Assignment 4

Task 1 - Functions!

Make a function that squares a number and returns the result.

Now that you have this function, call it, and then print the result. Note how the function itself does not print anything, it just returns a value, which you then print.

Task 2 - Iterative Maximum!

Recall from session 2 that Python has a function “max”, that returns the largest element in a list. You will now implement your own version of this function, iteratively.

Task 3 - Recursive Maximum!

This function could instead be expressed recursively. We can calculate the maximum by taking the larger of the first element in the list, and the largest in the rest (by using a recursive call).

You may assume the list given is non-empty (it has at least one element in it).

Task 4 - Linked Lists!

Recall from session 1 that Python has tuples. We will be using these to design a linked list. The first element of each tuple will be a value, and the 2nd element will be, itself, a linked list, using our data structure. We will use “None” to denote the end of the list.

1. What does a linked list of [1, 2] look like?

   ```
   (1, (2, None))
   ```

2. What does the empty list [] look like?

   ```
   None
   ```

How would you go about printing all the elements of such a structure?

Additional: Top tip: think recursively!