

Basic structure of a C programme

```
#include <stdio.h>
```

Allows you to input/output information

```
int main()  
{
```

The 'main' function

All the code in here will
(hopefully!) run once you
compile and execute
your file

```
    int i = 0;
```

Your code goes here

Good practice to indent
inside the curly brackets
(tab button on keyboard)

Declare new
integer 'i'

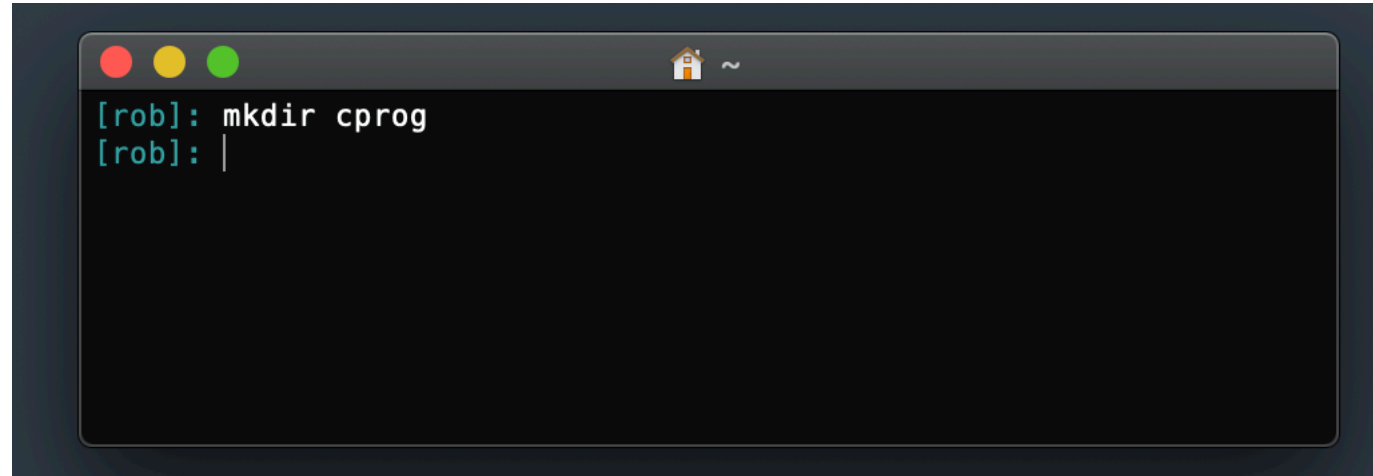
Initialize with
a value 0

```
}
```

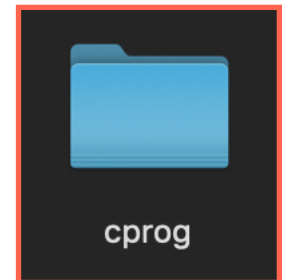
Starting your programme

1) SSH on to one of the maths servers

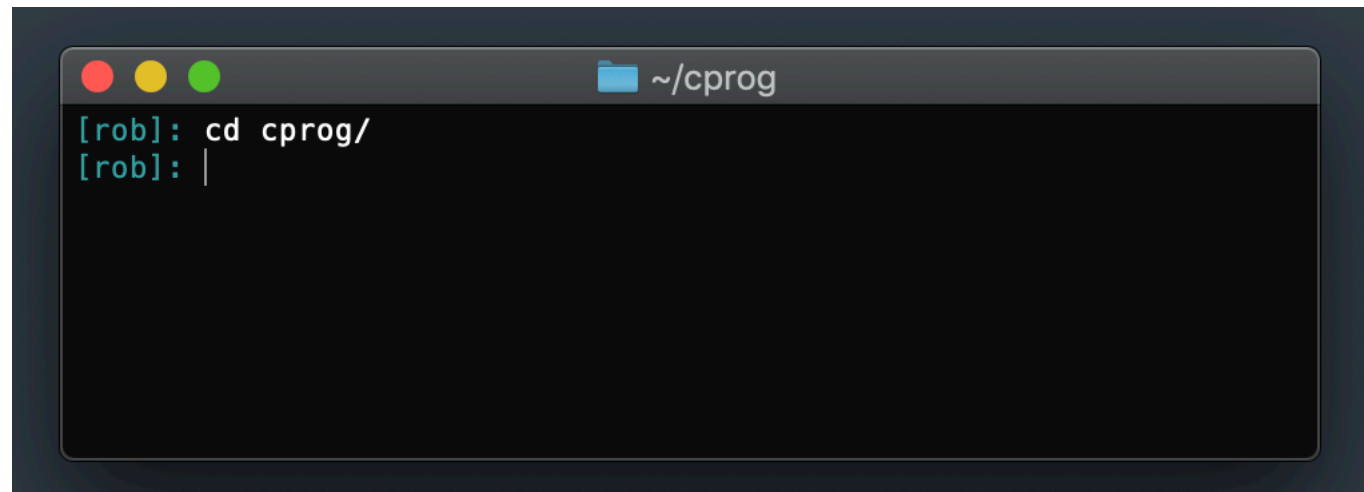
2) Make a new directory with the **mkdir** command to save your assignments:

A terminal window with a dark background and a title bar showing three colored window control buttons (red, yellow, green) and a home icon with a tilde (~). The terminal text shows the user 'rob' at a prompt, typing 'mkdir cprog', and then a new line with a cursor.

```
[rob]: mkdir cprog
[rob]: |
```

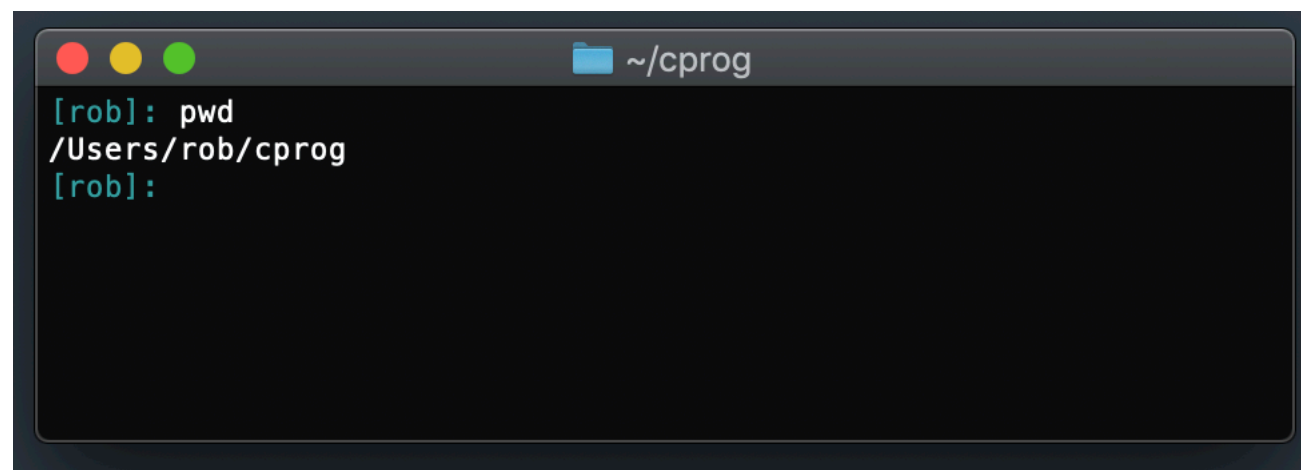


3) Move into this **directory** with the **cd** command:

A terminal window with a dark background and a title bar showing three colored window control buttons (red, yellow, green) and a folder icon with the text '~/cprog'. The terminal text shows the user 'rob' at a prompt, typing 'cd cprog/', and then a new line with a cursor.

```
[rob]: cd cprog/
[rob]: |
```

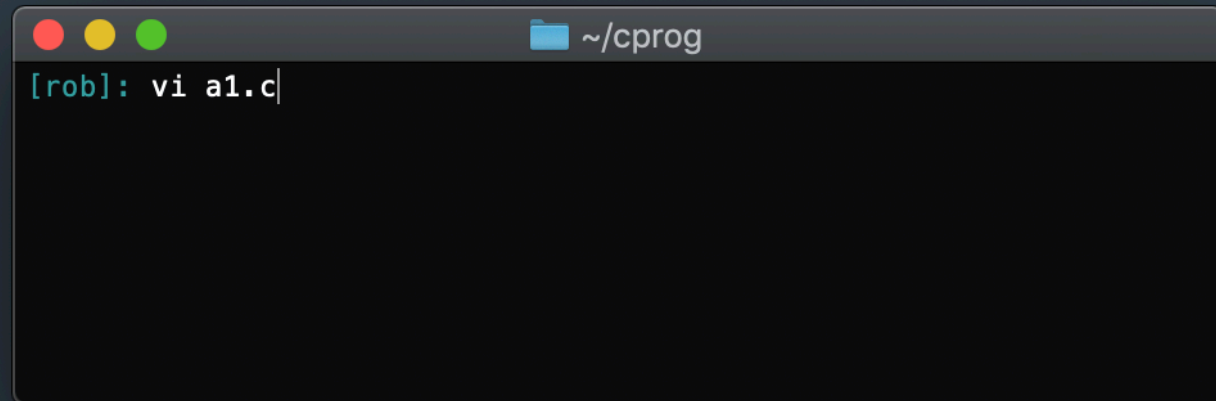
If you are unsure what directory you are in, you can print it out with the **pwd** command:

A terminal window with a dark background and a title bar showing three colored window control buttons (red, yellow, green) and a folder icon with the text '~/cprog'. The terminal text shows the user 'rob' at a prompt, typing 'pwd', the output '/Users/rob/cprog', and then a new line with a cursor.

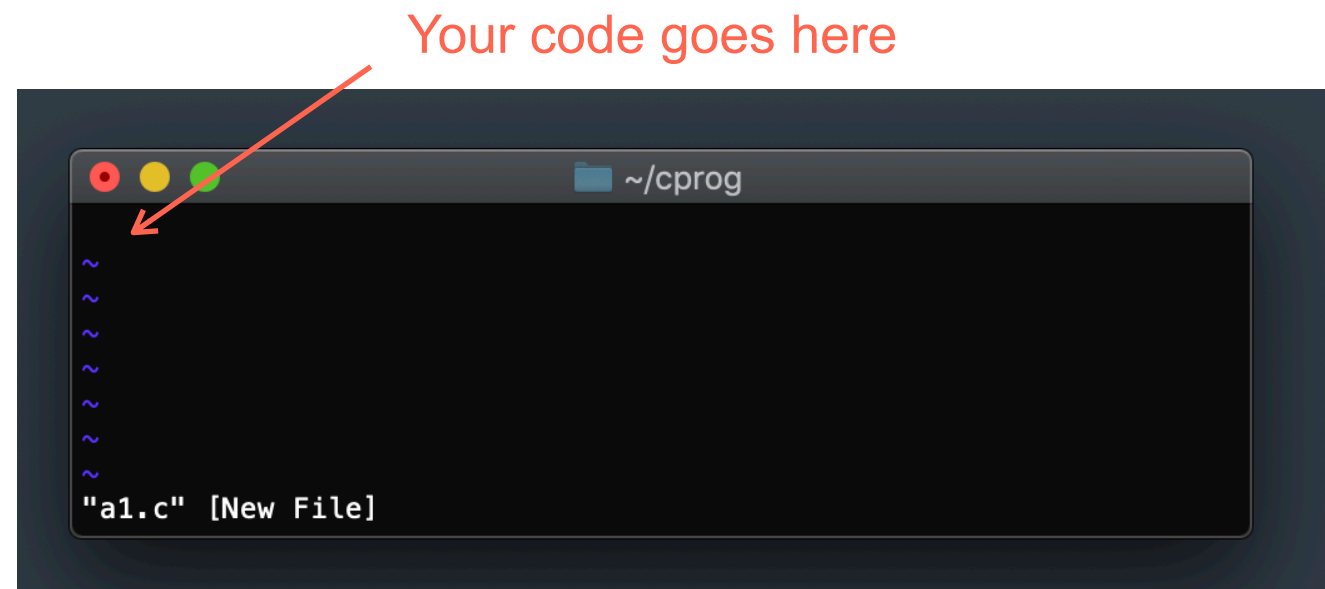
```
[rob]: pwd
/Users/rob/cprog
[rob]: |
```

Starting your programme

4) Create a new C file with the **vi** command:



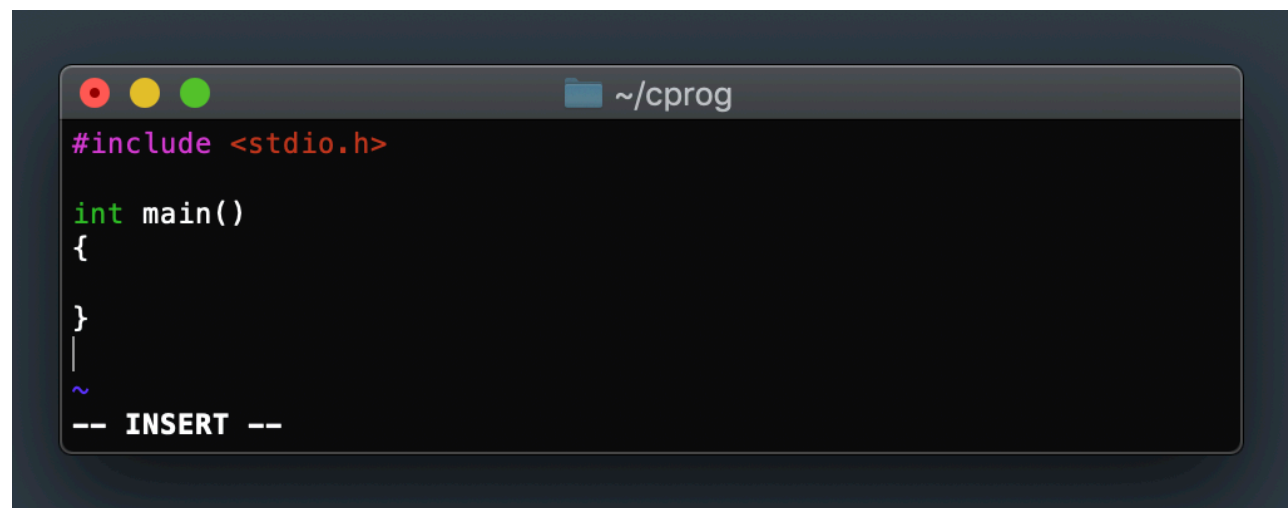
```
[rob]: vi a1.c
```



```
"a1.c" [New File]
```

Your code goes here

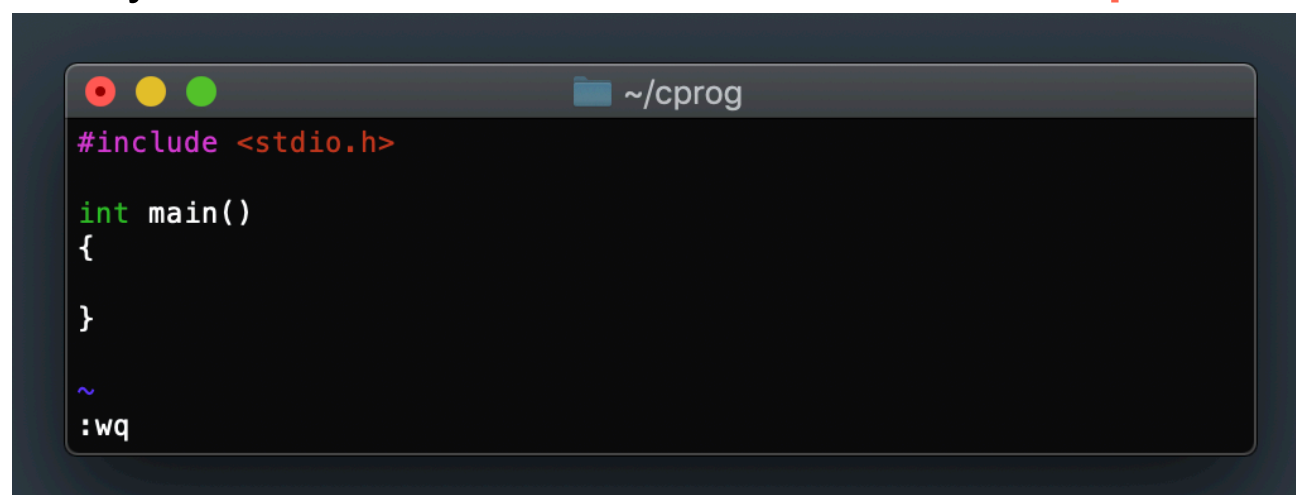
5) To write to the file type **i** to enter **Insert mode**:



```
#include <stdio.h>

int main()
{
}
~
-- INSERT --
```

6) To save your work and exit the editor first hit **Escape**, then type **:wq** to hit **Enter**:



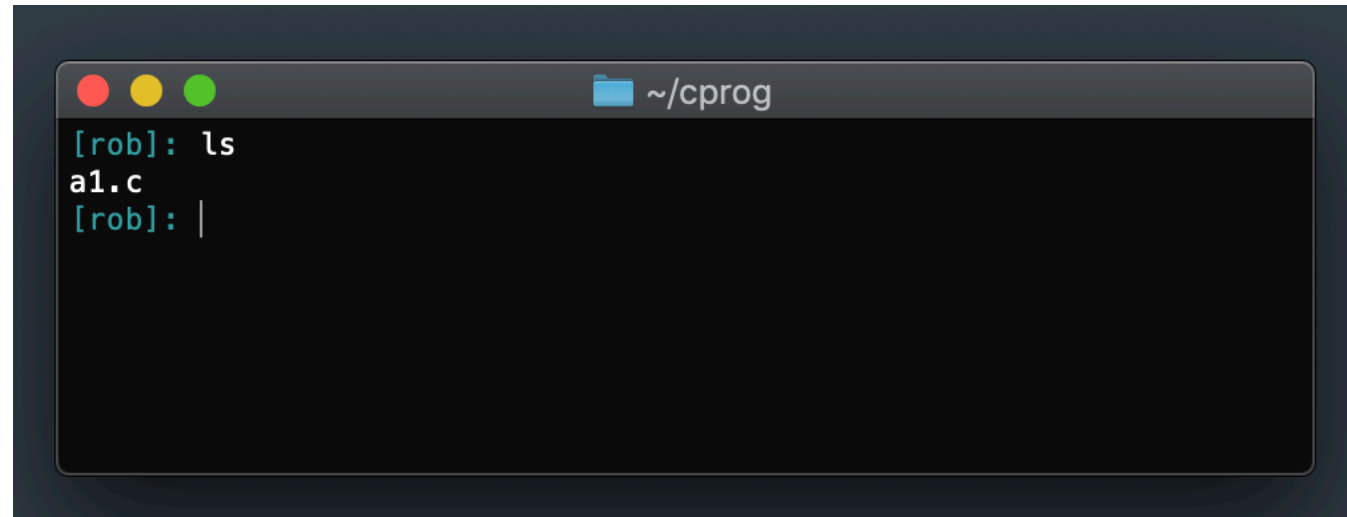
```
#include <stdio.h>

int main()
{
}
~
:wq
```

Note: you can also use a text editor of your choice on your local machine and then paste the code into a file on the maths server.

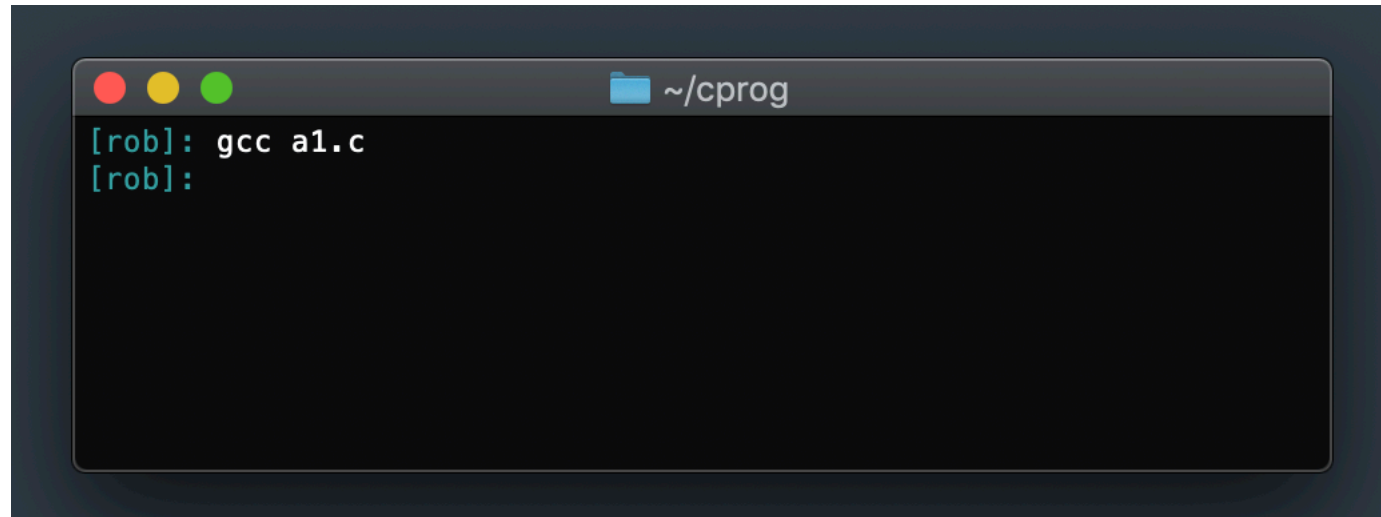
Compiling your code

7) You can see a **list of your files** with the **ls** command

A terminal window titled '~/cprog' with a dark background. The prompt is '[rob]:'. The user has entered 'ls' and the output is 'a1.c'. The cursor is on the next line.

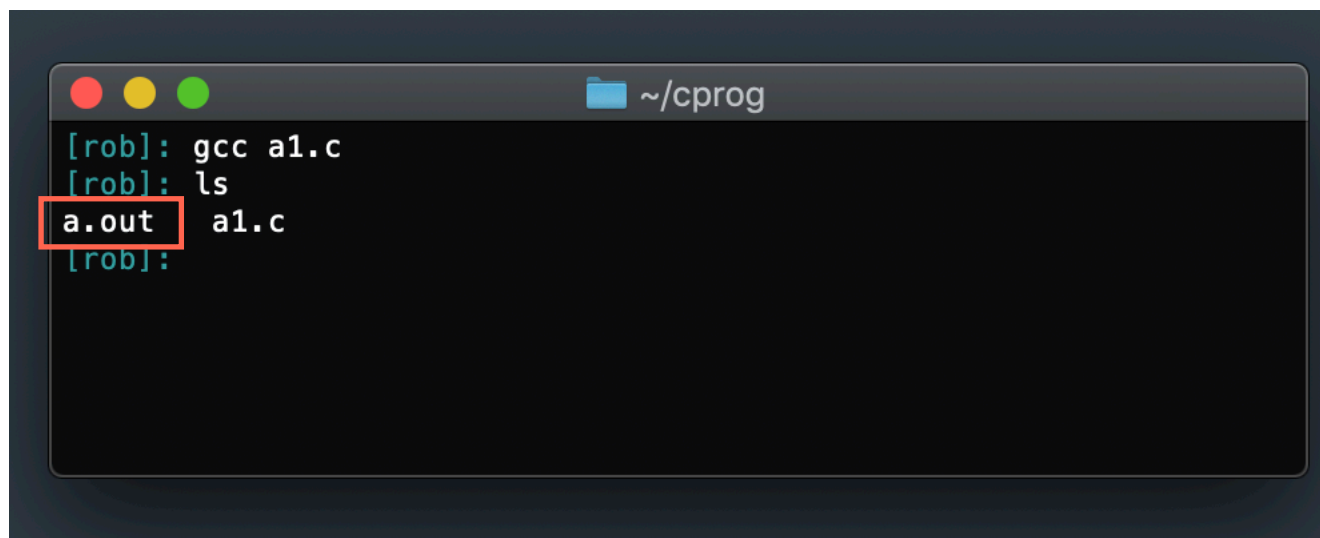
```
[rob]: ls
a1.c
[rob]: |
```

8) To **compile** your code use the **gcc** command

A terminal window titled '~/cprog' with a dark background. The prompt is '[rob]:'. The user has entered 'gcc a1.c' and the prompt is now '[rob]:' on the next line.

```
[rob]: gcc a1.c
[rob]:
```

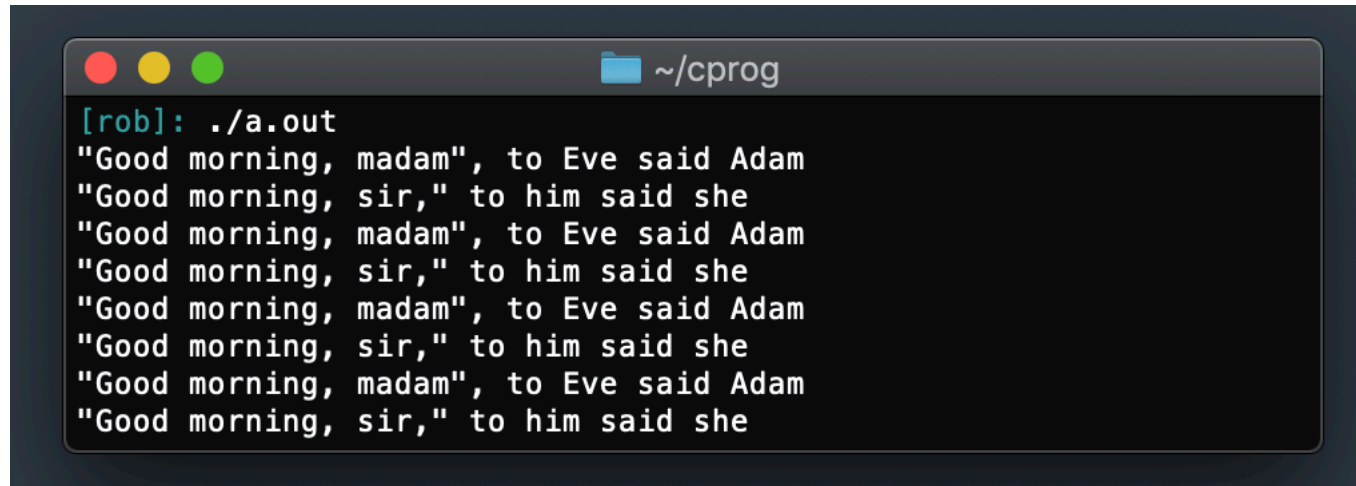
If this works you will see a file called **a.out** in your folder. This is called the **executable**. You can check this with the **ls** command:

A terminal window titled '~/cprog' with a dark background. The prompt is '[rob]:'. The user has entered 'gcc a1.c' and 'ls'. The output is 'a.out a1.c'. The 'a.out' file is highlighted with a red box. The cursor is on the next line.

```
[rob]: gcc a1.c
[rob]: ls
a.out a1.c
[rob]:
```

Executing your code

9) To run your executable type the command **./a.out**

A terminal window with a dark background and light-colored text. The window title bar shows a folder icon and the path ~/cprog. The prompt is [rob]:. The command ./a.out has been entered. The output consists of eight lines of text, alternating between "Good morning, madam", to Eve said Adam and "Good morning, sir," to him said she.

```
[rob]: ./a.out
"Good morning, madam", to Eve said Adam
"Good morning, sir," to him said she
"Good morning, madam", to Eve said Adam
"Good morning, sir," to him said she
"Good morning, madam", to Eve said Adam
"Good morning, sir," to him said she
"Good morning, madam", to Eve said Adam
"Good morning, sir," to him said she
```

Refer to your notes if you are stuck!

Webpage:

www.maths.tcd.ie/~odunlain/u11601/

Mathematics course U11601 (C programming) Michaelmas 2020

Course slogan μηδεις 'ανυπολογιστος 'εντεστιν
(Thanks to P. Karageorgis.)

C handbook and class notes

[C programming handbook \(last update 1/10/19\)](#)

[Class notes](#)

Assignments

[First programming assignment](#)

[Data for programming assignments](#)

[submit-work: screenshots](#) *But replace 1266 by u11601 throughout.*

[The *nix Command Line, by Fionn Fitzmaurice](#)

Quiz answers, current term

[May 2018 final exam **WITH ANSWERS**](#)

[April 2019 final exam](#)