```
LinearRegression::LinearRegression()
    set default values for variables
    ask user for x-axis file name
    check if x-axis file name is valid choice
    ask user for y-axis file name
    check if y-axis file name is valid choice
    call calculate method
void LinearRegression::calculate()
    b1Value = topValue / bottomValue;
    b0Value = averageOfVector(vector2) - b1Value *
averageOfVector(vector1);
    call readInValues for both files
    declare and initialize all need variables to hold temp values
    calculate topValueLeft using sumvalues and multiplyvalues methods
    calcualte topValueRight using averageOfVector method
    calcualte topValue using topValueLeft - topValueRight
    calculate bottomValueLeft using sumvalues and multiplyvalus
methods
    calculate bottomValueRight using averageOfvector method
    calculate bottomValue using bottomValueLeft - bottomValueRight
    calculate b1 value using topValue / bottomValue
    calculate b0 value using averageofvector method and b1value
void LinearRegression::readInValues(string filename, vector<float>
&vector)
    delcare ifstream variable
    open file
    declare currentValue float and set to 0
```

Pseudo-Code for Linear Regression Methods

```
while (lines in file)
        read in value
        add to vector
    close file
vector<float> LinearRegression::multiplyValues(vector<float> vector1,
vector<float> vector2)
    declare vector to hold results
    if (vectors not same size)
        return
    for (all items in vector1)
        add to new vector: vector1[i] * vector2[i]
    return new vector
float LinearRegression::sumValues(vector<float> vector)
    declare variable to hold result
    for (all items in vector)
        add vector[i] to sum
    return sum
void LinearRegression::varianceCalculate()
    calculate sum of yi - b0 - b1 * xi
    calculate variance
        sort of (1 / (n - 2)) * sum from above
void LinearRegression::rangeCalculate()
    calculate range
        calculate top right value
             (xk - average(x values)) * (xk - average(x values))
        calculate bottom right value
            sum of (xi - average(x values)) * (xi - average(x values))
        calculate right value
            top right value / bottom right value
        calculate range
           sqrt of 1 + (1 / n) + right value
```

```
above * variance
    range 90 = range * 90% interval
    range 70 = range * 70% interval

void LinearRegression::calculateUpperLower()

calculate yk
    b0 + b1 * xk
calculate upi and lpi
    yk + range70
    yk - range70
    yk + range90
    yk - range90
```