



SQITK3073 BUSINESS ANALYTICS PROGRAMMING

2025/2026 A251 GROUP B

INDIVIDUAL ASSIGNMENT 1

MALAYSIAN TAX INPUT PROGRAM

(TECHNICAL MANUAL REPORT)

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INTRODUCTION

The Malaysian Tax Input Program is a simple Python program that helps users calculate their yearly income tax based on Malaysia's official LHDN tax brackets. This project was made for a Business Analytics Programming class to use the programming skills learned in class. The system lets users register with a User ID and IC number and log in safely using the last four digits of their IC. Users can then enter their yearly income and tax relief. The program automatically works out the correct tax to pay using Malaysia's progressive tax rates. All the tax information is saved in a CSV file using the pandas library, so users can look at their tax history anytime. This project shows how simple programming ideas can be put together to make a useful tool for everyday tasks like calculating tax.

OBJECTIVE

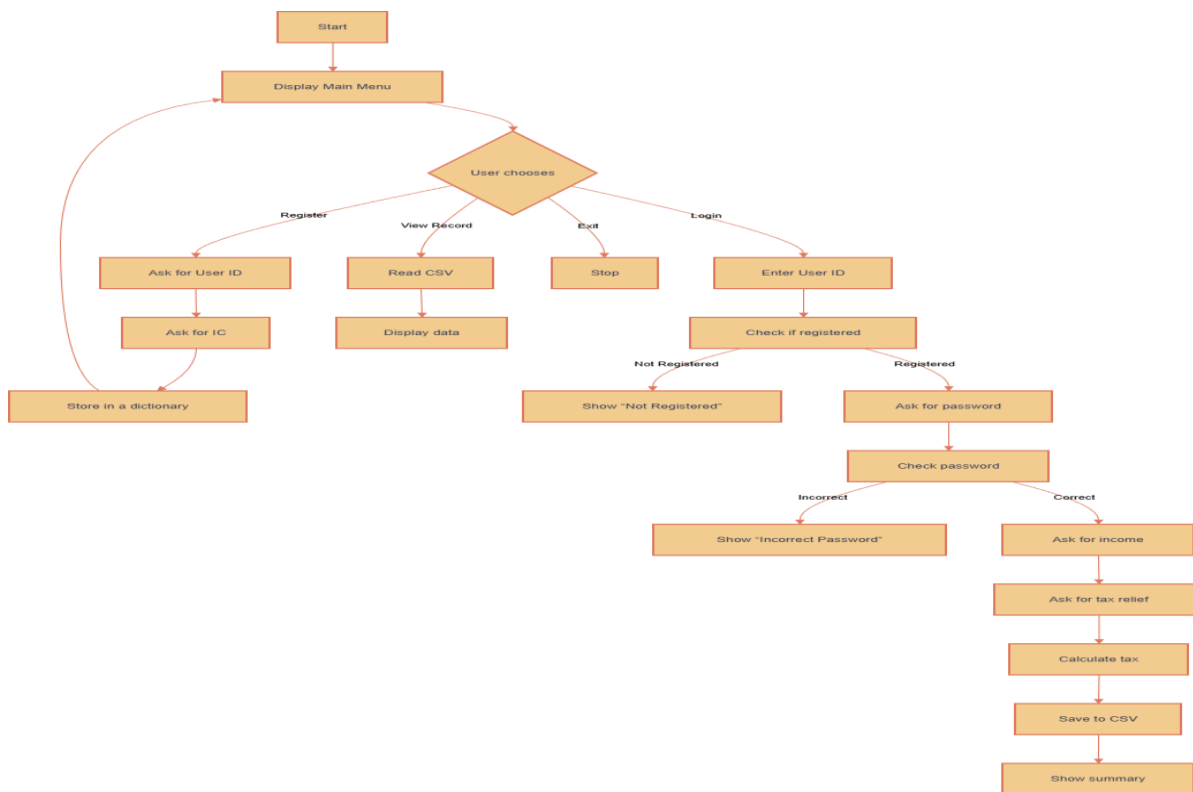
The objectives of this project are:

1. Implement user registration, log in and authentication using IC (Identity Card) numbers as passwords.
2. Calculate the tax payable based on the user's annual income and tax relief amount.
3. Store the user's data (Id, Password using IC number, income, tax relief, and tax payable) in a CSV file.

BACKGROUND

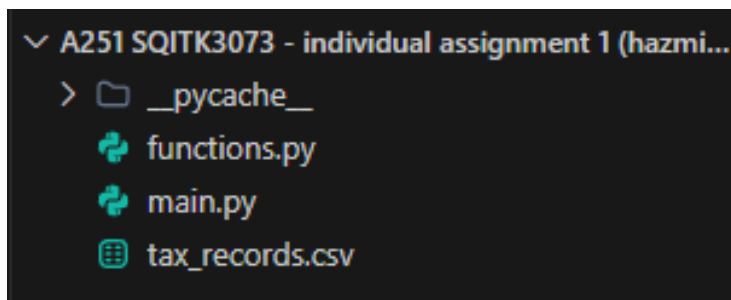
In Malaysia, income tax uses a progressive system, which means higher income is taxed at higher rates. Every year, LHDN updates the tax brackets to make sure the system is fair. Many people find it hard to calculate tax by hand because there are many income ranges and percentages to consider. This project was made to make it easier by using a Python program to do the calculations automatically. The program uses functions, loops, and conditionals to check the user's IC number, calculate the tax based on the right income bracket, and save the results with the pandas library. By using programming skills learned in class, like dictionaries, file handling, and modular coding, this project shows how coding can solve real-life problems in a useful way.

METHODOLOGY/WORKFLOW



INITIAL SETUP & CONFIGURATION

1. Install Python from website.
2. Install pandas via “pip install pandas”.
3. Ensure the project is organized into a single folder.



4. Ensure correct file path in main.py
5. Run the program using main.py
6. Testing the program.

BASIC OPERATIONS

1. USER LOGIN

Triggered when the user selects **Option 1** on the menu.

Function Used:

```
verify_user(ic_number, password)
```

How it works:

- Checks whether:
 - IC number is exactly 12 digits
 - IC contains only numbers
- Then checks:
- `password == ic_number[-4:]`
meaning the password MUST be the last 4 digits of the IC.

Outcome:

- If valid → login successful
- If invalid → user gets:
Invalid IC number or password. Please try again.

2. TAX CALCULATION

Function Used:

`calculate_tax(income, tax_relief)`

How it works:

1. After login, the user enters:

- Annual income
- Tax relief amount

2. The program calculates:

`chargeable_income = max(0, income - tax_relief)`

3. The function checks the chargeable income against the 2024 Malaysian tax brackets:

Example from your code:

`if chargeable_income <= 5000:`

`return 0`

`elif chargeable_income <= 20000:`

`return chargeable_income * 0.01`

`elif chargeable_income <= 35000:`

`return 150 + (chargeable_income - 20000) * 0.03`

This continues all the way until:

`return 237650 + (chargeable_income * 0.28)`

Outcome:

The program calculated your data

3. SAVING TAX RECORDS TO CSV

Function Used:

```
save_to_csv(data, filename='tax_records.csv')
```

How it works:

- Creates a dictionary containing:
 - IC_Number
 - Income_RM
 - Tax_Relief_RM
 - Tax_Payable_RM
- Converts it into a pandas DataFrame:

```
df = pd.DataFrame([data])
```

- If the CSV file already exists:

```
df.to_csv(filename, mode='a', header=False, index=False)
```

- If it does not exist:

```
df.to_csv(filename, index=False)
```

Outcome:

Your tax record has been saved successfully!

4. VIEWING SAVED TAX RECORDS

Triggered when the user selects **Option 2** on the menu.

Function Used:

```
read_from_csv(filename='tax_records.csv')
```

How it works:

- If the CSV file does not exist → return None
- If the file exists → load it as a DataFrame

Outcome:

- If records exist:

```
=== Tax Records ===
```

```
<printed table>
```

- If no records or CSV missing:

```
No tax records found.
```

5. EXIT THE PROGRAM

Triggered when the user selects **Option 3** on the menu.

Function Used:

```
print("\nThank you for using the Malaysian Tax Input Program. Goodbye!")
```

```
break
```

How it works:

- End the running program safely

Outcome:

- Exit the program (all data have been saved) and shown:

```
Thank you for using the Malaysian Tax Input Program. Goodbye!
```

TROUBLESHOOTING

1. “Invalid IC number or password.”

This comes from `verify_user()`.

Possible causes:

- IC not 12 digits
- Contains letters
- Password not matching last 4 digits

Fix:

- Enter a valid 12-digit IC
- Use the correct last 4 digits as the password

2. “Invalid input. Please enter valid numbers.”

Triggered when:

`float(input())`

fails.

Fix:

- Enter digits only
- Do not use commas (example: write 50000, not 50,000)

3. “No tax records found.”

Happens when:

- CSV file does not exist
- CSV file is empty
- CSV was deleted manually

Fix:

- Perform at least one tax calculation so the CSV is created
- Ensure the program has permission to write files

FREQUENTLY ASKED QUESTIONS (FAQs)

Q1: What is the login password?

The last 4 digits of your IC.

Q2: What IC format should I use?

12-digit number, no spaces, no dashes.

Correct: 010203041234

Wrong: 010203-04-1234

Q3: Why is there no registration?

This program uses direct verification: `verify_user(ic, password)`

No usernames or user ID storage.

Q4: Where are my records stored?

Inside: `tax_records.csv`

REFERENCES

Jiahao. (2025, July 21). *Tax Calculator 2025 (YA 2024) | Malaysia Personal Tax Relief*. E Stream MSC. <https://www.sql.com.my/income-tax-calculator-malaysia/ya-2024/>

Tax Rate | Lembaga Hasil Dalam Negeri Malaysia. (n.d.). Lembaga Hasil Dalam Negeri Malaysia. <https://www.hasil.gov.my/en/individual/individual-life-cycle/incomedeclaration/tax-rate/>

W3Schools.com. (n.d.). https://www.w3schools.com/python/python_functions.asp