

# QAP 4 – Mar 14 – 28, 2025



- Projects 1, 2 and 3 will be completed individually in this QAP, and Project 4 will be done in your groups. You have 2 weeks – plenty of time – but don't leave it to the last minute. Set up a Trello and have your normal daily meetings to track progress.
- Each project files are to be submitted through the assignment portals by Mar 28 at 11:59 pm. Make sure to send a chat with the URL for your GitHub Repository to Maurice and Dr. Malik.
- Questions can be asked before any classes during the regularly scheduled times in the next two weeks.

## Project 1 – Python – Functions and Lists

The **One Stop Insurance Company** needs a program to enter and calculate new insurance policy information for its customers. Allow the program to repeat to allow the user to enter as many customers as they want. **Add at least 3 functions to the program.** I will accept the FormatValues.py library as a function option – but you need to add a new function to the library – make it relevant. Bonus point – actually, just my admiration - if you can create a function that returns multiple values.

Set up the following constants at the beginning of the program for the next policy number, the basic premium, the discount for additional cars, the cost of extra liability coverage, the cost of glass coverage, the cost for loaner car coverage, the HST rate, and the processing fee for monthly payments. The values are 1944, , 869.00, .25, 130.00, 86.00, 58.00, .15, and 39.99 respectfully.

The user will input the customer's first and last name, address, city, province (validate using a list to make sure the province is valid), postal code, and phone number. They will also enter the number of cars being insured, and options for extra liability up to \$1,000,000 (enter Y for Yes or N for No), optional glass coverage (Y or N), and optional loaner car (Y or N). Finally enter a value to indicate if they want to pay in full or monthly (Full or Monthly or Down Pay – use a list to validate). If the enter Down Pay allow them to enter the amount of the down payment. Finally enter the Claim number, claim date, and the claim amount of all previous claims for the customer – set up to get out of the loop by the method of choice. Add at least 2-3 claims and store the values in lists. Convert the first and last name, the city, and the payment Method to title case and the Y/N values upper case. No validations required – other than those specified - but go for it if you want. Be careful when testing - enter values that are valid for each input.

Insurance premiums are calculated using a basic rate of \$869.00 for the first automobile, with each additional automobile offered at a discount of 25%. If the user enters a Y for any of the options, the costs are \$130.00 per car for extra liability, \$86.00 per car for glass coverage, and \$58.00 per car for the loaner car option. All these values are added together for the total extra costs. The total insurance premium is the premium plus the total extra costs. HST is calculated at 15% on the total insurance premium, and the total cost is the total insurance premium plus the HST. Customers can pay for their insurance in full or in 8 monthly payments, with or without a downpayment. Calculate the monthly payment by adding a processing fee of \$39.99 to the total cost and dividing the total cost by 8. If the user entered a down payment, determine the monthly payment based on the total price less the downpayment with the same processing fee over the same 8 months. The invoice date is the current date, and the first payment date is 20 days from the invoice date, or the first day of the next month, whichever is later.

Display all input and calculated values to the screen in a **well-designed receipt (2 col is fine)**. At the end include the previous claims from the lists entered with the following format:

| Claim # | Claim Date | Amount      |
|---------|------------|-------------|
| #####   | YYYY-MM-DD | \$##,###.## |
| #####   | YYYY-MM-DD | \$##,###.## |
| #####   | YYYY-MM-DD | \$##,###.## |

**BONUS** – Write the input data and the total cost to a data file called Policies.dat. This will be covered in class next week.

## Project 2 – GitHub

Create a GitHub repository called QAP 4 Files XX – where XX are your initials. Make the repository public and add a ReadMe file. Add the Python Program to the repository in one folder, and the files for the Web project in a separate folder.

In a separate chat, send me and Dr. Malik the URL for your repository so I can clone and run your project. Also include these files in a zipped folder in the assignment portal as well as a backup just in case I cannot access your repository.

## Project 3 – JavaScript

The St. John's Marina & Yacht Club is tired of all the paper it keeps tracking who has their yachts docked at the club, how much to charge them each month, and if the members have paid their bill. They decided the need to start with a program to allow them to enter the appropriate information and prepare a receipt. The club would like the receptionist to be able to enter existing club members, and add new members as they are accepted, since not all sites are in use. There are 100 sites at the marina.

Input for the program will include the current date (YYYY-MM-DD), the Site number (1-100), the member name, street address, city, province and postal code, phone number, and cell number, the membership type (S for Standard, E for Executive), and an value for each of the following options: the number of alternate members (family and friends who will be allowed access to the grounds), weekly site cleaning (Y for Yes, N for No), and video surveillance (Y for Yes, N for No).

The program should perform the following calculations. Even numbered sites cost \$80.00 per month, and odd numbered sites cost \$120.00 since they are larger. Each alternate member costs \$5.00 per month. Add these two numbers to get the site charges.

If the member chooses, weekly site cleaning the charge is \$50.00 per month, and video surveillance is \$35.00 per month. Add these together to determine the extra charges.

The subtotal is the site charge plus the extra charges. Taxes are calculated at 15% on subtotal, and the total monthly charge is the subtotal plus the taxes. Finally monthly dues are calculated at \$75.00 for standard members and \$150.00 for executive members. The total monthly charge and the monthly dues are added together to give the Total Monthly Fees.

Also determine the total Yearly Fees by multiplying the total monthly fees by 12. The monthly payment is the Total yearly fees, plus a processing fee of \$59.99 divided

| St. John's Marina & Yacht Club<br>Yearly Member Receipt  |                        |
|--|------------------------|
| Client Name and Address:   |                        |
| XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX<br>XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX<br>XXXXXXXXXXXXXXXXXXXXXX, XX XXXXX |                        |
| Site #: ###  | Member type: XXXXXXXXX |
| Alternate members: ##  |                        |
| Weekly site cleaning: XXX  |                        |
| Video surveillance: XXX  |                        |
| Site charges: \$#,###.##   |                        |
| Extra charges: \$###.##  |                        |
| Subtotal: \$#,###.##   |                        |
| Sales tax (HST): \$###.##  |                        |
| Total monthly charges: \$#,###.##  |                        |
| Monthly dues: \$###.##   |                        |
| Total monthly fees: \$#,###.##   |                        |
| Total yearly fees: \$##,###.##   |                        |
| Monthly payment: \$#,###.##  |                        |
| Issued: YYYY-MM-DD   |                        |
| HST Reg No: 549-33-5849-47   |                        |
| Cancellation fee: \$#,###.##   |                        |

by 12. Finally, a cancellation fee, if the client leaves the marina without proper notice, as 60% of the yearly site charges. Note: Just calculate the value and print in the receipt – no extra inputs are required.

Display all calculated values to the screen based on the invoice displayed on the right. The membership type will be displayed as Standard or Executive. The weekly site cleaning and video surveillance will be displayed as Yes or No.

## Project 4 – Entity / Relationship Diagram

**The following is to be completed in your groups. It is strongly suggested that you get together with your team and plan the solution over several meetings – so not to have one person complete it all.**

Sleep-Tite Motel requires a program to track rooms, bookings, and revenues for the hotel. Note there is no restaurant since there is a Tim's on one side and a steak house on the other side of the parking lot. They do have a coffee station and snacks set up in the corner of the reception area for guests – purchases are just paid for at the front reception. Create the ERD for the following system.

A **Defaults** file called STDef.dat will be used to store current values for the invoice number (1856), room rate (\$75.00), the HST rate (15%), the Early check-in rate (\$12.00), the Extra bed rate (\$7.00 per night), the Extra key rate (\$2.00), and the Late check-out rate (\$12.00). This can be set up as a table / file in the ERD but it will be stand alone, not have a primary key, and not have relationships to any other tables.

The **Room Status** file will only have 26 records since there are 26 rooms in the hotel (101 - 126). Included will be the Room number, the Customer name, the full mailing address for the customer, the customer phone number, the customer credit card number and expiry date, the check-in date, the check-out date, and options for an early check-in, an extra bed in the room, extra key for the room, late check out. If the room is empty the customer's name will contain the value "Vacant".

The **Bookings** file has information for each advanced booking made by a customer. These bookings are usually made by phone, or through the company web page. Included in this table are the booking ID which is generated by the system, the customer's name and phone, the check-in and the check-out dates.

As a customer checks out, information will be saved to a **Revenue** file. Based on the information in the room status table, the system will create, display, and print an invoice for the customer. This will include the charges based on the # nights and the room rate, any extra charges such as the early check-in, extra bed, extra key, or the late check-out. The revenue table includes the invoice number, the invoice date, the customer's name, the payment method (Cash, Debit or Credit card), the room charge, the extras charge (based on early check-in, extra bed, extra key, and late check-out), the subtotal, taxes and total.

The hotel has a storage room with all supplies for cleaning, office supplies, extra room towels and face clothes, and supplies for the coffee station and snack bar. They would like to put a computer in the room to track items brought in and items taken out. Set up a **Supplies** file that will allow them to track inventory and allow for ordering.

Identify 2 or 3 extra field that you could add to the ERD. Include a reason why you feel each field would be useful to the system. Explain your additions at the end of the Word file and explain the reason / purpose for the extra fields.