



Institute of Computer Engineering Technology



iCET Certified Developer

COURSE WORK

Assigment	Programming Fundamentals
Batch No	iCD 113
Name	Methods in JAVA
Ass. Date	16th September 2024

TAX Calculator

Case Study

Taxation is done in different ways in several categories. It is difficult to calculate manually and you are assigned to create a tax calculator to make it easier. When the amount earned under each tax category is input, the system should calculate the amount of ta to be paid and give it as output. Also, this system has the ability to calculate leasing payments.

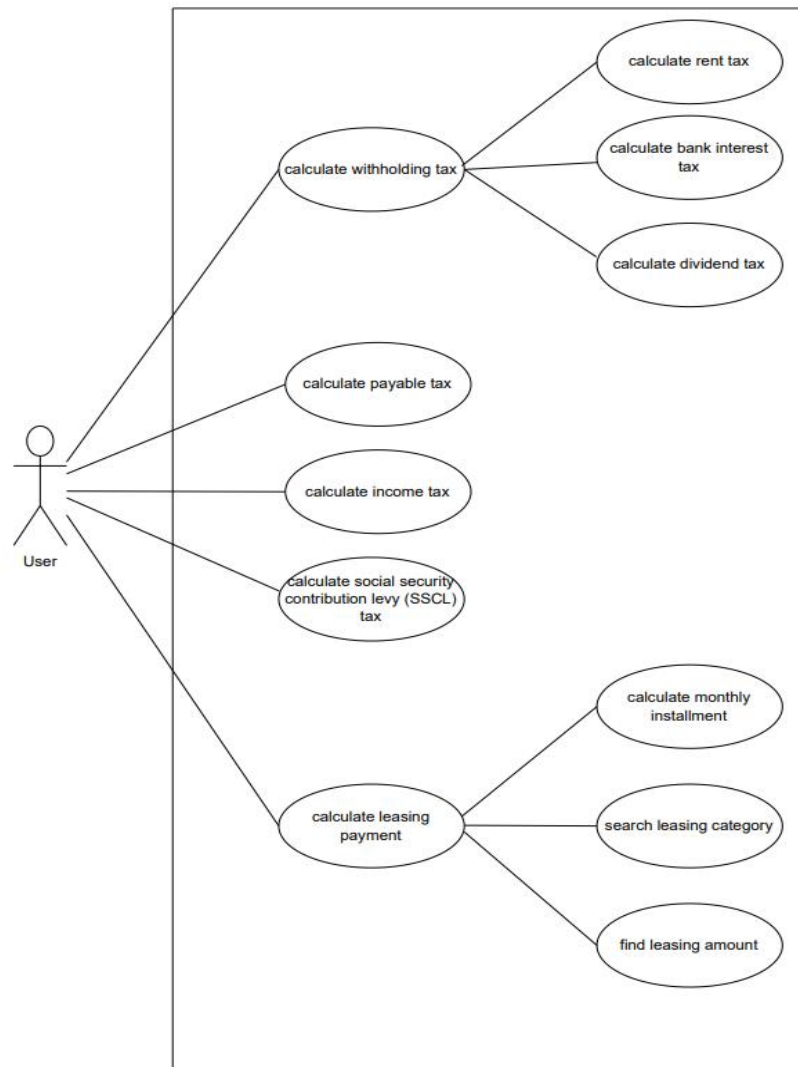


Figure 1 – Use case Diagram

1. Withholding Tax

There are three categories of Withholding Tax. When the user selects the Withholding Tax category correctly, prompt the window related to the category. The withholding Tax page is given below(Figure 3) and the user can enter an option number that he wants to execute.

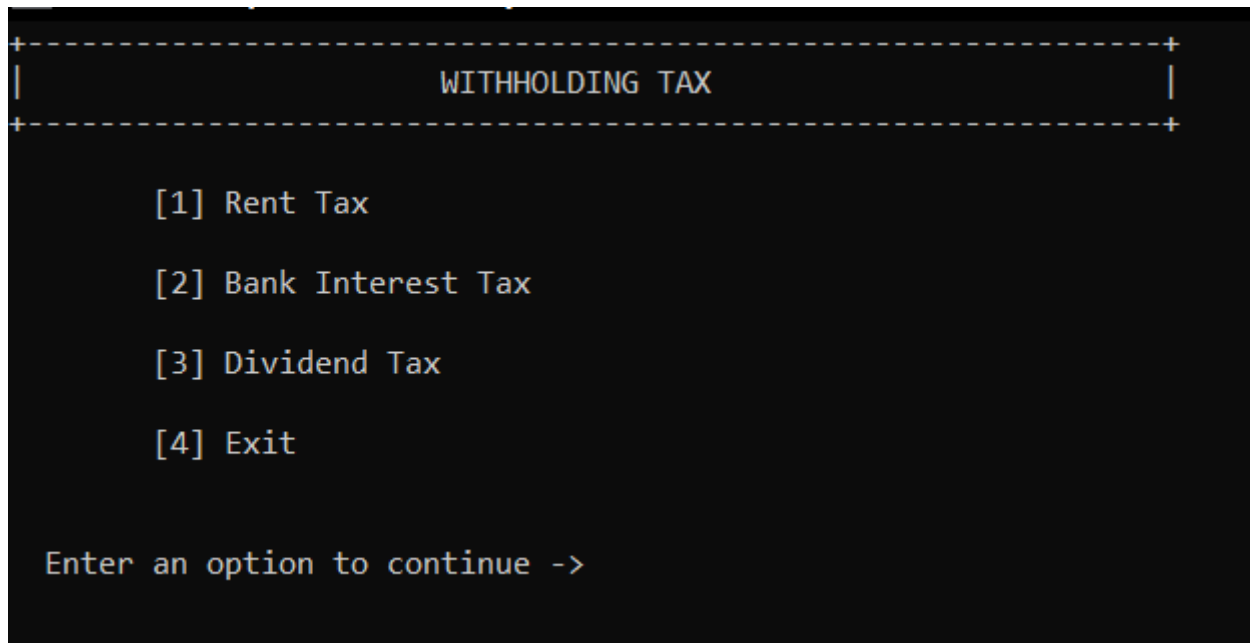


Figure 3 - Home Page of the Withholding TAX

I. Rent Tax ([Demo](#))

Rent Tax is a tax that is collected by the organization when a person provides a service to the organization. In Rent Tax, 10% is charged for all payments above Rs.100 000 and no tax is charged up to Rs.100 000. If the service value is less than Rs.100 000, print “You don’t have to pay Rent Tax...”. (Figure 6)

When the user inputs the payment amount, the system should count the amount of the Rent Tax and display it.

Input values should be validated, which means input values should be greater than 0 (can not input negative values). If the user has entered an invalid value, the user should be kept prompted until he enters a valid value (Figure 5).

Once the system calculates Rent Tax successfully, a message should prompt to ask whether the user wants to calculate Rent Tax again or go back to the main menu (Figure 4). If the user input “Y”, the user can calculate Rent Tax again. If the user inputs “N”, the user can go to the Home page.

```
+-----+
|              RENT TAX              |
+-----+

Enter your rent      : 200000

You have to pay Rent Tax : 10000.00

Do you want to calculate another Rent Tax (Y/N) :
```

Figure 4 - Rent Tax calculate

```
+-----+
|              RENT TAX              |
+-----+

Enter your rent      : -200000

Invalid input...

Do you want to enter the correct value again (Y/N): _
```

Figure 5 – User Input Validate

```
+-----+
|                RENT TAX                |
+-----+

Enter your rent          : 50000

    You dont have to pay rent tax...

Do you want to calculate another Rent Tax (Y/N) :
```

Figure 6 – When service charge less than Rs.100 000

II. Bank Interest Tax ([Demo](#))

Bank Interest Tax is charged from the annual bank interest. Bank Interest Tax is 5% of annual interest. When the user inputs the annual bank interest amount, the system should count the amount of the Bank Interest Tax and display it. Values should be validated as previously. Once calculate the Tax value is correct, it should prompt whether to calculate Bank Interest Tax again or go back to the main menu.

```

+-----+
|                BANK INTEREST TAX                |
+-----+

Enter your bank interest per year      : 50000

You have to pay Bank Interest Tax per year : 2500.00

Do you want to calculate another Bank Interest Tax (Y/N) : _

```

Figure 7 – Bank Interest Tax

III. Dividend Tax (Demo)

Dividend Tax is a tax that is collected from stock market dividends. In Dividend Tax, 14% is charged for all dividends above Rs.100 000 and no tax is charged up to Rs.100 000. If the dividend value is less than Rs.100 000, print “You don’t have to pay Dividend Tax....”. Values should be validated as previously. Once calculate the Tax value is correct, it should prompt whether to calculate Dividend Tax again or go back to the main menu.

```

+-----+
| DIVIDEND TAX |
+-----+

Enter your total dividend per year : 150000

You have to pay Dividend Tax per year : 7000.00

Do you want to calculate another Dividend Tax (Y/N):

```

Figure 8 - Dividend Tax Calculator

```

+-----+
| DIVIDEND TAX |
+-----+

Enter your total dividend per year : 50000

You dont have to pay Dividend Tax...

Do you want to calculate another Dividend Tax (Y/N): _

```

Figure 9 – When dividend TAX less than Rs.100 000

2. Payable Tax ([Demo](#))

The company keeps a percentage of an employee's salary and pays it as a tax, it is called Payable Tax. The percentage of monthly Payable Tax is given below.

- Payable Tax is charged above Rs.100 000 and no tax is charged up to Rs.100 000.
- Rs.100 000 to the 1st Rs.41 667 (100 000 – 141 667) - 6%
- Rs.141 667 to the 2nd Rs.41 667 (141 667 – 183 333) - 12%
- Rs.183 333 to the 3rd Rs.41 667 (183 333 – 225 000) - 18%
- Rs. 225 000 to the 4th Rs.41 667 (225 000 – 266 667) - 24%
- Rs.266 667 to the 5th Rs.41 667 (266 667 – 308 333) - 30%
- More than Rs.308 333 - 36%

3. Income Tax ([Demo](#))

Income Tax is the amount of tax paid on the annual income of the person. The percentage of yearly Income Tax is given below.

- Income Tax is charged above Rs.1 200 000 and no tax is charged up to Rs.1 200 000.
- Rs.1 200 000 to the 1st Rs.500 000 (1 200 000 – 1 700 000) - 6%
- Rs.141 667 to the 2nd Rs. 500 000 (1 700 000 – 2 200 000) - 12%
- Rs.183 333 to the 3rd Rs. 500 000 (2 200 000 – 2 700 000) - 18%
- Rs. 225 000 to the 4th Rs. 500 000 (2 700 000 – 3 200 000) - 24%
- Rs.266 667 to the 5th Rs. 500 000 (3 200 000 – 3 700 000) - 30%
- More than Rs. 3 700 000 - 36%

Values should be validated as previously. Once calculate the Tax value is correct, it should prompt whether to calculate Payable Tax again or go back to the main menu.

```
+-----+
|                               |
|                               |
+-----+
|                               |
|                               |
| Enter your total income per year : 5400000 |
|                               |
| You have to pay Income Tax per year : 1062000.00 |
|                               |
|                               |
| Do you want to calculate another Income Tax (Y/N): |
|                               |
+-----+
```

Figure 12 - Income Tax

```
+-----+
|                               |
|                               |
+-----+
|                               |
|                               |
| Enter your total income per year : 600000 |
|                               |
| You don't have to Income Tax... |
|                               |
|                               |
| Do you want to calculate another Income Tax (Y/N): |
|                               |
+-----+
```

Figure 13 – When Income TAX less than Rs.1 200 000

4. Social Security Contribution Levy (SSCL) Tax ([Demo](#))

A Social Security Contribution Levy (SSCL) is a payable tax imposed on importers, manufacturers, service providers, wholesalers, and retailers. SSCL Tax calculates in two steps. The steps are given below.

Step 1

Add sale tax to the value. (Sale Tax -2.5%)

Ex:- value of Goods -100 000

Sale tax - $100\,000 \times 2.5\% = 2\,500$

Value of Goods after sale tax added – $100\,000 + 2\,500 = 102\,500$

Step 2

Add VAT to the Value of Goods after sale tax added.(VAT -15%)

Ex:- Value of Goods after sale tax added – 102 500

Value of Goods after VAT added – $102\,500 \times 15\% = 15\,375$

Total SSCL Tax = Sale Tax + VAT

= 2 500 + 15 375 = 17 875

User input values should be validated as previously. Once calculate the Tax value is correct, it should prompt whether to calculate SSCL Tax again or go back to the main menu.

```
+-----+
|          SOCIAL SECURITY CONTRIBUTION LEVY (SSCL) TAX          |
+-----+

Enter value of Good or Service : 100000

You have to pay SSCL Tax      : 17875.00

Do you want to calculate another SSCL Tax (Y/N):
```

Figure 14 - SSCL Tax

5. Leasing Payment

When the user input the lease amount, annual interest and the number of year, we can count monthly leasing installment by using leasing formula.

Lease Payment Calculation Formula

$$\text{Monthly installment} = A \times i / (1 - (1 / (1 + i)^n))$$

A – lease amount	n – number of month
i - annual interest rate / 12	

There are three categories of calculate Leasing Payments. When the user selects the Leasing Payment category correctly, prompt the window related to the category. The Leasing Payment page is given below(Figure 15) and the user can enter an option number that he wants to execute.

```

+-----+
|               Leasing Payment               |
+-----+

[1] Calculate Monthly Installment
[2] Search Leasing Category
[3] Find Leasing Amount
[4] Exit

Enter an option to continue ->

```

Figure 15 - Leasing Payment Home Page

I. Calculate Monthly Installment ([Demo](#))

First, the user should enter a valid lease amount. Otherwise, it should handle like previously. Once the user has entered a valid lease amount, the user should enter the annual interest rate and the number of years. The annual interest rate must be greater than 0% and the maximum number of the year is 5. If the year is greater than 5, then it should be notified as well as follows(Figure 17).

```
+-----+
|               Calculate Leasing Payment               |
+-----+
Enter lease amount      : 2500000
Enter annual interest rate : 22
Enter number of year    : 3
Your monthly instalment : 95476.13

Do you want to calculate another monthly instalment (Y/N):
```

Figure 16 - Calculate Monthly Installment

Once calculate the Monthly Installment is correctly, it should prompt whether to calculate the Monthly Installment again or go back to the main menu.

```
+-----+
|               Calculate Leasing Payment               |
+-----+
Enter lease amount      : 1000000
Enter annual interest rate : 22
Enter number of year    : 6
      Invalid number of year... Enter the correct value again...

Enter number of year    : 3
Your monthly instalment : 38190.45

Do you want to calculate another monthly instalment (Y/N):
```

Figure 17 - When input incorrect year

II. Search Leasing Category ([Demo](#))

First, the user should enter the lease amount and the annual interest rate. The annual interest rate must be greater than 0%. The system should display monthly payments of 3 years, 4 years, and 5 years of leasing plans.

```

+-----+
|                                     |
|                               Search Leasing Category                               |
|                                     |
+-----+
|
| Enter lease amount           : 2500000
|
| Enter annual interest rate   : 22
|
| Your monthly instalment for 3 year leasing plan - 95476.13
| Your monthly instalment for 4 year leasing plan - 78765.19
| Your monthly instalment for 5 year leasing plan - 69047.28
|
| Do you want to Search another Leasing Category (Y/N):
|
+-----+

```

Figure 18 - Search Leasing Category

III. Find the Leasing Amount ([Demo](#))

First, the user should enter the monthly lease payment amount user can pay, the annual interest rate, and the number of years. The annual interest rate must be greater than 0% and the maximum number of the year is 5. Finally, system should calculate the total leasing amount available from the leasing company.

```

+-----+
|                                     |
|                               Find Leasing Amount                               |
|                                     |
+-----+
|
| Enter the monthly lease payment amount you can afford : 50000
|
| Enter number of year           : 3
|
| Enter annual interest rate     : 22
|
| You can get Lease Amount       : 1309228.00
|
| Do you want to calculate another monthly instalment (Y/N): ☐
|
+-----+

```

Figure 19 - Find Leasing Amount

Guideline

- Refer to the Coursework Guidelines at the end to understand the specific guidelines to be followed when developing the project required.
- You can't create classes except for the class that holds the main method.
- Use the Scanner class to get input from the command-line-interface.
- All validations that have been mentioned in this document should be implemented
- It is not required to clear the command line screen while navigating between the options. But doing so highly recommend it.
- The code to clear the command line from inside a Java application is as follows. You can use this code when you need to clear the command line.

```
public final static void clearConsole() {  
    try {  
        final String os = System.getProperty("os.name");  
        if (os.contains("Windows")) {  
            new ProcessBuilder("cmd", "/c", "cls").inheritIO().start().waitFor();  
        } else {  
            System.out.print("\033[H\033[2J");  
            System.out.flush();  
        }  
    } catch (final Exception e) {  
        e.printStackTrace();  
        // Handle any exceptions.  
    }  
}
```

- You can create as many methods as you wish in the only class that you have.
- Demo Videos are given at relevant places for you to understand the coursework requirement better and Demo videos may help you to clarify your doubts to some extent.
- Submission - Your work is to be made into a .zip file with the file name format [BatchNumber_Name], and submit on or before the deadline.
- If you still have any questions, feel free to question.