: Still in the build directory, run the command `make`. This will compile your project and create an executable file with the same name as your

project. Running `./your_project_name` will run your executable.

Project syntax of CMakeLists.txt :

```
cmake_minimum_required(VERSION 3.00)
project(libraryManagementSystem C)
set(CMAKE_C_STANDARD 99)
set(CMAKE_C_FLAGS "${CMAKE_C_FLAGS} -pthread -lm")
include_directories(HEADER_FILES)
file(GLOB MAIN
"main.c"
"*.c"
"*.h"
)
add_executable(executable ${MAIN})
```

> Above is the program of CMakeLists.txt for my project “Library-Management-system”

Step 3 : Creating a build directory :

1. To create a new directory named "build", use the `mkdir` command in your terminal as follows:

```
mkdir build
```

After running this command, a new directory named "build" will be created in your current location.

2. Now go within the build directory

To navigate to the newly created "build" directory, use the `cd` command in your terminal as follows:

```
cd build
```

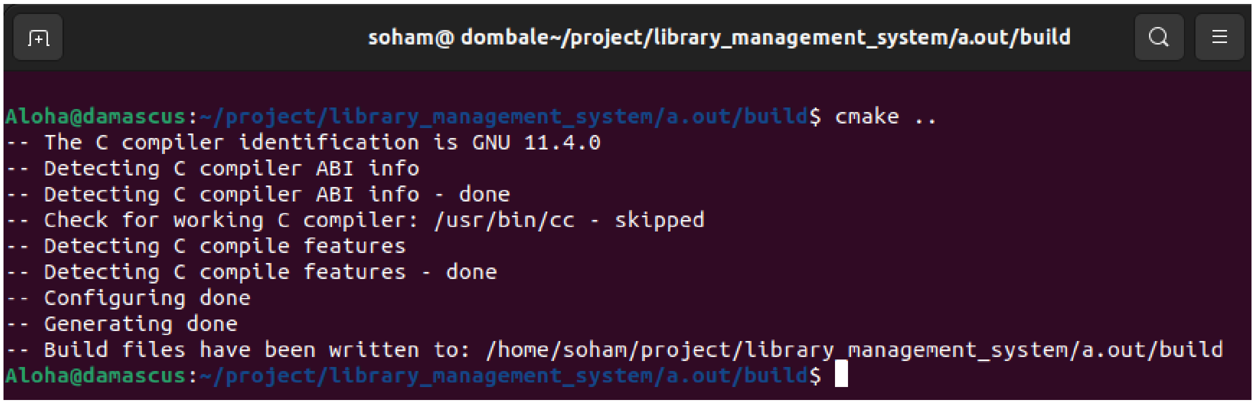
After running this command, you will be inside the "build" directory.

Step 4 : Run “cmake” :

To run CMake, use the `cmake ..` command in your terminal as follows:

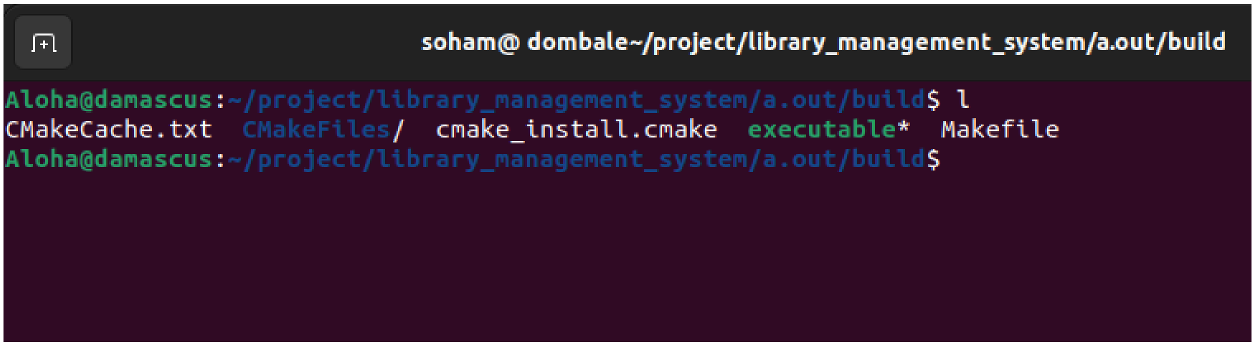
```
cmake ..
```

After running this command, CMake will generate the necessary build files in the "build" directory.


soham@ dombale~/project/library_management_system/a.out/build

```
Aloha@damascus:~/project/library_management_system/a.out/build$ cmake ..
-- The C compiler identification is GNU 11.4.0
-- Detecting C compiler ABI info
-- Detecting C compiler ABI info - done
-- Check for working C compiler: /usr/bin/cc - skipped
-- Detecting C compile features
-- Detecting C compile features - done
-- Configuring done
-- Generating done
-- Build files have been written to: /home/soham/project/library_management_system/a.out/build
Aloha@damascus:~/project/library_management_system/a.out/build$ 
```

List out contents :

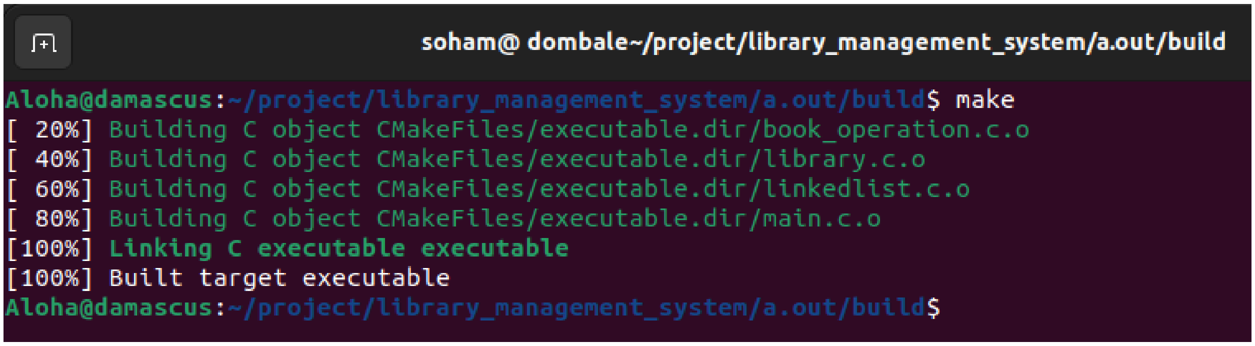


soham@ dombale~/project/library_management_system/a.out/build

```
Aloha@damascus:~/project/library_management_system/a.out/build$ l
CMakeCache.txt  CMakeFiles/  cmake_install.cmake  executable*  Makefile
Aloha@damascus:~/project/library_management_system/a.out/build$
```

An executable file is been created.

Now type “make” command



soham@ dombale~/project/library_management_system/a.out/build

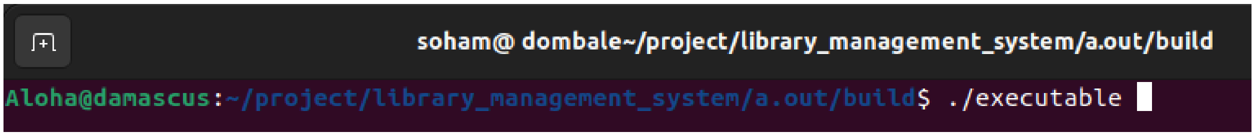
```
Aloha@damascus:~/project/library_management_system/a.out/build$ make
[ 20%] Building C object CMakeFiles/executable.dir/book_operation.c.o
[ 40%] Building C object CMakeFiles/executable.dir/library.c.o
[ 60%] Building C object CMakeFiles/executable.dir/linkedlist.c.o
[ 80%] Building C object CMakeFiles/executable.dir/main.c.o
[100%] Linking C executable executable
[100%] Built target executable
Aloha@damascus:~/project/library_management_system/a.out/build$
```

Step 5: Run executable file:

To run your compiled program, use the `./executable` command in your terminal as follows:

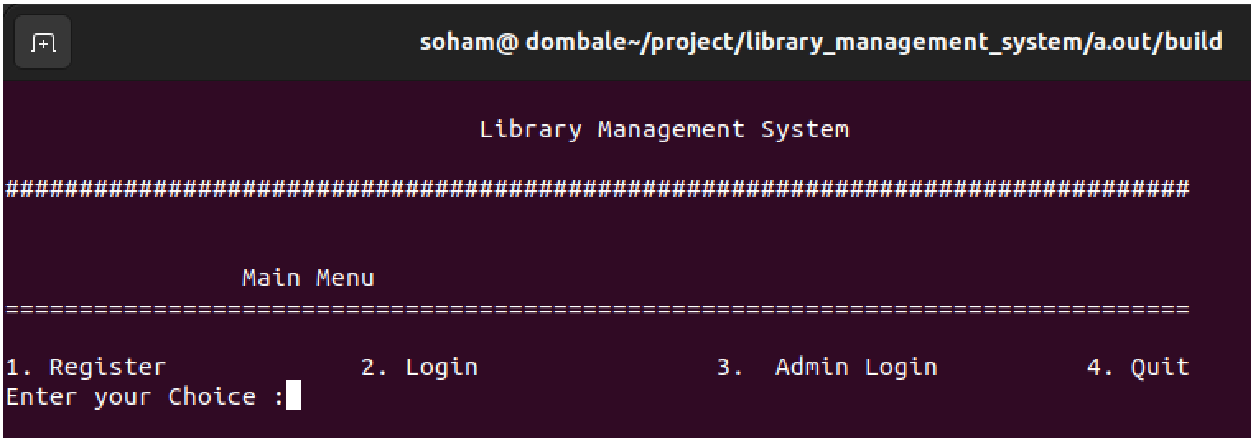
```
./executable
```

After running this command, your program will be compiled and run.



soham@ dombale~/project/library_management_system/a.out/build

```
Aloha@damascus:~/project/library_management_system/a.out/build$ ./executable
```


soham@ dombale~/project/library_management_system/a.out/build

```
                                Library Management System

################################################################################


                Main Menu
================================================================================

1. Register             2. Login                3.  Admin Login          4. Quit
Enter your Choice :
```