

**Name:** Jonathan Hargitai  
**Student ID:** 220575494  
**Course:** FINE 3300 (Fall 2025)  
**Instructor:** Faisal Habib  
**Due Date:** Nov 10, 2025  
**Github Repository:** <https://github.com/Jhar100/FINE3300-2025-A2>

## Loan Amortization Schedules Results

Inputs:

- Principal: \$500,000
- Quoted Rate: 5.5%
- Amortization: 25 years
- Mortgage Term: 30 years

Output From Program:

- Monthly Payment: \$3,051.96
- Semi-monthly Payment: \$1,524.25
- Bi-weekly Payment: \$1,406.88
- Weekly Payment: \$703.07
- Rapid Bi-weekly Payment: \$1,525.98
- Rapid Weekly Payment: \$762.99
- Files generated:
  - A2\_PartA\_Schedules.xlsx
  - A2\_PartA\_BalanceDecline.png

Walkthrough:

This program extends the mortgage payment calculator from Assignment 1 to create full loan amortization schedules.

It calculates payments for six frequencies using the Canadian semi-annual compounding method.

Each payment is taken from the present-value-of-annuity formula, while rapid payment options are based on the monthly schedule (half for bi-weekly, quarter for weekly).

The program also automatically saves the full payment schedules to an Excel file and generates a balance decline graph.

All results are rounded to two decimal places.

## Consumer Price Index (CPI) Analysis

Overview:

This program analyzes CPI data from Statistics Canada for 2024, it covers Canada and all ten provinces.

It combines the 11 provided CSV files from 'A2 Data' file into one dataset and performs multiple inflation-related calculations.

- Displays the first 12 rows of combined CPI data.
- Calculates average month-to-month CPI changes for Food, Shelter and All-items excluding food and energy.
- Identifies provinces with the highest average change in each category:
  - Canada – All-items excluding food and energy (0.2 %)
  - Alberta – Food (0.1 %)
  - New Brunswick – Shelter (0.5 %)
- Computes the equivalent salary to \$100,000 in Ontario across all provinces (Dec 2024):
  - Canada \$99,078.1, Ontario \$100,000.0, Quebec \$96,803.9, B.C. \$95,943.5, Alberta \$104,302.4, Manitoba \$98,340.5, Saskatchewan \$100,061.5, Nova Scotia \$100,553.2, New Brunswick \$98,524.9, Prince Edward Island \$100,553.2, Newfoundland & Labrador \$98,770.7
- Reads MinimumWages.csv and compares nominal vs. real minimum wages (Dec 2024):
  - Highest nominal – British Columbia (\$17.8)
  - Lowest nominal – Alberta (\$15.0)
  - Highest real (CPI-adjusted) – British Columbia (\$11.4)
- Calculates annual CPI change for Services (Jan–Dec 2024):
  - Canada 3.5 %, Ontario 3.3 %, Quebec 3.8 %, B.C. 3.7 %, Alberta 4.1 %, Manitoba 3.3 %, Saskatchewan 3.1 %, Nova Scotia 3.3 %, New Brunswick 2.8 %, Prince Edward Island 2.1 %, Newfoundland & Labrador 2.3 %
- Determines the region with the highest Services inflation: Alberta (4.1 %)

Walkthrough:

The program first reshapes each CSV for structure, then merges them into a single DataFrame using pandas.

For each question, the program filters and computes inflation metrics and then rounds results to one decimal place, formatting them as percentages.

All results are printed in a clean, labeled format in the terminal, to keep calculations transparent .

### Reflection:

This assignment really developed my ability to work with real financial and economic data in Python. In Part A, I learned how to automate and visualize amortization schedules, while Part B helped me understand how to analyze inflation trends and cost-of-living differences using accurate and historical CPI data. Creating the program also built my skills in data cleaning and utilising pandas for professional outputs.