Option 1: PyBank

 Revenue

In this challenge, you are tasked with creating a Python script for analyzing the financial records of your company. You will be given two sets of revenue data (`budget_data_1.csv` and `budget_data_2.csv`). Each dataset is composed of two columns: `Date` and `Revenue`. (Thankfully, your company has rather lax standards for accounting so the records are simple.)

Your task is to create a Python script that analyzes the records to calculate each of the following:

- The total number of months included in the dataset
- The total amount of revenue gained over the entire period
- The average change in revenue between months over the entire period
- The greatest increase in revenue (date and amount) over the entire period
- The greatest decrease in revenue (date and amount) over the entire period

As an example, your analysis should look similar to the one below:

```
Financial Analysis
----------------------------
Total Months: 25
Total Revenue: $1241412
Average Revenue Change: $216825
Greatest Increase in Revenue: Sep-16 ($815531)
Greatest Decrease in Revenue: Aug-12 ($-652794)
```

Your final script must be able to handle any such similarly structured dataset in the future (your boss is going to give you more of these -- so your script has to work for the ones to come). In addition, your final script should both print the analysis to the terminal and export a text file with the results.

In [1]:
```
import os
import csv
```

In [2]:
```
date, revenue = ([] for i in range(2))
```

In [3]:
```
# input and output files
input_file = "budget_data_1-Copy1.csv"
output_file = "budget_data_1_summary.txt"
```

In [4]:
```
# input and output paths
csv_input_path = os.path.join("raw_data", input_file)
txt_output_path = os.path.join("summary_doc", output_file)
```

In [5]:
```
with open(csv_input_path, mode='r', newline='') as budget_data:
    reader = csv.reader(budget_data, delimiter=',')

    next(reader)

    row_num = 0
    for row in reader:
        date.append(row[0])
        revenue.append(row[1])
        row_num += 1




# *-----------------*
# |  Summary Table  |
# *-----------------*
```

In [6]:
```
# sum of months
print("Total Months:", row_num)
```

```
Total Months: 41
```

In [7]:
```
# sum of revenue
revenue_sum = 0
for i in revenue:
    revenue_sum += int(i)

print("Total Revenue: $" + str(revenue_sum))
```

```
Total Revenue: $18971412
```

In [8]:
```
# average revenue change
total_revenue_change = 0
for h in range(row_num):
    total_revenue_change += int(revenue[h]) - int(revenue[h - 1])

# the first_pass variable is created to remove the first iteration revenue cha
nge
# which, takes the first list element and subtracts it by the last list elemen
t.
first_pass = (int(revenue[0]) - int(revenue[-1]))
total_revenue_change_adj = total_revenue_change - first_pass

avg_revenue_change = (total_revenue_change_adj + int(revenue[0])) / row_num
print("Average Revenue Change: $" + str(round(avg_revenue_change)))
```

```
Average Revenue Change: $21559
```

In [9]:
```
# greatest increase in revenue
high_revenue = 0
for j in range(len(revenue)):
    if int(revenue[j]) - int(revenue[j - 1]) > high_revenue:
        high_revenue = int(revenue[j]) - int(revenue[j - 1])
        high_month = date[j]

print("Greatest Increase in Revenue:", high_month, "($" + str(high_revenue) +
")")
```

```
Greatest Increase in Revenue: Feb-16 ($1837235)
```

In [10]:
```
# greatest decrease in revenue
low_revenue = 0
for k in range(len(revenue)):
    if int(revenue[k]) - int(revenue[k - 1]) < low_revenue:
        low_revenue = int(revenue[k]) - int(revenue[k - 1])
        low_month = date[k]

print("Greatest Decrease in Revenue:", low_month, "($" + str(low_revenue) +
")")
```

```
Greatest Decrease in Revenue: Aug-14 ($-1779747)
```

In [11]:
```
# print summary header
print("\nFinancial Analysis", "\n" + "-" * 50)

# sum of months
print("Total Months:", row_num)

# sum of revenue
revenue_sum = 0
for i in revenue:
    revenue_sum += int(i)

print("Total Revenue: $" + str(revenue_sum))

# average revenue change
total_revenue_change = 0
for h in range(row_num):
    total_revenue_change += int(revenue[h]) - int(revenue[h - 1])

# the first_pass variable is created to remove the first iteration revenue cha
nge
# which, takes the first list element and subtracts it by the last list elemen
t.
first_pass = (int(revenue[0]) - int(revenue[-1]))
total_revenue_change_adj = total_revenue_change - first_pass

avg_revenue_change = (total_revenue_change_adj + int(revenue[0])) / row_num
print("Average Revenue Change: $" + str(round(avg_revenue_change)))


# greatest increase in revenue
high_revenue = 0
for j in range(len(revenue)):
    if int(revenue[j]) - int(revenue[j - 1]) > high_revenue:
        high_revenue = int(revenue[j]) - int(revenue[j - 1])
        high_month = date[j]

print("Greatest Increase in Revenue:", high_month, "($" + str(high_revenue) +
")")


# greatest decrease in revenue
low_revenue = 0
for k in range(len(revenue)):
    if int(revenue[k]) - int(revenue[k - 1]) < low_revenue:
        low_revenue = int(revenue[k]) - int(revenue[k - 1])
        low_month = date[k]

print("Greatest Decrease in Revenue:", low_month, "($" + str(low_revenue) +
")")


# white space after table
print("\n\n")


# *------------------*
```

```
# |  Output TXT File  |
# *-------------------*
```

```
Financial Analysis
----------------------------------------------------
Total Months: 41
Total Revenue: $18971412
Average Revenue Change: $21559
Greatest Increase in Revenue: Feb-16 ($1837235)
Greatest Decrease in Revenue: Aug-14 ($-1779747)
```

In [12]:
```
with open(txt_output_path, mode='w', newline='') as summary_txt:
    writer = csv.writer(summary_txt)

    writer.writerows([
        ["Financial Analysis for: " + input_file],
        ["-" * 50],
        ["Total Months: " + str(row_num)],
        ["Total Revenue: $" + str(revenue_sum)],
        ["Average Revenue Change: $" + str(round(avg_revenue_change))],
        ["Greatest Increase in Revenue: " + str(high_month) + " ($" + str(high
_revenue) + ")"],
        ["Greatest Decrease in Revenue: " + str(low_month) + " ($" + str(low_r
evenue) + ")"]
    ])
```

In [13]:
```
#Process second set of data on budget_data_2-Copy1.csv

date, revenue = ([] for i in range(2))

# input and output files
input_file = "budget_data_2-Copy1.csv "
output_file = "budget_data_2_summary.txt"

# input and output paths
csv_input_path = os.path.join("raw_data", input_file)
txt_output_path = os.path.join("summary_doc", output_file)


with open(csv_input_path, mode='r', newline='') as budget_data:
    reader = csv.reader(budget_data, delimiter=',')

    next(reader)

    row_num = 0
    for row in reader:
        date.append(row[0])
        revenue.append(row[1])
        row_num += 1




# *-----------------*
# |  Summary Table  |
# *-----------------*

# print summary header
print("\nFinancial Analysis", "\n" + "-" * 50)

# sum of months
print("Total Months:", row_num)


# sum of revenue
revenue_sum = 0
for i in revenue:
    revenue_sum += int(i)

print("Total Revenue: $" + str(revenue_sum))


# average revenue change
total_revenue_change = 0
for h in range(row_num):
    total_revenue_change += int(revenue[h]) - int(revenue[h - 1])

# the first_pass variable is created to remove the first iteration revenue cha
nge
# which, takes the first list element and subtracts it by the last list elemen
t.
first_pass = (int(revenue[0]) - int(revenue[-1]))
```

```
total_revenue_change_adj = total_revenue_change - first_pass

avg_revenue_change = (total_revenue_change_adj + int(revenue[0])) / row_num
print("Average Revenue Change: $" + str(round(avg_revenue_change)))


# greatest increase in revenue
high_revenue = 0
for j in range(len(revenue)):
    if int(revenue[j]) - int(revenue[j - 1]) > high_revenue:
        high_revenue = int(revenue[j]) - int(revenue[j - 1])
        high_month = date[j]

print("Greatest Increase in Revenue:", high_month, "($" + str(high_revenue) +
")")


# greatest decrease in revenue
low_revenue = 0
for k in range(len(revenue)):
    if int(revenue[k]) - int(revenue[k - 1]) < low_revenue:
        low_revenue = int(revenue[k]) - int(revenue[k - 1])
        low_month = date[k]

print("Greatest Decrease in Revenue:", low_month, "($" + str(low_revenue) +
")")


# white space after table
print("\n\n")


# *-------------------*
# |  Output TXT File  |
# *-------------------*

with open(txt_output_path, mode='w', newline='') as summary_txt:
    writer = csv.writer(summary_txt)

    writer.writerows([
        ["Financial Analysis for: " + input_file],
        ["-" * 50],
        ["Total Months: " + str(row_num)],
        ["Total Revenue: $" + str(revenue_sum)],
        ["Average Revenue Change: $" + str(round(avg_revenue_change))],
        ["Greatest Increase in Revenue: " + str(high_month) + " ($" + str(high
_revenue) + ")"],
        ["Greatest Decrease in Revenue: " + str(low_month) + " ($" + str(low_r
evenue) + ")"]
    ])
```

```
Financial Analysis
----------------------------------------------------
Total Months: 86
Total Revenue: $36973911
Average Revenue Change: $5087
Greatest Increase in Revenue: Jul-2014 ($1645140)
Greatest Decrease in Revenue: Jun-2014 ($-1947745)
```