Question 1. Using C on ECF

Start Visual Studio Code by typing `code` inside the Terminal. Install the C/C++ tools. Save a `.c` file into a folder of your choice (e.g. `a.c`) into a folder of your choice (e.g. `/u/username/Desktop/ESC190/Lab1`). Now, open the folder using VS Code.

Question 2.

In your main function, define the variable `int a` and initialize it to 5. Now, write a function which does not return anything, but can set the value of an integer to 10.

Use this function to set the value of `a` to 10.

Use `printf` to demonstrate that the value of a changed.

Now, put a breakpoint at `int a = 5`, and trace the code.

Now, write a similar function in Python, and point out the similarities and/or differences.

Question 3.

In `main()`, initialize an array of `char`s by setting up a `char arr[100]`. Now, write a function that would change the contents of the array.

Now, write a similar function in Python, and point out the similarities and/or differences.

Question 4.

Implement a function that performs `https://en.wikipedia.org/wiki/Insertion_sort#Algorithm`. The function should take in an array of integers, and modify the array so that it's sorted in increasing order.

Here is code to print out an array of integers using a for-loop and a while-loop in C.

```
int i = 0;
int a[5] = {2, 3, 4, 5, 6};
// initialize i to 0, run the loop while i < 5, and increase i by 1 every time;
// Here, i++ is the same as i = i + 1
for(i = 0; i < 5; i++){
  printf("%d\n", a[i]);
}

i = 0;
while(i < 5){
  printf("%d\n", a[i]);
  i++; // same as i = i + 1
}
```

Question 5.

Write a function that, without using `strlen`, returns the length of a string given by a pointer to the first character in a string

What is the runtime complexity of this function?

Question 6.

Write a function
`void seq_replace(int *arr1, unsigned long arr1_sz, int *arr2. unsigned long arr2_sz)` which takes in two arrays `arr1` and `arr2` and their sizes, and replaces every appearances of `arr2` in `arr1` with all 0's.

For example `int a[] = {5, 6, 7, 8, 6, 7};`
`int b[] = {6, 7};`
`seq_replace(a, 6, b, 2);`
should result in `a` being `{5, 0, 0, 8, 0, 0}`
What is the runtime complexity of this function?

Question 7.

Make sure that you can use VS Code on your laptop.