# Lesson 4

# assignment 4a – Working with a Decision Structure

## Objectives:

* Use an Input, Processing and Output (IPO) chart to create a flowgorithm program meeting customer requirements
* Use a Decision structure to determine which calculation to use
  + Use the AND/OR operator
* Create Procedures/Functions
  + Demonstrates passing and receiving values between procedures

## Lab Task Checklist

* It is expected you have read the required reading in this Lesson before starting the lab.
* Review Course Resources/Rules of Engagement (ROE) and Standards/ROE: Programming/Flowgorithm Programs
* Review Course Resources/Flowgorithm Guidance/Menu Guidance
* Create the Flowgorithm program to meet customer requirements
* Ensure you have test cases reflected in the comments
* File naming Convention: “lastname-asgn4a.fprg”. \*\*where lastname is YOUR lastname and the filename uses only small letters…no capitals.
* Submit all required lab files to BlackBoard

## Instructions:

1. Open Flowgorithm and save the file with the required naming convention.
2. Save with the required naming conventions in the “Lab Task Checklist”
3. Customer Requirements:

The customer needs to determine what the shipping costs will be for a package. The shipping cost is determined by weight. Once the weight is entered the program should display the rate used and the total shipping charges.

| **Weight of Package** | **Rate per Pound** |
| --- | --- |
| 2 lbs or less | 1.00 |
| Over 2 but not more than 6 lbs | 2.25 |
| Over 6 but not more than 10 lbs | 3.50 |
| Over 10 lbs | 4.10 |

* personal message (i.e., not just the **fee**).
* Display a message for end of program and programmer credits
* Display a message with customer information (customer name and account number)

1. Review the example IPO “Additional Lab Materials” below.
2. Open Flowgorithm and save the file with the required naming convention.
3. Enter the required program attributes for your program.
4. Create the algorithm using Flowgorithm to meet the customer requirements.
   1. Declare named constants/variables using correct naming conventions(These are discussed in the ROE).
   2. Make sure you are using the correct datatype
   3. DO NOT use magic numbers.
   4. Test using the IPO test cases and document the test case in your code as comments.
5. Additional Requirements:
   1. Create modules/functions that:
      1. Display a welcoming message and a purpose statement
      2. Processing for shipping costs
      3. Displays an End of job message and your name
6. Variable Declarations/Definition
   1. Declare named constants (rate per pound) within the module that does the processing. Once rate is determined set the rate to that value. Example: rate = RATE1

Make sure your calculation does not use actual rate value numbers (Magic Number) for rate.

1. Add Decision Structures as needed to meet customer requirements.
2. Submit file/s to BlackBoard.

## **Additional Lab Materials:**

### IPO

| **Input** | **Processing** | **Output** |
| --- | --- | --- |
| Package weight  Named Constants (Given) Rates for:   * More than 10 * More than 6 less than 10 * More than 2, less than 6 * Equal or Less than 2 | Get package weight  Assign rates for shipping  Test for rate to be charged   * More than 10 = 4.10   + Set rate to the rate to be charged * More than 6 less than 10 = 3.50   + Set rate to the rate to be charged * More than 2, less than 6 = 2.25   + Set rate to the rate to be charged * Equal or Less than 2 = 1.00   + Set rate to the rate to be charged   Calculate shipping total   * Shipping total = rate \* weight   ***\*\*hint: The order that you test matters.*** | Welcome message  Prompt: weight  Result: Rate charged and total shipping cost  End of Program message |
| **Storage/Memory Location**  The student will need to decide which names to use. Remember to follow the correct naming conventions. | The student will need to decide which names to use. Remember to follow the correct naming conventions |  |
| **Test Data** | T1: W= 2 rate = 1 total = 2  T2: w= 5 rate = 2.25 total = 11.25  T3: W= 6 rate = 2.25 total = 13.50  T4: W= 7 rate = 3.50 total = 24.5  T4: W= 10 rate = 3.50 total = 35.00  T5: W= 12.3 rate = 4.10 total = 49.2 |  |

### Hierarchy Chart