# CS 111 Final Programming Test

This programming assignment is designed to assess your Python programming proficiency. The test is closed note but you are encouraged to look up and memorize the answers beforehand.

Unless otherwise specified, you are not allowed to use built-in "magic" functions that solve the problem using a single or very few lines of code. When in doubt, ask Adam.

## Requirements

For this lab, you must implement the following functions in C++. Note that each function is graded independently of each other. If you are not comfortable writing function, you may place each task in its own file for reduced credit.

**TIP**: it is always better to make an attempt than to submit something empty. I am a person too; I want you to succeed! It's much easier to give sympathy points when there's at least evidence that you tried.

### Function #1: find\_largest

Implement a function called ***int find\_largest(vector<int>\* some\_list)*** that finds the largest number present in some\_list.

Example Usage:

|  |
| --- |
| vector<int> data{1, -3, 5, 2, 9, 1, 0};  int largest = find\_largest(&my\_list);  cout << largest << endl; //output is 9 |

### Function #2: write\_list

Implement a function called ***void write\_list(vector<int>\* some\_list, string file\_name)*** that writes the contents of the list to the file name present in some\_list (one item per line in the file).

Example Usage:

|  |
| --- |
| vector<int> data{1, -3, 5, 2, 9, 1, 0};  string file\_name = "output.txt";  write\_list(&my\_list, file\_name); #outputs contents of my\_list to file |

### Function #3: read\_list

Implement a function called ***vector<int> read\_list(string file\_name)*** that reads the contents present in file\_name into a vector. Your function should return this list back to the caller. The file will contain one entry per line.

Example Usage:

|  |
| --- |
| string file\_name = "function3.txt";  vector<int> items = read\_list(file\_name);  //items now contains a bunch of numbers |

### Function #4: convert\_time

Implement a function called ***string calculate\_time(int hour, int minute, int second)*** that converts the supplied hours, minutes, and seconds from a 24 hour clock to a 12 hour clock (AM / PM) and returns the appropriate string. Assume valid input ranges (0-24 for hours, 0-60 for minutes, 0-60 for seconds). Examples:

* If your function is supplied the values 6, 12, 30, your function should return "06:12:30AM" as a string.
* If your function is supplied the values 13, 0, 1, your function should return "01:00:01PM".

Example Usage:

|  |
| --- |
| string time = calculate\_time(6, 12, 30);  cout << time << endl; //will print "06:12:30AM"  time = calculate\_time(13, 0, 1);  cout << time << endl; //will print "01:00:01PM" |

### Function #5: to\_upper

Implement a function called ***string to\_upper(string text)*** that converts the supplied string into all upper case. Ignore all other characters. For example, "Hello!" should be converted into "HELLO!"

Example Usage:

|  |
| --- |
| string upper = to\_upper("Hello!");  cout << upper << endl; |

## Grading

Each function will be evaluated on the following 10-point scale (50 points overall):

* [1] A function is used
* [1] Functions return the correct value to the caller (no prints!)
* [8] The function meets the stated requirements. This is broken down as follows:
  + [8] – The function works exactly as specified by the requirements
  + [6-7] – The function is nearly correct, but has one minor flaw
  + [4-5] – The function is mostly correct or has a few flaws in its implementation
  + [3] – The function is missing significant portions of its implementation
  + [1-2] – An attempt was made