SWE 1301: Introduction to Problem Solving and Software Development

Lecture 10: Nested-If-Then Decision Structure
At: CIT Theatre
1-2pm
By: M .I. Mukhtar

Lecture Outline

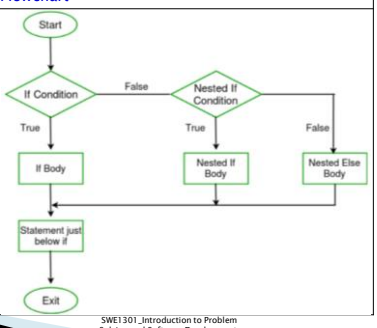
- **Decision Logic Structure**
  - Recap on Nested-IF-Then
  - More Examples on Nested-IF-Then.

Nested If--Else

- **Nesting** allows multiple choices and instructions within **if** and **if...else** statements.
  - in particular they could contain other **if** or **if...else** statements;

Nested If Decision Logic Structure Format

Algorithm	Flowchart

.
 	
5. If (decision) Then
instruction
Else
If (decision) then
instruction
Else
instruction
 	
6. .
.
	

Example 3

- Write the algorithm and draw the flowchart that allow a user to input an examination mark and test it for the award of a grade. The mark is a whole number between 1 and 100. Grades are awarded according to the following criteria:
  - 80–100 Distinction
  - 79–60 Merit
  - 59–40 Pass
  - 0–39 fail

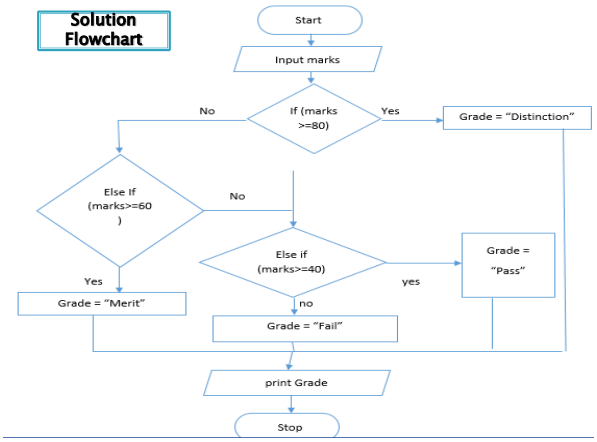
Solution- Algorithm

- Step 1: Input Marks
- Step 2:

```
if(marks>=80) then
  Grade = "Distinction"
else
  if(marks>=60) then
    Grade = "Merit"
  else
    if(marks >=40) then
      Grade = "Pass"
    else
      Grade = "Fail"
```

Step 3: Print Grade
Step 4: End

Solution Flowchart



Example 4

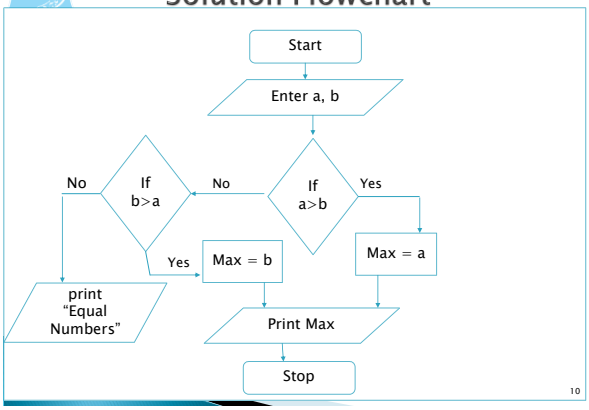
- Write the algorithm and draw the flowchart to check the larger of 2 numbers. The solution should notify the user if the 2 numbers are equal.

Solution Algorithm

Step 1: Enter a, b
Step 2: **if**(a>b) Then
Max = a
print Max
else
if(b>a) Then
Max = b
print Max
else
print "Equal Numbers"

Step 3: End

Solution Flowchart



Brain Teaser

- Provide alternative ways to solve Example 3 and 4

Summary

- The decision logic structure tells the computer that If a condition is true, Then execute a set of instructions, or Else execute another set of instructions.
- **Nesting** allows multiple choices to be executed by the computer

Questions !!!