Student Name:	**Weight:**	**15%**
Student ID:	**Marks:**	**/100**

Assignment: Programming Basics

Type: Group Assignment

Modules: 1 and 2 ONLY

- Students should **ONLY USE** programming topics (e.g., variables, arithmetic expressions, input/output statements, and decision-making statements) covered in modules 1 and 2.

- **Submissions using programming concepts that are not covered in modules 1 and 2 will be penalized.**

  - **Penalty with no limit will be applied.**

- **Late submission will not be accepted**

Stock Value Scenario

Princess Peach purchased stock in Mario and Luigi's Software, Inc. Here are the details of her purchase:

- The number of shares purchased was 1500
- Princess Peach paid $15.87 per share
- Toad, the stockbroker, is paid a commission.
  - A flat commission amount of $100.00 is paid if the number of shares purchased is less than 1000.
  - No commission is paid if number of shares purchased is 1000 or more.

A month later, Princess Peach sold the stock. Here are the details of the sale:

- The number of shares sold was 1500
- Princess Peach sold the stock for $16.90 per share
- Toad, the stockbroker, is paid a commission.
  - A flat commission amount of $100.00 is paid if the number of shares sold is less than 1000.
  - A flat commission amount of $50.00 is paid if the number of shares sold is 1000 to 2000.
  - No commission is paid if number of shares sold is more than 2000.

Princess Peach would like a simple program to compute and display the following:

- The amount paid for the stock.
- The amount of commission paid the broker when stock was bought.
- The amount the stock was sold for.
- The amount of commission paid to the broker when the stock was sold.
- The amount of profit/loss made after selling the stock and paying all the commissions. If she lost money in the transaction the amount of profit should be displayed as a negative number.

Equipment and Materials

For this assignment, you will need:

- Python IDE

Instructions

This assignment will need to be completed outside of class time. See the Brightspace for exact due date.

1. Working in your group, review the stock value scenario and program testing section.

2. Draft a flowchart to represent the process/algorithm of calculating a customer's profit.

3. Write a program that meets the requirements described in the above scenario.

4. The program should ask the user to enter the following information:

   - Stock's name
   - Total number of purchased shares and amount paid per share.
   - Total number of sold shares and amount paid per share.

5. The input values should be validated as follows:

   - Total number of purchased/sold shares must be a positive number (i.e., Not zero or negative).
   - Amount paid per a purchased/sold share must be positive amount (i.e., Not zero or negative).
   - Total number of sold shares should not exceed the total number of purchased shares.

6. If an input is invalid, the program should display an appropriate error message and end normally.

7. The program calculates the cost of stock shares' purchase, sales, and profit.

   a. Total purchase amount = number of purchased shares * amount paid per a purchased share.

   b. Total sale amount = number of sold shares * amount paid per a sold share.

   c. Profit = total sale amount - total purchase amount - purchase commission – sale commission

8. The program displays purchase report, selling report, and profit. Check test cases (1-4).

9. Constants must be used for commissions (0, 50, and 100) and threshold values of number of purchased/sold shares (1000, 2000).

10. When your program is complete, use the data listed in each of the following tests below to see if your program works correctly.

Note: Check your program against the marking criteria for the submission.

11. Your program's output should **EXACTLY MATCH** the following tests.

12. Submit the following to Brightspace:

- The code of the program that you implemented (.py file)
- A copy of the output from your test runs (.txt file)
- The flow chart in PDF or PNG format.
- The peer assessment in PDF or DOC format.

Program Testing

Test 1
 	
• Number of purchased shares is 1500 for $15.87 per a share.
 	
• Number of sold shares is 1500 for $16.9 per a share.
	``
	-- 	
	*** Welcome to Stock Value Calculator Program! ***
	-- 	
	Enter stock's name: Mario and Luigi's Software Inc.
	Enter the total number of purchased shares: 1500
	Enter the dollar amount paid per a purchased share: 15.87
	Enter the total number of sold shares: 1500
	Enter the dollar amount paid per a sold share: 16.9
	**
	                  Purchasing Report
	**
	Stock Name: Mario and Luigi's Software Inc.
	Total Purchase Amount: $23805.0
	Purchase Commission: $0
	**
	                   Selling Report
	**
	Total Sold Amount: $25350.0
	Sold Commission: $50
	**
	Congratulation, Total Profit: $1495.0
	**
	``

Test 2
 	
• Number of purchased shares is 500 for $10 per a share.
 	
• Number of sold shares is 500 for $9 per a share.
	``
	-- 	
	*** Welcome to Stock Value Calculator Program! ***
	-- 	
	Enter stock's name: Mario and Luigi's Software Inc.
	Enter the total number of purchased shares: 500
	Enter the dollar amount paid per a purchased share: 10
	Enter the total number of sold shares: 500
	Enter the dollar amount paid per a sold share: 9
	**
	                  Purchasing Report
	**
	Stock Name: Mario and Luigi's Software Inc.
	Total Purchase Amount: $5000.0
	Purchase Commission: $100
	**
	                   Selling Report
	**
	Total Sold Amount: $4500.0
	Sold Commission: $100
	**
	Good Luck Next Time, You Lost: $-700.0
	**
	``

Test 3
 	
• Number of purchased shares is 2000 for $10 per a share.
 	
• Number of sold shares is 2000 for $10 per a share.
	``
	-- 	
	*** Welcome to Stock Value Calculator Program! ***
	-- 	
	Enter stock's name: Mario and Luigi's Software Inc.
	Enter the total number of purchased shares: 2000
	Enter the dollar amount paid per a purchased share: 10
	Enter the total number of sold shares: 2000
	Enter the dollar amount paid per a sold share: 10
	**
	                 Purchasing Report
	**
	Stock Name: Mario and Luigi's Software Inc.
	Total Purchase Amount: $20000.0
	Purchase Commission: $0
	**
	                  Selling Report
	**
	Total Sold Amount: $20000.0
	Sold Commission: $0
	**
	No Profit or Loss, Total Profit: $0.0
	**
	``

Test 4
 	
• Number of purchased shares is 1500 for $10 per a share.
 	
• Number of sold shares is 1000 for $20 per a share.
	``
	-- 	
	*** Welcome to Stock Value Calculator Program! ***
	-- 	
	Enter stock's name: Mario and Luigi's Software Inc.
	Enter the total number of purchased shares: 1500
	Enter the dollar amount paid per a purchased share: 10
	Enter the total number of sold shares: 1000
	Enter the dollar amount paid per a sold share: 20
	**
	                 Purchasing Report
	**
	Stock Name: Mario and Luigi's Software Inc.
	Total Purchase Amount: $15000.0
	Purchase Commission: $0
	**
	                  Selling Report
	**
	Total Sold Amount: $20000.0
	Sold Commission: $50
	**
	Congratulation, Total Profit: $9950.0
	**
	PS C:\Users\hibrahim>
	``

Test 5 • Number of purchased shares <= 0	``` -- *** Welcome to Stock Value Calculator Program! *** -- Enter stock's name: Mario and Luigi's Software Inc. Enter the total number of purchased shares: -1000 Error: Number of purchased shares should be >= 0 PS C:\Users\hibrahim> ``` ``` -- *** Welcome to Stock Value Calculator Program! *** -- Enter stock's name: Mario and Luigi's Software Inc. Enter the total number of purchased shares: 0 Error: Number of purchased shares should be >= 0 PS C:\Users\hibrahim> ```

Test 6 • Amount paid per a purchased share <= 0	``` --- *** Welcome to Stock Value Calculator Program! *** --- Enter stock's name: Mario and Luigi's Software Inc. Enter the total number of purchased shares: 10 Enter the dollar amount paid per a purchased share: -20 Error: the purchase amount should be > 0 PS C:\Users\hibrahim> ``` ``` --- *** Welcome to Stock Value Calculator Program! *** --- Enter stock's name: Mario and Lugis's Software Inc. Enter the total number of purchased shares: 10 Enter the dollar amount paid per a purchased share: 0 Error: the purchase amount should be > 0 PS C:\Users\hibrahim> ```
Test 7 • Number of sold shares <= 0	``` --- *** Welcome to Stock Value Calculator Program! *** --- Enter stock's name: Mario and Luigi's Software Inc. Enter the total number of purchased shares: 10 Enter the dollar amount paid per a purchased share: 10 Enter the total number of sold shares: -20 Error: Number of sold shares should be >= 0 and must be <= number of purchased shares ```
Test 8 • Amount paid per a sold share <= 0	``` --- *** Welcome to Stock Value Calculator Program! *** --- Enter stock's name: Mario and Luigi's Software Inc. Enter the total number of purchased shares: 10 Enter the dollar amount paid per a purchased share: 10 Enter the total number of sold shares: 10 Enter the dollar amount paid per a sold share: -10 The sold amount should be > 0 PS C:\Users\hibrahim> ```
Test 9 • Number of sold shares > number of purchased shares	``` --- *** Welcome to Stock Value Calculator Program! *** --- Enter stock's name: Mario and Luigi's Software Inc. Enter the total number of purchased shares: 20 Enter the dollar amount paid per a purchased share: 10 Enter the total number of sold shares: 30 Error: Number of sold shares should be >= 0 and must be <= number of purchased shares PS C:\Users\hibrahim> ```

Peer assessment

Each member should assign a mark out of 10 to other members.

Please use the following table to complete the peer assessment. Marks/tasks are just samples.

	Member 1 Name	Member 2 Name	Member 3 Name	Completed Tasks
Member 1 Name	N/A	9	10	• Task 1 description • Task 2 description
Member 2 Name	8	N/A	9	• Task 3 description • Task 4 description
Member 3 Name	9	10	N/A	• Task 5 description • Task 6 description
Average	8.5	9.5	9.5	•

Marking Criteria

	Fail (0)	Needs Improvement (50%)	Good (75%)	Excellent (100%)	Marks
Flow chart	• Not Submitted	• Majority of design is incorrect. • Majority of details missing.	• Majority of design is correct. • Majority of details missing.	• Complete design, all flow of control structures present. • Follows rules of one entry and one exit point for each construct. • All calculations worked out precisely. • All variables clearly defined.	/20

Working code	• Doesn't compile, no significant code provided	• The project doesn't run in all scenarios • Input requests work but don't match the scenario • 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 • 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 use of if/else statements • Output matches the scenario	**/45**
Style	• Very poor style, difficult to read	• Minority of code follows recommended style.	• Majority of code follows recommended style.	• 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 •	**/15**

Testing	• No evidence of testing provided.	• Minority of testing expectations met.	• Majority of testing expectations met.	• Sample output exactly matches the provided test plan • Output formatted according to the specification (test plan) Output provided as .txt file	/15
Peer Assessment	• Incomplete or not submitted			• Complete	
				Total	/100