

Makefile Task

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Requirements: build a project using Makefile

Source codes

- I tried creating another file with the main and to use a function from it for testing

main file

```
#include <iostream>
#include "head.hpp"
using namespace std;

int main()
{
    cout <<"Hello this is ziad from main.c"<<endl;
    func();
    return 0;
}
```

head.cpp

```
#include <iostream>

void func()
{
    std::cout<<"hi i'm function from head.c"<<std::endl;
}
```

Makefile

```
CC=g++ #compiler used
CFLAGS=-Wall -c #flags for compilation

all: project #make all depends on project building

install: project #install build project also
    mkdir -p build/usr/bin #
    mv *.o build/usr/bin/
```

```
mv main build/usr/bin/

project: head.o main.o          #dependencies for building the project
      $(CC) main.o head.o -o main    #I used no flags here by the way

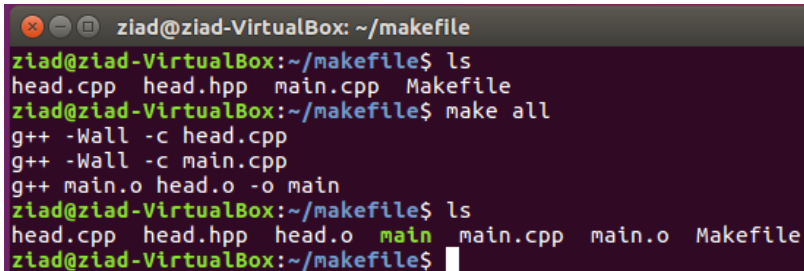
main.o: main.cpp                #dependencies to compile main.cpp
      $(CC) $(CFLAGS) main.cpp

head.o: head.cpp                #dependencies to compile head.cpp
      $(CC) $(CFLAGS) head.cpp

clean :
      rm -rf *o main          #removes the main exe file
      rm -r build              #removes the build directory
```

Testing

Make all



A terminal window titled 'ziad@ziad-VirtualBox: ~/makefile' showing the following commands and output:

```
ziad@ziad-VirtualBox:~/makefile$ ls
head.cpp head.hpp main.cpp Makefile
ziad@ziad-VirtualBox:~/makefile$ make all
g++ -Wall -c head.cpp
g++ -Wall -c main.cpp
g++ main.o head.o -o main
ziad@ziad-VirtualBox:~/makefile$ ls
head.cpp head.hpp head.o main main.cpp main.o Makefile
ziad@ziad-VirtualBox:~/makefile$
```

- as we can see the binaries are produced
- also the executable file "main" is made

Output from the project

```
ziad@ziad-VirtualBox: ~/makefile
ziad@ziad-VirtualBox:~/makefile$ ls
head.cpp head.hpp main.cpp Makefile
ziad@ziad-VirtualBox:~/makefile$ make all
g++ -Wall -c head.cpp
g++ -Wall -c main.cpp
g++ main.o head.o -o main
ziad@ziad-VirtualBox:~/makefile$ ls
head.cpp head.hpp head.o main main.cpp main.o Makefile
ziad@ziad-VirtualBox:~/makefile$ ./main
Hello this is ziad from main.c
hi i'm function from head.c
ziad@ziad-VirtualBox:~/makefile$
```

- As shown both the prints from the head.cpp and the main.cpp are printed
- so the project was compiled and linked successfully

Make install

```
ziad@ziad-VirtualBox: ~/makefile
ziad@ziad-VirtualBox:~/makefile$ make all
g++ -Wall -c head.cpp
g++ -Wall -c main.cpp
g++ main.o head.o -o main
ziad@ziad-VirtualBox:~/makefile$ ls
head.cpp head.hpp head.o main main.cpp main.o Makefile
ziad@ziad-VirtualBox:~/makefile$ make install
g++ main.o head.o -o main
mkdir -p build/usr/bin
mv *.o build/usr/bin/
mv main build/usr/bin/
ziad@ziad-VirtualBox:~/makefile$ ls build/usr/bin
head.o main main.o
ziad@ziad-VirtualBox:~/makefile$ ls
build head.cpp head.hpp main.cpp Makefile
ziad@ziad-VirtualBox:~/makefile$
```

- Here it shows after make install the executables and binaries are moved to their directory

Make clean

```
ziad@ziad-VirtualBox: ~/makefile
ziad@ziad-VirtualBox:~/makefile$ make all
g++ -Wall -c head.cpp
g++ -Wall -c main.cpp
g++ main.o head.o -o main
ziad@ziad-VirtualBox:~/makefile$ ls
head.cpp head.hpp head.o main main.cpp main.o Makefile
ziad@ziad-VirtualBox:~/makefile$ make install
g++ main.o head.o -o main
mkdir -p build/usr/bin
mv *.o build/usr/bin/
mv main build/usr/bin/
ziad@ziad-VirtualBox:~/makefile$ ls build/usr/bin
head.o main main.o
ziad@ziad-VirtualBox:~/makefile$ ls
build head.cpp head.hpp main.cpp Makefile
ziad@ziad-VirtualBox:~/makefile$ make clean
rm -rf *.o main
rm -r build
ziad@ziad-VirtualBox:~/makefile$ ls
head.cpp head.hpp main.cpp Makefile
ziad@ziad-VirtualBox:~/makefile$
```

- As shown all executables and binaries are deleted