# CS 211 Midterm

Notes:

* You will be asked to solve the coding challenges below during lab on 12/17.
* During that lab, you will not be allowed to use internet resources or have notes of any kind.
* You are free to create your own helper functions
* Some problem may state that you are **not allowed** to use a certain data structure or algorithm. Ignoring these rules will result in reduced points.
* Some problems may state that **you must** use a certain data structure or algorithm. Ignoring these rules will result in reduced credit.

## Challenges

1. Write a function that sorts an array using Bubble Sort.

void bubbleSort(int\* numbers, int size)

2. Implement a function that parses the supplied vector of integers representing rainfall data and returns the day (as a string) that has the most rain. The input vector is formatted such that index 0 represents Sunday and every 7th item is the same day. Thus:

* 0, 7, 14… is a Sunday
* 1, 8, 15… is a Monday
* 2, 9, 16… is a Tuesday
* Etc.

string dayWithMostRain(vector<int> rainfall)

The next two questions use the following BinaryNode class definition

|  |
| --- |
| class BinaryNode { public:  int value;  BinaryNode \*left = nullptr;  BinaryNode \*right = nullptr;  BinaryNode (int v = 0){  value = v;  } }; |

3. Write a function called bstToVector that returns the supplied binary search tree into a sorted STL vector.

vector<int> bstToVector(BinaryNode\* node)

4. Complete the function isBst() such that the function returns TRUE when the supplied node represents a valid BST and FALSE otherwise.

bool isBst(BinaryNode\* node)

5. Write a function called findMostCommon that finds the most commonly used character in the supplied string.

char findMostCommon(string text)

6. It’s a secret! But don’t worry, it’s not too hard 😊