**COSC 1337 Final Exam Spring 2016:**

***Note: For question 1 and 5, please type out your answers in word document and send it by blackboard email. For question 2, 3 and 4, please work them out using visual studio and send them by blackboard email in zip folder, including source files and scree shot for results.***

***Due time: Tuesday, May 10th, midnight.***

1. (CLO1) Use internet as your resource,
2. Identify and explain: what is a programming development lifecycle?(3 points)
3. List and explain the six steps of a programming development life cycle. (3 points)

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| * (CLO2)Demonstrate a basic understanding of object-oriented programming by using structs and classes in software projects. |
| * (CLO4)Document and format code in a consistent manner. |
| * (CLO5)Apply basic searching and sorting algorithms in software design. |
| * (CLO6)Apply single- and multi-dimensional arrays in software. |

1. Consider the following definition of a struct

struct twoVals

{

int x;

int y;

string name;

};

1. Write test a testing program to have an array of twoVals. The program should read and store information for each twoVals. It should then sum up all the x and all the y in alla of the twoVals. (5 points)
2. The testing program should sort the array of twoVals. It places twoVals in ascending order by their x value. (5 points)
3. The testing program should have a search method with it. (5 points)

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| * (CLO3)Use object oriented programming techniques to develop executable programs that include elements such as encapsulation, inheritance, overloading and polymorphism. |
| * (CLO7)Use a symbolic debugger to find and fix runtime and logical errors in software. |

1. Consider the definition of the following class:

class final

{

public:

string sum(); //returns the appended sum of the private data numbers

void print() const; //prints the private data

final(); //default constructor

final(string a, string b); //constructor with parameters

final(const final & f); // copy constructor

private:

string x;

string y;

};

1. Write the definitions of the member functions as described in the definition of the class final. (5 points)
2. Write a test program to test the various operations of the class final. (5 points)
3. Make sure to separate solutions into header file, implementation file and test file and make sure to document and format code in a consistent manner, including comments (5 points)

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| * (CLO 8) Demonstrate a basic understanding of programming methodologies, including object oriented, structured, and procedural programming. |

1. Design and implement a class dayType that implements the day of the week in a program. The class dayType should store the day, such as Sun for Sunday. The program should be able to perform the following operation on objects of the type dayType:

* A default constructor (2 points)
* A copy constructor (1 points)
* Set the day (2 points)
* Print the day (2 points)
* Return the day (2 points)
* Return the next day (2 points)
* Return the previous day (3 points)
* Update the day, stored in a dayType object , by adding certain days to it. For example, if the day is Monday and you add 4 days, the updated day is Friday. Similarly, if the day is Tuesday, and you add 13 days, the updated day is Monday. (4 points)
* Write the main program to test the dayType class, you have to test all the functions in the class design. (5 points)

1. (CLO 9). Describe the phases of program translation from source code to executable code. (5 points)