**Student Name: Weight: 20%**

**Student ID:** **Marks:** **/100**

# Assignment: Programming Strategies

## Scenario

Circle Phones is an online retail business specializing in cell phones and tablets. The owner initially hired your company to create an application to calculate Circle Phones’ daily profits (Part 1). When you presented your results, the owner was so impressed with your company’s work that they returned with a request to modify the previous program to calculate the total profit for customized periods of time (Part 2).

## Equipment and Materials

For this assignment, you will need:

* Python IDE

## Instructions

This assignment consists of three sections, all completed outside of class time. See the course schedule and Brightspace for exact dates.

**Individual Submission (20%)**

1. Working individually, review the Scenario and the Profit Calculator Details sections of this document, noting how the program expectations change between Part 1 and Part 2.
2. Review the grading criteria for individual submissions.
3. Draft a flowchart to represent Part 1 of the program.
4. Create the code for a program that meets the requirements outlined for Part 1.
5. Test your code against the expected output provided for Part 1.

**Important:** After successfully completing Part 1, save a copy of your work.

1. Make a copy of your Part 1 flowchart and modify it to represent Part 2.
2. Make a copy of your Part 1 code and modify it to meet the Part 2 requirements.
3. Test your code against the expected output provided for Part 2.
4. Submit the following to Brightspace:

* The final code of the program that you implemented for Part 2 (.py file)
* Your test outputs for Part 2 (.txt file)
* The flowchart for Part 2 showing your programming strategy

**Group Submission (75%)**

1. After you’ve submitted your individual program, join a group, as directed by your instructor.
2. Share your programs and your draft flowcharts with your group and work together to develop a common solution for each of the two parts.
3. Check your Part 1 program against the expected output for Part 1.
4. Check your Part 2 program against the expected output for Part 2.
5. Check both parts against the detailed marking criteria at the end of this document.
6. Submit this final version of the code as a group. Only one copy is required per group, and any of the group members may submit the following to Brightspace:

* A copy of the flowchart of Part 2 (your instructor may indicate a preferred format)
* Part 2 code that you implemented (.py file)
* A copy of the test outputs for Part 2 (.txt file)

**Peer Assessment (5%)**

Each student must also complete a peer assessment of their group members. Your instructor will provide further submission details.

## Circle Phones Profile Calculator Details

### Part 1: Daily Profit Calculator

Circle Phones divides their phones and tablets into five categories, each with different profit margins. The owner has provided the following categories and profit margins for each category.

**Table 1: Profit Margins Based on Product Category**

|  |  |  |
| --- | --- | --- |
| Category | Description | Average Profit Per Unit |
| 1 | Apple iPhone | $120.45 |
| 2 | Android Phone | $99.50 |
| 3 | Apple Tablet | $75.69 |
| 4 | Android Tablet | $65.73 |
| 5 | Windows Tablet | $51.49 |

Create an application that automatically calculates Circle Phones’ total profit for a one-day period. Your application must meet the following criteria:

* Calculates total profit for the day in CDN$.
* Asks the user to enter the product category (1–5) and then the quantity sold in that category.
* Allows the user to stop entering data if there aren’t sales in all five categories by entering zero for the product category.
* Returns an error message when the user enters a value other than 0,1,2,3,4 or 5 for the product category.
* Incorporates the data from the table above into the code.

**Important:** After successfully completing Part 1, save a copy of your flowchart and program.

### Part 1 Test Plan

#### Input values are shown in bold underline.

#### Welcome to Circle Phones’ Profit calculator.

#### Enter product number 1-5, or enter 0 to stop: 5

#### Enter quantity sold: 3

#### Enter product number 1-5, or enter 0 to stop: 1

#### Enter quantity sold: 2

#### Enter product number 1-5, or enter 0 to stop: 0

#### Your total profit for today is: 395.37

### Part 2: Daily, Weekly and Weekend Profit Calculator

In addition to calculating total daily profit, the owner now wants the program to be able to calculate total profit for a weekend, a five-day workweek, or for a whole week.

Modify a **copy** of your Part 1 program so that it meets the following criteria:

* Asks the user to indicate what time period they want to enter sales data for:

**Table 2: Time Period Selection**

|  |  |
| --- | --- |
| **User Entry** | **Time Period** |
| 1 | One day |
| 2 | One week (7 days) |
| 3 | One work week (Monday–Friday) |
| 4 | One weekend (Saturday–Sunday) |

* Asks the user to enter sales data by one of the following four pathways:
  + If the user enters **1**, they are asked to enter sales data following the same criteria outlined in Part 1.
  + If the user enters **2** they are asked to enter sales data for each day of the week. (seven times, using the criteria outlined in Part 1)
  + If the user enters **3** they are asked to enter sales data for each day of the work week (five times, using the criteria outlined in Part 1)
  + If the user enters **4** they are asked to enter sales data for each day of the weekend. (two times, using the criteria outlined in Part 1)
* Calculates the total profit for the indicated period for time. Displayed as “Your total profit for *periodOfTime* is: $9999.00”
* In addition to the calculation, the application returns a customized comment depending on the calculation result.
  + If the total profit is greater than or equal to $10,000, then the program displays the message: “You did well this period! Keep up the great work!”
  + If the total profit is less than $10,000, the program displays the message: “We didn’t reach our goal for this period. More work is needed.”
* The program continues working until the user exits by entering **0**.
* The program can accept the day input value in uppercase or lowercase letters or mix between both
* The program should test if the inputs (that are numbers) are numbers before converting them to integers

### Part 2 Test Plan

#### Input values are shown in bold underline.

Welcome to Circle Phones’ Profit calculator.

You can calculate the profit of the company according to a specific day or by a week or divide the week into weekdays and weekend.

Enter:

1 - For specific Day

2 - For the Week

3 - For Week Business Days

4 - For Weekend days

0 - Exit

**1**

Enter a specific day [Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday]: **Monday**

For Monday

Enter product number 1-5 or 0 to stop: **1**

Enter quantity sold: **37**

Enter product number 1-5 or 0 to stop: **4**

Enter quantity sold: **52**

Enter product number 1-5 or 0 to stop: **0**

Total Profit for the Monday is: $7874.61

We didn’t reach our goal for this period. More work is needed.

You can calculate the profit of the company according to a specific day or by a week or divide the week into weekdays and weekend.

Enter:

1 - For specific Day

2 - For the Week

3 - For Week Business Days

4 - For Weekend days

0 - Exit

**2**

For Monday

Enter product number 1-5 or 0 to stop: **2**

Enter quantity sold: **600**

Enter product number 1-5 or 0 to stop: **0**

For Tuesday

Enter product number 1-5 or 0 to stop: **0**

For Wednesday

Enter product number 1-5 or 0 to stop: **0**

For Thursday

Enter product number 1-5 or 0 to stop: **0**

For Friday

Enter product number 1-5 or 0 to stop: **0**

For Saturday

Enter product number 1-5 or 0 to stop: **0**

For Sunday

Enter product number 1-5 or 0 to stop: **3**

Enter quantity sold: **500**

Enter product number 1-5 or 0 to stop: **0**

Total Profit for the week is: $97545.00

You did well this period! Keep up the great work!

You can calculate the profit of the company according to a specific day or by a week or divide the week into weekdays and weekend.

Enter:

1 - For specific Day

2 - For the Week

3 - For Week Business Days

4 - For Weekend days

0 - Exit

**3**

For Monday

Enter product number 1-5 or 0 to stop: **5**

Enter quantity sold: **900**

Enter product number 1-5 or 0 to stop: **0**

For Tuesday

Enter product number 1-5 or 0 to stop: **0**

For Wednesday

Enter product number 1-5 or 0 to stop: **0**

For Thursday

Enter product number 1-5 or 0 to stop: **0**

For Friday

Enter product number 1-5 or 0 to stop: **0**

Total Profit for the week (business days) is: $46341.00

You did well this period! Keep up the great work!

You can calculate the profit of the company according to a specific day or by a week or divide the week into weekdays and weekend.

Enter:

1 - For specific Day

2 - For the Week

3 - For Week Business Days

4 - For Weekend days

0 - Exit

**4**

For Saturday

Enter product number 1-5 or 0 to stop: **4**

Enter quantity sold: **600**

Enter product number 1-5 or 0 to stop: **0**

For Sunday

Enter product number 1-5 or 0 to stop: **0**

Total Profit for the weekend is: $39438.00

You did well this period! Keep up the great work!

You can calculate the profit of the company according to a specific day or by a week or divide the week into weekdays and weekend.

Enter:

1 - For specific Day

2 - For the Week

3 - For Week Business Days

4 - For Weekend days

0 - Exit

**0**

## Marking Criteria

### Individual Submission

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Needs Improvement (0–49%)** | **Passing (50–100%)** | **Marks** |
| **Individual work** | * Program meets less than half of the requirements required for the group submission * Incorrect file(s) submitted * Flow chart not submitted | * Program works in most scenarios, but could use improvement * Most inputs can be entered as required, and most outputs are generated as required * Reasonable effort has been made to format the output as required * Flow chart submitted | **/20** |
| **Peer assessment** | * Not submitted or incomplete | * Completed for all group members | **/5** |

### Group Submission

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Needs Improvement (0–50%)** | **Good (51–75%)** | **Excellent (76–100%)** | **Marks** |
| **Flow chart** | * Largely incomplete * Poor structure | * Good overall design, but not complete or there are steps missing | * Excellent design which can be followed to write a functional code * No missing steps or branches | **/10** |
| **Working code** | * The project doesn’t run in all scenarios * Input requests work but don’t match the scenario * No conversion of data types * Syntax of if/else statements has mistakes * Output works but doesn’t match the scenario | * The project runs in all scenarios * Input requests work but don’t match the scenario * Some data types are not ideal * Correct use of if/else statements * Output works but doesn’t match the scenario | * The project runs in all scenarios * Input requests match the scenario exactly * Correct data types used * Correct use of if/else statements * Output matches the scenario | **/45** |
| **Style** | * Indentation – not consistent * Readability – poor variable names * Documentation * No comments are included at the top. * No comments indicating major code sections or what they do | * Indentation – some parts are consistent and some are not * Readability – some variable names are not ideal * Documentation * Comments at the top are missing or incomplete. * Comments indicating major code sections and what they do are incomplete | * Indentation – consistent * Readability – good variable names * Documentation * Comments at the top are complete and include name, date, program description including details on inputs, processing and outputs  (4–5 sentences minimum). * Comments indicate major code sections and what they do | **/10** |
| **Testing** | * Sample output doesn’t match the provided test plan * Output is not formatted according to the specification (test plan) | * Parts of the sample output don’t exactly match the provided test plan * Output formatted according to the specification (test plan) | * Sample output exactly matches the provided test plan * Output formatted according to the specification (test plan) | **/10** |
| **Total** | | | | **/100** |