# Workshop - 7

Workshop Value: 10 marks (4.4% of your final grade)

**Learning Outcomes**

Upon successful completion of this workshop, you will have demonstrated the abilities:

- to decipher and identify a problem
- to analyze and decompose a problem
- to identify the required detailed steps to solve a problem
- to communicate the solution to fellow peers and non-technical business persons

**Workshop Grading and Promotion Policy**

Workshops for this course will be assessed using the following criteria:

- Workshops must be completed before the class time to be graded
- You must successfully complete 8 workshops (if more than 8 are completed, the best 8 will be used)
- Each student is expected to be a presenter of the workshop solution at least once by the end of the term
- Workshop solutions and presentations will be evaluated using the published workshop rubrics

## Workshop Overview

The objective of this activity is to emphasize how much easier it is to provide solutions to larger problems by first isolating and focusing on smaller discrete parts of the problem individually and then piece those solutions together at the end to provide an overall solution to the larger problem.

This approach will provide a modular solution where each smaller part works independently from other parts and performs only a very specific task. Each "part" or scenario detailed in the next section guides you on this journey by isolating one specific smaller part of the problem. Incrementally, with each scenario, a new smaller problem will be solved and by the end of 6$^{th}$ scenario, an overall solution will have been developed.

## Workshop Details

A La Carte Entertainment is a place where people can see stage productions (theatrical) or musicals. Each type of production has a different ticket cost and each production can be seen during the day (Matinée) or in the evening. The time of day the production is run influences the ticket cost. In order to gain access to the venue, a cover charge is applied. Discounts are offered based on the number of people in a group. As optional services, A La Carte Entertainment also offers a small-scale snack bar and valet parking. A system is needed to track the costs generated by each patron and provide an overall itemized receipt of costs incurred for their time spent at A La Carte Entertainment.

Use the pricelist described below to extract the possible options for each part of the system.

## A LA CARTE ENTERTAINMENT - PRICELIST

### Musical Feature Ticket Pricing

Matinée (12pm-4pm) -----$88.00 / person
Evening (6pm-9pm) ----- $175.00 / person

### Theatre Feature Ticket Pricing

Matinée (12pm-4pm) ------$78.00 / person
Evening (6pm-9pm) ------ $165.00 / person

### Valet Parking (Tipping Optional)

| | |
|---|---|
| Matinée – Standard | $15.00 |
| Matinée – VIP | $25.00 |
| Evening – Standard | $20.00 |
| Evening – VIP | $30.00 |

### Discounts* *(Applies only to the total ticket cost)*

2 People (Disc) ---------- 5%
3 People (Disc) ---------- 10%
4 People (Disc) ---------- 15%
5+ People (Disc)---------- 20%

### Admission Cover Charge

Per child (<18) ---------- $0.50
Per Adult (18+) ---------- $5.50
Per Senior (65+)---------- $1.25

### Snack Stand

Non-Alcoholic Beverage----------$3.00
Alcoholic Beverage ----------$7.75
Misc. Candy Item ----------$2.50

## Part-1 (Cover Charges)

A) Using what you know about the **cover charges**, define the necessary process (using **pseudo code**) to calculate the cover charges for an individual or group (more than one person).
   - Hint: What inputs do you need? How will the calculated values be stored? How will other processes outside of this specific task access/use this calculated value(s)?

B) Test your logic using the following scenarios (create your own to thoroughly test all possibilities):
   1. Three seniors, one adult, and two children enter the venue paying the necessary cover charges.
   2. One adult enters the venue paying the necessary cover charge.

C) Create the complementary flowchart after you are satisfied with the pseudo code testing.

## Part-2 (Ticket Charges)

A) Using what you know about the **musical/theatre ticket** costs based on **matinee and evening times**, define the necessary process to calculate the ticket costs for an individual or group (more than one person).
   - Hint: What inputs do you need? How will the calculated values be stored? How will other processes outside of this specific task access/use this calculated value(s)?

B) Test your logic using the following scenarios (create your own to thoroughly test all possibilities):
   1. One senior, two adults, and one child go to the A La Carte venue at 8:00 PM to see the musical "Trump Squeaks". Using your flowchart determine how much the ticket charges cost.
   2. One senior, two adults, and one child go to the A La Carte venue at 3:00 PM to see the musical "Doug Ford Barks". Using your flowchart determine how much the ticket charges cost.

3. One senior, two adults, and one child go to the A La Carte venue at 8:00 PM to see the theatre production of "Saw 1 – Where it Began". Using your flowchart determine how much the ticket charges cost.
4. One senior, two adults, and one child go to the A La Carte venue at 2:00 PM to see the theatre production of "Jaws 1 – Swim with Me". Using your flowchart determine how much the ticket charges cost.

C) Create the complementary flowchart after you are satisfied with the pseudo code testing.

## Part-3 (Discounts)

A) Using what you know about the available **discounts**, define the necessary process to calculate the discount (if applicable) for an individual or group (more than one person).
   - Hint: What inputs do you need? How will the calculated values be stored? How will other processes outside of this specific task access/use this calculated value(s)?

B) Test your logic using the following scenarios (create your own to thoroughly test all possibilities):
1. One senior goes to the A La Carte venue at 8:00 PM to see the musical "The Walking Dead". Using your flowchart determine the discount.
2. One senior, and two adults go to the A La Carte venue at 3:00 PM to see the theatre production of "Daenarys Rides Dragons". Using your flowchart determine the discount.
3. Two adults, and five children go to the A La Carte venue at 8:00 PM to see the musical of "APS145 Puts Logic to Music!" Using your flowchart determine the discount.

C) Create the complementary flowchart after you are satisfied with the pseudo code testing.

## Part-4 (Snack Charges)

A) Using what you know about the snack costs, define the necessary process to calculate the costs for snack purchases at the snack stand.
   - Hint: What inputs do you need? How will the calculated values be stored? How will other processes outside of this specific task access/use this calculated value(s)?

B) Test your logic using the following scenarios (create your own to thoroughly test all possibilities):
1. Purchase of no snacks.
2. Purchase of 4 soft-drinks (Coke, Pepsi, Ginger Ale and Fruitopia). Using your flowchart determine the cost.
3. Purchase of 2 soft-drinks, 2 beers, and 2 wines. Using your flowchart determine the cost.
4. Purchase of 1 wine and 4 chocolate bars

C) Create the complementary flowchart after you are satisfied with the pseudo code testing.

## Part-5 (Valet Parking Charges)

A) Using what you know about valet services, define the process for calculating the valet charges.
   - Hint: What inputs do you need? How will the calculated values be stored? How will other processes outside of this specific task access/use this calculated value(s)?

B) Test your logic using the following scenarios (create your own to thoroughly test all possibilities):

1. Standard tier valet service during the matinee timeframe (A: with a $5.00 tip, B: Without a tip).
2. Standard tier valet service during the evening timeframe (A: with a $5.00 tip, B: Without a tip).
3. VIP tier valet service during the matinee timeframe (A: with a $5.00 tip, B: Without a tip).
4. VIP tier valet service during the evening timeframe (A: with a $5.00 tip, B: Without a tip).

C) Create the complementary flowchart after you are satisfied with the pseudo code testing.

## Part-6 (Print Receipt of All Charges)

A) Using what you know about all the possible chargeable services, define the process for displaying the final receipt of costs (taxes are optional if you want to include this).
   - Hint: What inputs do you need? How will the calculated values be stored? How will other processes outside of this specific task access/use this calculated value(s)?
   - Note: This is the final smaller problem. Putting everything together at this point will give you the full solution!

B) Test your logic using the following scenarios (create your own to thoroughly test all possibilities):

| Test | Cover Charges | Ticket Charges | Snack Charges | Valet Charges | Discounts Applied |
|---|---|---|---|---|---|
| 1 | YES/SHOW | YES/SHOW | - | - | - |
| 2 | YES/SHOW | YES/SHOW | YES/SHOW | - | YES/SHOW |
| 3 | YES/SHOW | YES/SHOW | - | YES/SHOW | - |
| 4 | YES/SHOW | YES/SHOW | YES/SHOW | YES/SHOW | YES/SHOW |

C) Create the complementary flowchart after you are satisfied with the pseudo code testing.

## Part-7 (Final Solution Test)

A) Define a process that uses (references) the pre-defined sub-processes from above, to assemble the final solution.
   - **Note**: The pseudo code and flowchart will be simplified as it can refer to sub-processes as a single process (ex: flowchart rectangular symbol) since those sub-processes (tasks) are already independently defined.

B) Use the following test case scenario and apply it against your flowchart process to calculate the total cost:

1. One senior, two adults, and one child go to see the theatre production of “Chewbacca Chew’s the Furniture” at 9:00 PM. They opt for the VIP valet treatment (tipping $7.50) and at intermission, indulge themselves with three wines, four bags of chips, and three Sprite soft drinks. What was the total cost?

2. Two adults go to see the musical of “Yoda Sings” at 2:00 PM. They don’t use the valet, but at intermission, indulge themselves with two wines and two bags of popcorn. What was the total cost?

C) Presenters will prepare a video.

**[Logic 1]** Parts 1 & 2. (Cover charges and ticket charges)

**[Logic 2]** Parts 3 & 4. (Discounts and Snack charges)

**[Logic 3]** Parts 5 & 6. (Parking and receipt)

| Task | Subtask | Member(s) | Marks | Comments |
|---|---|---|---|---|
| Pseudocode | Logic 1 | 1 | 40% | |
| | Logic 2 | 2 | 40% | |
| | Logic 3 | 3 | 40% | |
| | Combined | 1-3 | 60% | |
| FlowChart | Logic 1 | 4 | 40% | |
| | Logic 2 | 5 | 40% | |
| | Logic 3 | 6 | 40% | |
| | Combined | 4-6 | 60% | |
| Video | Presentation | 1 or 4 | 100% | Members rotate weekly |