Testing the project

In order to make sure the project works to the specifications I have been given I have carried out extensive testing on the code I have written. I have done this by compiling the code and testing outputs and calculations as I wrote the program, this allowed me to break the project down into smaller sub tasks that I could test and analyse with more ease.

## TaxCalculator.java

This class contained the methods used for calculating the tax on an income and the remaining tax on that income after it had been taxed.

## taxPayable(double inputIncome)

The taxPayable method takes a double as an inputted income and then works out the tax payable on the input; it then rounds the tax payable to the nearest integer and returns it as an integer.

I first tested the parameter to make sure that the method takes in doubles by calling the method using a double variable as the parameter, the program compiled an ran as expected with no errors. I then tested the method using other types of variables as the parameter, doing this caused a compilation error the program failed. I know that this method will only take double type variables as a parameter to perform the calculation on.

The next piece of code that needs to be tested is the code that actually calculates the amount of tax on the inputted income. In order to calculate this I have stored some important values in a multidimensional array that is structured as such that the first dimension stores the arrays for each of the tax bands and the second dimension stores the value of the lower bound of the tax band and the tax rate of the tax band. I have also given this array the private, static and final modifiers so that it cannot be accessed outside the class and cannot be changed once the values have been initialized. This makes it so that the program will not accidently change any of the values stored in that array and also means that if any of the tax rates or tax boundaries are changed at a later point then only one value needs to be changed in the program and multiple changes throughout the code are not needed. The method makes use of this array by checking to see if the inputted income is greater then the value for the lower bound of the greatest tax band; if the value is greater then the program works the magnitude by which the value is greater and multiplies that