Université Concordia University | CENTRE FOR CONTINUING EDUCATION

CEBD 1100: Python for Data Analysis

(Spring 2025)

Assignment 1 – Tip Calculator / Input File Statistics and Reporting

Description and Purpose

The purpose of this assignment is to allow you to take the theory we learned in class and apply it practically on your computer, using Python.

Your task is to produce the code required to answer the various questions, test the code, and formalize it before delivering it.

This assignment is meant to be used as an introduction to programming.

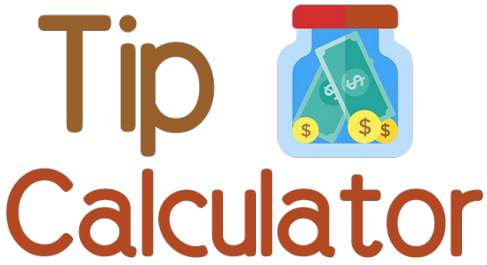
Learning Objective(s)

1) Ability to understand and apply the following Python functions:
   a) print
   b) print.format
   c) input
   d) while/for/in
   e) Python math functions
   f) Python string functions
2) Reading a CSV file
3) Looping through records of a CSV file
4) Parsing data from CSV records
5) Converting parsed data to a usable format.
6) Aggregate data.
7) Present data in a report format.

Program #1 – Tip Calculator

Description

Code a “tip calculator” program that calculates the price per person for a meal.



Input

The program should ask the user several questions including:

1. The number of diners
2. The price of the meal, before tax
3. The tip percentage (Horrible = 0%, Basic service = 10%, Good service = 15%, Exceptional Service = 20%)

Output

The program will then display the following information, with the prices properly formatted and rounded.

1. The number of diners
2. The price of the meal before tax
3. The Quebec tax added (Federal)
4. The Quebec tax added (Provincial)
5. The total including tax
6. The tip amount (based on the price before tax)
7. The grand total including tax
8. The amount owed per person

Guidelines

- The tip percentage should be shown as choices:

  ```
  1) Exceptional 20% , 2) Good 15%, 3) Basic 10%, 4) Horrible 0%
  ```

  - If the user chooses 2, then the tip percentage is 15%
- If the user chooses something not in the menu choice list, the program should ask them to choose again and tell them the input was not correct.
- If the user enters a value other than a number (for money amounts), the program should ask them to input the value again.
- There are no “exit” choices in any of the menus, once the program starts, we expect the user to complete the process.
- Comments should be used where applicable.
- Regional settings are not necessary.
- Quebec sales tax rules are here: https://www.revenuquebec.ca/en/businesses/consumption-taxes/gsthst-and-qst/basic-rules-for-applying-the-gsthst-and-qst/

Program #2 – Input file Analysis

Step 1

Download the sample CSV file from Moodle and copy it into your PyCharm project.

Step 2

Create the program structure needed to read the file, and also to take care of any errors which may result in reading the file.

In case of any error, you can exit the program with the message "Sorry an error has occurred.".

Please don't rename the input file, this way your instructor can easily run your projects without having to change the code.

Step 3

1. A list of sales channels.
2. Totals per sales channel (repeated for each sales channel).
    a. The number of total units sold for channel.
    b. The average revenue of all the units sold for channel.
    c. The total revenue for channel.
3. Big totals
    a. The number of total units sold.
    b. The average revenue of all the units sold.
    c. The total revenue.

Step 4

Present a report to the user formatted as follows:

```
                    Sales Report
                    ------------

                Produced on: 2022-07-11

Regions analysed:  Sub-Saharan Africa, Australia and Oceania, Central
America and the Caribbean, …,…,…

Total, x regions.

Sub-Saharan Africa

 Total units sold:              12345
 Average revenue per unit:      $1234.99
 Total revenue of sales:        $12345678.99

Australia and Oceania

 Total units sold:              12345
 Average revenue per unit:      $1234.99
 Total revenue of sales:        $12345678.99
```

All the regions should be listed here.

There should be a line like this for each region.

```
Grand Totals

 Total units sold:              12345
 Average revenue per unit:      $1234.99
 Total revenue of sales:        $12345678.99
```

Resources, Reference, Please See

Please refer to class slides for details on each of the commands.

You can also search on Google for tips and tricks, but please don't copy the code verbatim.

Submission Procedure

For a single "py" file, drag your completed "py" file into the submission link in Moodle. There is no need to ZIP it.

For multiple files, ZIP your files up – and drag the zip file into the submission link in Moodle.

Please submit prior the due date. It's highly recommended to go back into Moodle and verify that your submission work, to eliminate any doubt of technical error.

Please contact your instructor if you have difficulties with this procedure.

Grading Scheme / Rubric

Item	Value
Part 1	10
Part 2	10
TOTAL	20

1 point will be deducted for each formatting error.

3 points will be deducted for no comments in the code.

The objective of the code met:

- Fully: 0 points removed
- Partially: 1 – 10 points removed depending on severity.
- Code compiling but not working at all: Maximum 5 points granted.