# Comp 150&2 Assignment Design

## Problem.

Write a calculator program that allows a user to get results of basic math operations from operands and operations of their choice.

## Program Description.

* The program will ask the user for an operand.
* The program will ask the user to choose an operation.
* If the operation needs a second operand, it will ask the user for one, then print the output.
* If the operation only needs one operand, it will print the output.
* After the output is printed, the user will be asked for an operand again, and the program loops around for as long as the user is entering operands and operations.
* The user has the option to enter ‘q’ at any point in the program when they choose to quit the program.

## Variables.

X: The first operand.

Y: The second operand.

R: The result of the calculations.

I: Used only in the functions that required for loops, like the power and factorial functions.

## Modules

addNumbers(double x, double y)

Task: Adds two numbers.

Control: In a switch statement.

Accepts: Numeric x and y input.

Returns: The sum of the two numbers.

Modifies: No Pass-by-reference values.

Locals: r

subNumbers(double x, double y)

Task: Finds the difference between two numbers.

Control: In a switch statement.

Accepts: Numeric x and y input.

Returns: The difference of x – y.

Modifies: No pass-by-reference values.

Locals: r

multNumbers(double x, double y)

Task: Multiplies two numbers.

Control: In a switch statement.

Accepts: Numeric x and y.

Returns: The product of x and y.

Modifies: No pass-by-reference values.

Locals: r

divNumbers(double x, double y)

Task: Divides x by y.

Control: In a switch statement.

Accepts: Numeric x and y.

Returns: The quotient of x/y.

Modifies: No pass-by-reference values.

Locals: r

remNumbers(int x, int y)

Task: Finds the remainder of x/y.

Control: In a switch statement.

Accepts: Numeric x and y.

Returns: The remainder of x/y.

Modifies: No pass-by-reference values.

Locals: r.

factNumber(int x)

Task: Finds the factorial of x.

Control: In a switch statement.

Accepts: Numeric x. This function only needs one operand.

Returns: The factorial of x.

Modifies:

Locals: r and i.

logNumber(int x)

Task: Finds log base 10 of x.

Control: In a switch statement.

Accepts: Numeric x. This function only needs one operand.

Returns: The log to base 10 of x.

Modifies:

Locals: r.

expoNumber(double x, double y)

Task: Finds x to the power of y.

Control: In a switch statement.

Accepts: Numeric x and y.

Returns: x to the power of y.

Modifies:

Locals: r and i.

getOperand( )

Task: Prompts user for an operand.

Control: This function is in the do…while loop and is repeated as necessary.

Accepts: The operand.

Returns: The operand.

Modifies: x is a pass-by-reference value.

Locals: operation.

getOperator( )

Task: Gets the user to input what operation they want the calculator to perform.

Control: This is a menu function, and uses a switch statement to output the answer.

Accepts: Nothing

Returns: the Operator.

Modifies: No pass-by-reference values.

Locals: x.

int main( )

Task: Contains the code to be executed.

Accepts: Nothing.

Returns: Returns an integer. Returns 0 if the program is successful.