

Module 3: Critical Thinking

Calculate Average Withholding: This document contains the documentation for the Java application that was created for CSU Global's Programming I, Module 3 assignment. The application takes user input, calculates the correct average weekly withholding, and prints this information to the screen.

Pseudocode via Comments: The following section contains the pseudocode that was used to detail the steps of the Module 3 Java application; the pseudocode was written using Java's comment functionality. A screenshot of the pseudocode written inside of the Eclipse IDE is provided.

```
//Start

//Import java.util.Scanner;
//Set up document
//Scanner scr = new Scanner(System.in);

//Set up variables
    //int incomeGross
    //char taxRate
    //double taxWithholding

//Initialize scanner to set input to incomeGross

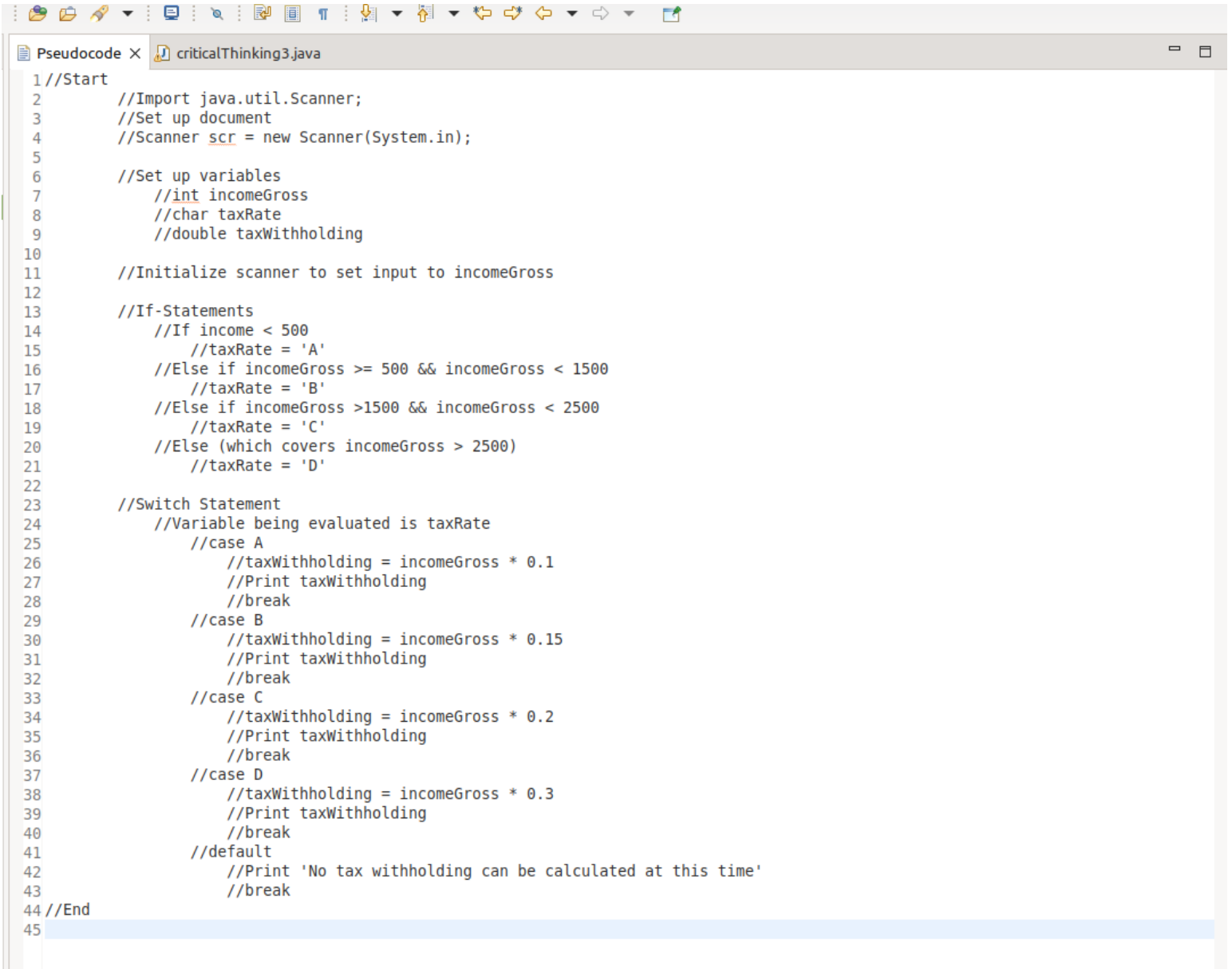
//If-Statements
    //If income < 500
        //taxRate = 'A'
    //Else if incomeGross >= 500 && incomeGross < 1500
        //taxRate = 'B'
    //Else if incomeGross >1500 && incomeGross < 2500
        //taxRate = 'C'
    //Else (which covers incomeGross > 2500)
        //taxRate = 'D'

//Switch Statement
    //Variable being evaluated is taxRate
        //case A
            //taxWithholding = incomeGross * 0.1
            //Print taxWithholding
            //break
        //case B
            //taxWithholding = incomeGross * 0.15
            //Print taxWithholding
            //break
        //case C
            //taxWithholding = incomeGross * 0.2
            //Print taxWithholding
            //break
        //case D
            //taxWithholding = incomeGross * 0.3
            //Print taxWithholding
            //break
        //default
            //Print 'No tax withholding can be calculated at this time'
            //break

//End
```

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Pseudocode Screenshot:



The screenshot shows a Java IDE window titled "criticalThinking3.java". The code is written in a pseudocode style, using comments to describe the logic of a program that calculates tax withholding based on income. The code is as follows:

```
1 //Start
2 //Import java.util.Scanner;
3 //Set up document
4 //Scanner scr = new Scanner(System.in);
5
6 //Set up variables
7 //int incomeGross
8 //char taxRate
9 //double taxWithholding
10
11 //Initialize scanner to set input to incomeGross
12
13 //If-Statements
14 //If income < 500
15 //taxRate = 'A'
16 //Else if incomeGross >= 500 && incomeGross < 1500
17 //taxRate = 'B'
18 //Else if incomeGross >1500 && incomeGross < 2500
19 //taxRate = 'C'
20 //Else (which covers incomeGross > 2500)
21 //taxRate = 'D'
22
23 //Switch Statement
24 //Variable being evaluated is taxRate
25 //case A
26 //taxWithholding = incomeGross * 0.1
27 //Print taxWithholding
28 //break
29 //case B
30 //taxWithholding = incomeGross * 0.15
31 //Print taxWithholding
32 //break
33 //case C
34 //taxWithholding = incomeGross * 0.2
35 //Print taxWithholding
36 //break
37 //case D
38 //taxWithholding = incomeGross * 0.3
39 //Print taxWithholding
40 //break
41 //default
42 //Print 'No tax withholding can be calculated at this time'
43 //break
44 //End
45
```

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Source code: This section contains the source code for Module 3's Java application. Screenshots of the source code and the application being executed within the Eclipse IDE are provided.

```
import java.util.Scanner;
public class criticalThinking3 {
    public static void main(String[] args) {

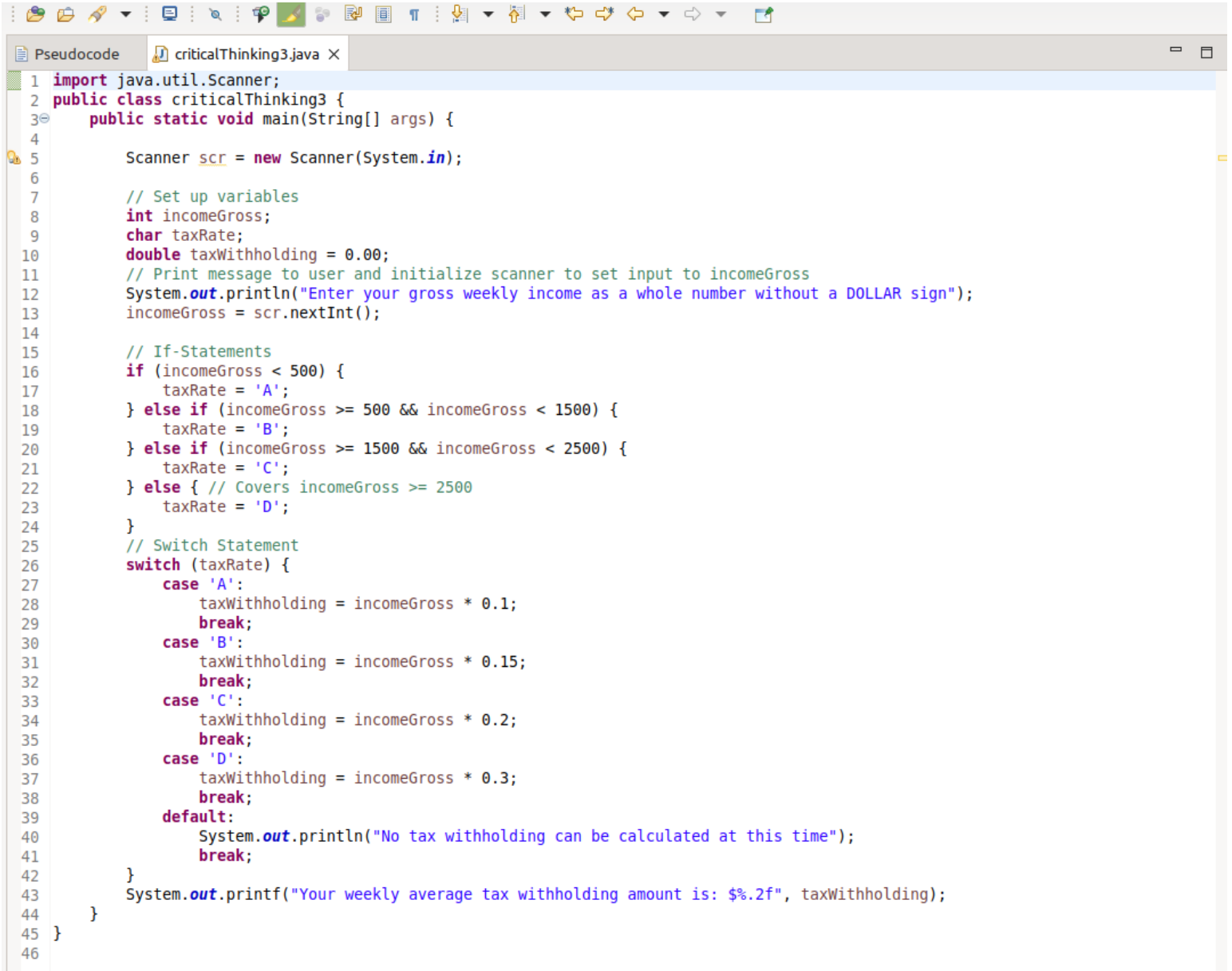
        Scanner scr = new Scanner(System.in);

        // Set up variables
        int incomeGross;
        char taxRate;
        double taxWithholding = 0.00;
        // Print message to user and initialize scanner to set input to incomeGross
        System.out.println("Enter your gross weekly income as a whole number without a DOLLAR sign");
        incomeGross = scr.nextInt();

        // If-Statements
        if (incomeGross < 500) {
            taxRate = 'A';
        } else if (incomeGross >= 500 && incomeGross < 1500) {
            taxRate = 'B';
        } else if (incomeGross >= 1500 && incomeGross < 2500) {
            taxRate = 'C';
        } else { // Covers incomeGross >= 2500
            taxRate = 'D';
        }
        // Switch Statement
        switch (taxRate) {
            case 'A':
                taxWithholding = incomeGross * 0.1;
                break;
            case 'B':
                taxWithholding = incomeGross * 0.15;
                break;
            case 'C':
                taxWithholding = incomeGross * 0.2;
                break;
            case 'D':
                taxWithholding = incomeGross * 0.3;
                break;
            default:
                System.out.println("No tax withholding can be calculated at this time");
                break;
        }
        System.out.printf("Your weekly average tax withholding amount is: $%.2f", taxWithholding);
    }
}
```

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Source code Screenshot:



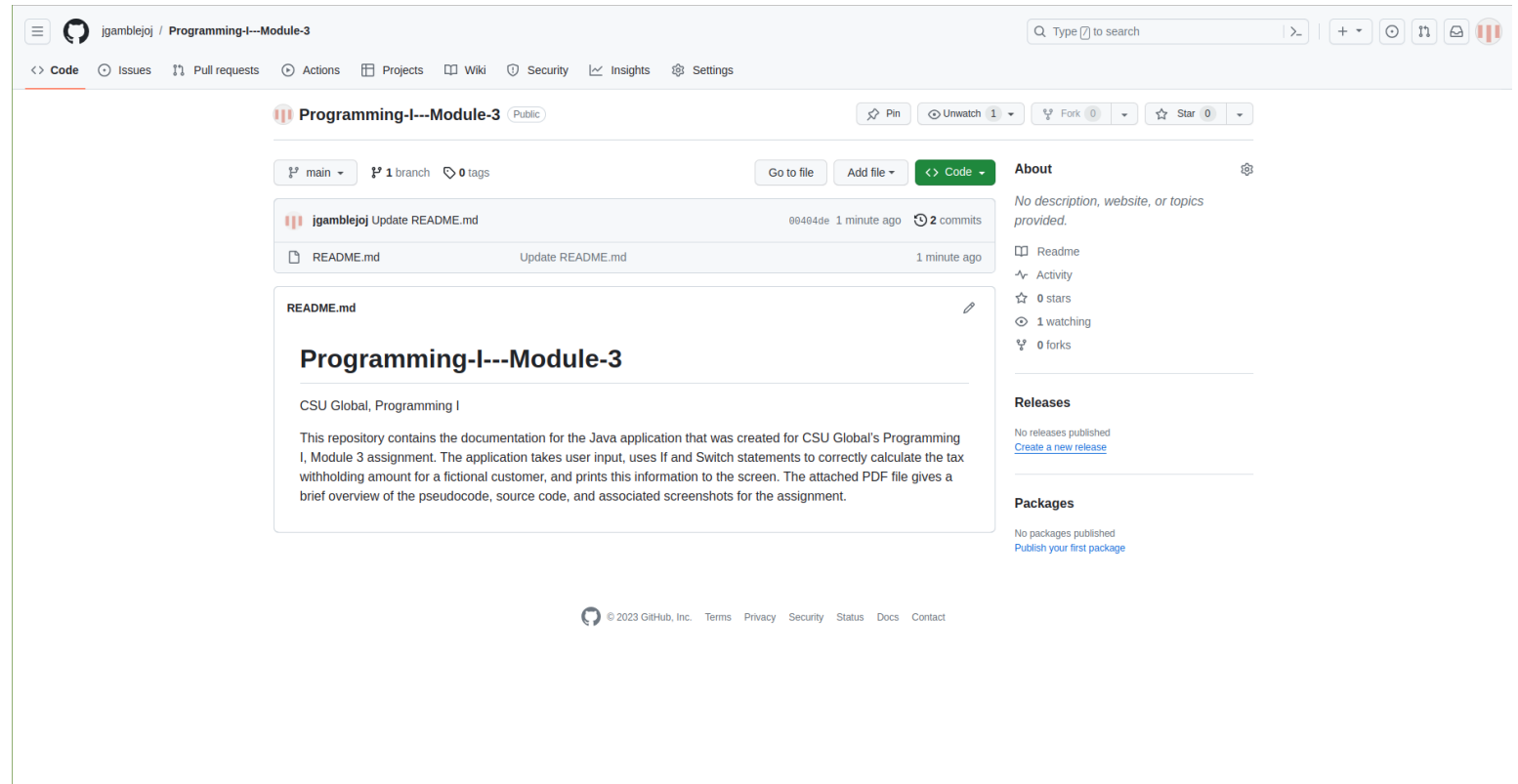
```
1 import java.util.Scanner;
2 public class criticalThinking3 {
3     public static void main(String[] args) {
4
5         Scanner scr = new Scanner(System.in);
6
7         // Set up variables
8         int incomeGross;
9         char taxRate;
10        double taxWithholding = 0.00;
11        // Print message to user and initialize scanner to set input to incomeGross
12        System.out.println("Enter your gross weekly income as a whole number without a DOLLAR sign");
13        incomeGross = scr.nextInt();
14
15        // If-Statements
16        if (incomeGross < 500) {
17            taxRate = 'A';
18        } else if (incomeGross >= 500 && incomeGross < 1500) {
19            taxRate = 'B';
20        } else if (incomeGross >= 1500 && incomeGross < 2500) {
21            taxRate = 'C';
22        } else { // Covers incomeGross >= 2500
23            taxRate = 'D';
24        }
25        // Switch Statement
26        switch (taxRate) {
27            case 'A':
28                taxWithholding = incomeGross * 0.1;
29                break;
30            case 'B':
31                taxWithholding = incomeGross * 0.15;
32                break;
33            case 'C':
34                taxWithholding = incomeGross * 0.2;
35                break;
36            case 'D':
37                taxWithholding = incomeGross * 0.3;
38                break;
39            default:
40                System.out.println("No tax withholding can be calculated at this time");
41                break;
42        }
43        System.out.printf("Your weekly average tax withholding amount is: $%.2f", taxWithholding);
44    }
45 }
46
```

Screenshot of the application executing

```
<terminated> criticalThinking3 [Java Application] /usr/lib/jvm/java-17-openjdk-amd64/bin/java (Dec 3, 2023, 2:23:53 AM – 2:24:03 AM) [pid: 26841]
Enter your gross weekly income as a whole number without a DOLLAR sign
1989
Your weekly average tax withholding amount is: $397.80
```

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Screenshot of Git Repository



Here is the link to the assignment's Git repository: <https://github.com/jgamblejoj/Programming-I---Module-3>