**PyBank Analysis**

The first step to perform this analysis is to investigate the dataset: budget\_data.csv that was provided for purposes of doing this exercise.

By opening this file into our code editor, we can see that is composed by only two columns: Date and Profit/Losses where in the column Date we can see that values have the following structure: Month-Year, meanwhile the Profit/Losses column holds positives and negative integers which show for practical purposes can tell us if the company did well or not during the period we look at.

Once we finished with getting acquainted with our dataset, we can start writing our code to get the information that we want. First, we import that required libraries: os and csv, next we specify the path where our csv of interest is located at:

# Write down the file path of the csv

csvpath = os.path.join('Resources', 'budget\_data.csv')

And then we pass this path into our os function “with open (path, ‘r’) as file:”

with open(csvpath, 'r') as csv\_file:

csvreader = csv.reader(csv\_file)

header = next(csvreader)

By doing this we tell our computer to open and read the file that we specify with the path we pass as the argument. The next step in our code is to use csv.reader function to read the desired file in a csv way and then we skip the first line because we do not want to include the header of the columns in our next step.

Now, we use a for loop to read the csv we load into the csvreader line by line:

for row in csvreader:

month\_counter += 1

total\_amount += int(row[1])

pl\_values.append(int(row[1]))

months.append(row[0])

Besides reading the csv, we place a month\_counter which adds 1 into it for every iteration the for loop makes, by doing this we can know how many months this dataset has, while the next variable: total\_amount adds calculate the total sum of the Profit/Losses column. The final steps in this for loop are appending all the Profit/Losses values into a new list in order to calculate the Average Change separately and creating a new list called months and appending the Date column into it.

month\_counter = 0

total\_amount = 0

pl\_values = []

months = []

changes = []

The next step in our code is making a new for loop with range of length of the pl\_values list that we defined, the main purpose of this is to calculate the average change of the Profit/Losses column. Since the formula for calculate change is the next period – the prior period we cannot start from index [0] at this list so we use if i == 0: pass, which is going to start the loop again and i will be 1. By doing so all the next iteration are going to be calculating the change between periods inside the proper range of our pl\_values list and appending these changes inside the changes list. Finally, we just take the average of all the values inside the changes list

for i in range(len(pl\_values)):

if i == 0:

continue

change = pl\_values[i] - pl\_values[i-1]

changes.append(change)

average\_change = sum(changes) / len(changes)

The last part of our analysis consists in getting the greatest increase and descrese in profits and its corresponding periods, for do so we use max() function on our changes list then we just look for this max value corresponding index and add 1 to it (we do this because in the last loop we start calculating the change between periods at index[1]) and then place this index into our months list to find the corresponding period. We then repeat this step but with min() function.

max\_value = max(changes)

max\_index = changes.index(max\_value)

max\_month = months[max\_index + 1]

min\_value = min(changes)

min\_index = changes.index(min\_value)

min\_month = months[min\_index + 1]

print('Financial Analysis')

print('----------------------------')

print(f'Total Months: {month\_counter}')

print(f'Total: ${total\_amount}')

print(f'Average Change: ${average\_change}')

print(f'Greatest Increase in Profits: {max\_month} (${max\_value})')

print(f'Greatest Decrease in Profits: {min\_month} (${min\_value})')

By running this code, we obtained our desired output:

**Financial Analysis**

**----------------------------**

**Total Months: 86**

**Total: $38382578**

**Average Change: $-2315.1176470588234**

**Greatest Increase in Profits: Feb-2012 ($1926159)**

**Greatest Decrease in Profits: Sep-2013 ($-2196167)**

In summary, our dataset has information from 86 months where the total sum during that period of time is $38,382,578 however, we can see that the profit and losses are quite drastic since we found the greatest decrease in profit of almost $-2,196,167 and the greatest increase of $1,926,159 so we can infer that these data might come from a very dynamic industry such a finance or technology. Another interesting insight is that by looking at the average change of $-2,315 we can obtained that although that this data show positive results the tendency is that Losses are more frequent or greater than profits.