CS 150 Lecture 10 Exercises

Complete each of the exercises below and upload to Canvas before the deadline.

# Review Exercise 1 - Input, Output & In-Out Parameters

[Follow this link](https://codecheck.io/files/2009020114bcc2ci5ujmt2ywp9fvcsi54n1) to write the **prototypes** for several function calls, **deducing the correct signature** from the context in **PrototypeTester.cpp** Do not implement the functions themselves. That is already done. Place the prototypes in **proto.h**.

|  |
| --- |
| *Copy and paste a screenshot of the source code for proto.h* |

|  |
| --- |
| *Copy and paste a screenshot of your testing results* |

Exercise 2 - Recursion Illustrated

Open **elevator.cpp**. Make the elevator stop when it reaches the penthouse on floor **25**. Then, have the elevator announce each floor as it comes back down. Run and screenshot your completed below.

|  |
| --- |
| *Copy and paste a screenshot of your completed elevator.cpp source code here.* |

|  |
| --- |
| *Copy and paste a screenshot of the program running here.* |

Exercise 3 - Some Recursive Functions

Complete the **triangle()** function which computes triangle numbers, **using only recursion**. Do not use any loops. Run and copy your completed code into the text areas below.

|  |
| --- |
| *Copy and paste a screenshot of the triangle function here.* |

|  |
| --- |
| *Copy and paste a screenshot running the tests here.* |

Complete the **power()** function which computes any number, raised to a power, **using only recursion**. Do not use any loops (or **<cmath> pow()**) Run and copy your completed code into the text areas below.

|  |
| --- |
| *Copy and paste a screenshot of the source code for main.cpp here.* |

|  |
| --- |
| *Copy and paste a screenshot of the tests running.* |

Complete the **changeXtoY()** function, which changes all lowercase **x** characters found in a string toy, **using only recursion**. Do not use any loops (or **<string>** functions, obviously) Run and copy your completed code into the text areas below.

|  |
| --- |
| *Copy and paste a screenshot of the source code for main.cpp here.* |

|  |
| --- |
| *Copy and paste a screenshot of the tests running.* |

Exercise 4 - Recursive Efficiency

Complete the **fib()** function with a recursive helper program to eliminate the excessive calls to previous calculated versions of **fib()**. Run and copy your completed code into the text areas below.

|  |
| --- |
| *Copy and paste a screenshot of your fib() and fibhelp() function source code here.* |

|  |
| --- |
| *Copy and paste a screenshot of the program running here.* |