# *COSC 3100 – Data Structures II*

## Assignment 1
## Deadline September 4, 2023

1) Carefully explain the operation of the following recursive function, and determine the return produced by the following two calls: f(5, 3) and f(5, 4).

```
int f(int a, int b)
{
        int result;
        if (b == 0) {
                result = 1;
        }
        else {
                if (b % 2 == 0) {
                        result = f(a * a, b / 2);
                }
                else {
                        result = f(a * a, b / 2) * (a + 1);
                }
        }
        return result;
}
```

2) A function is to be declared as:

```
void reverse(int n);
```

Define ‘reverse’ as a recursive function to take an ‘int’ value as an argument and, **within the function**, write out the digits of the integer argument in reverse order. For example, if the function is called by ‘reverse(3456);’ then the output should be: 6543

3) Implement a class called ‘Stock’ with the following data:

Company name
Stock symbol
Price

The Stock class should have the following member functions defined:

**Stock(const string& name="", const string& symbol="", double price=0);**
Constructor to create a new Stock
**Stock(const Stock& s);**
Copy constructor to create a new Stock
**void display() const;**
Display all information associated with a Stock
**string getName() const;**
Return the name of the Stock
**string getSymbol() const;**
Return the Stock symbol
**double getPrice() const;**
Return the price of the Stock
**bool operator==(const Stock& rhs) const;**
Determines whether two Stocks are equal, based on the Stock symbol
**bool operator!=(const Stock& rhs) const;**
Determines whether two Stocks are not equal, based on the Stock symbol

**THE DEPARTMENT STANDARDS FOR “STYLE GUIDELINES” SHOULD BE FOLLOWED IN ALL CODE.**