Problem Solving Test

- Day & Date: Wednesday & 28 Sept. 2011
- Time: 2 – 3 pm
- Venue: BK2

Recap Exercise

- Write a pseudo code and draw a flow chart for a program to calculate an income tax using the following:

```
Tax = 0.25 * (monthly income * 11 – number of
  kids * exemption rate)
```

The exemption rate is based on the following:

Number of kids	Exemption rate
1 – 5	RM450
6 or more	RM500

Selection Structure (*cont..*)
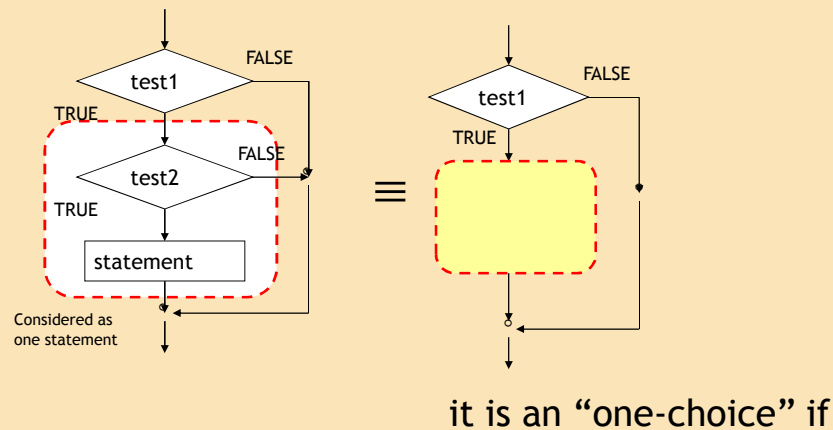
- Pseudo code – nested if.

```
Algorithm: nested if
:
n. if condition
      :
      n.m if condition
            n.m.1 statement
                  :
n+1.  end_if
:
```
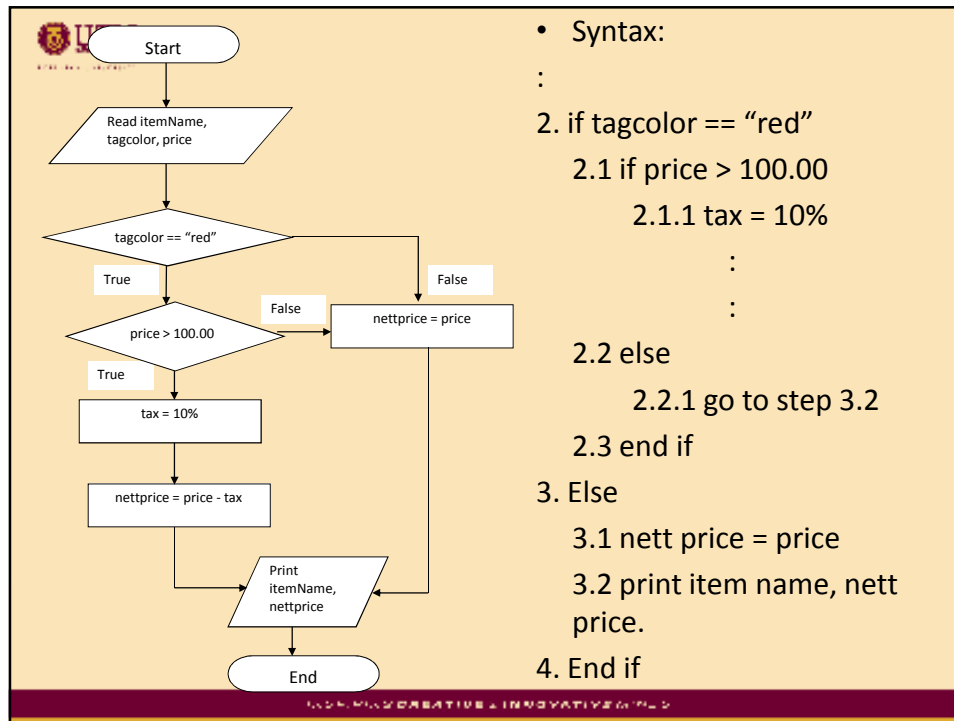
Selection Structure (*cont..*)

Nested if
 (if within if)

it is an "one-choice" if

Slide 1

Flowchart:
- Start
- Read itemName, tagcolor, price
- tagcolor == "red" → True / False
  - True → price > 100.00 → True / False
    - True → tax = 10% → nettprice = price - tax
    - False → nettprice = price
  - False → nettprice = price
- Print itemName, nettprice
- End

- Syntax:
:
2. if tagcolor == "red"
    2.1 if price > 100.00
            2.1.1 tax = 10%
                    :
                    :
    2.2 else
            2.2.1 go to step 3.2
    2.3 end if
3. Else
    3.1 nett price = price
    3.2 print item name, nett price.
4. End if

Slide 2

Selection Structure (*cont..*)

- Pseudo code – nested if using if-else if.
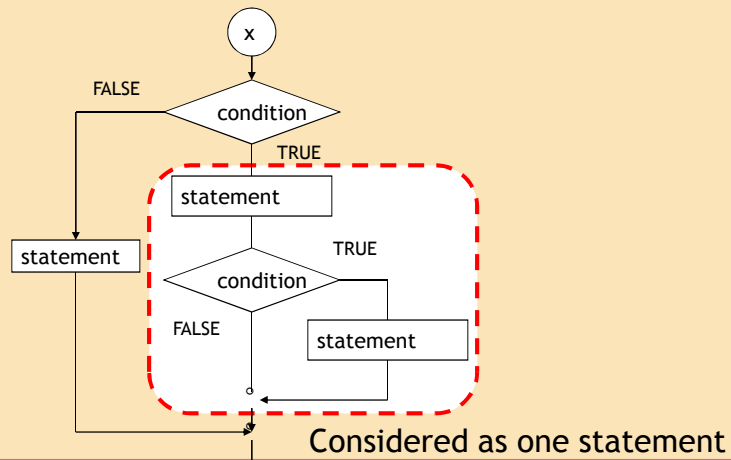
```
Algorithm: if-else if
:
n. if condition
      n.m if condition
            n.m.1 statement
                :
n+1  else
      n+1.m.1 statement
      :
n+2. end_if
:
```

UTM

Selection Structure (*cont*..)

Complex if-else & if Statements

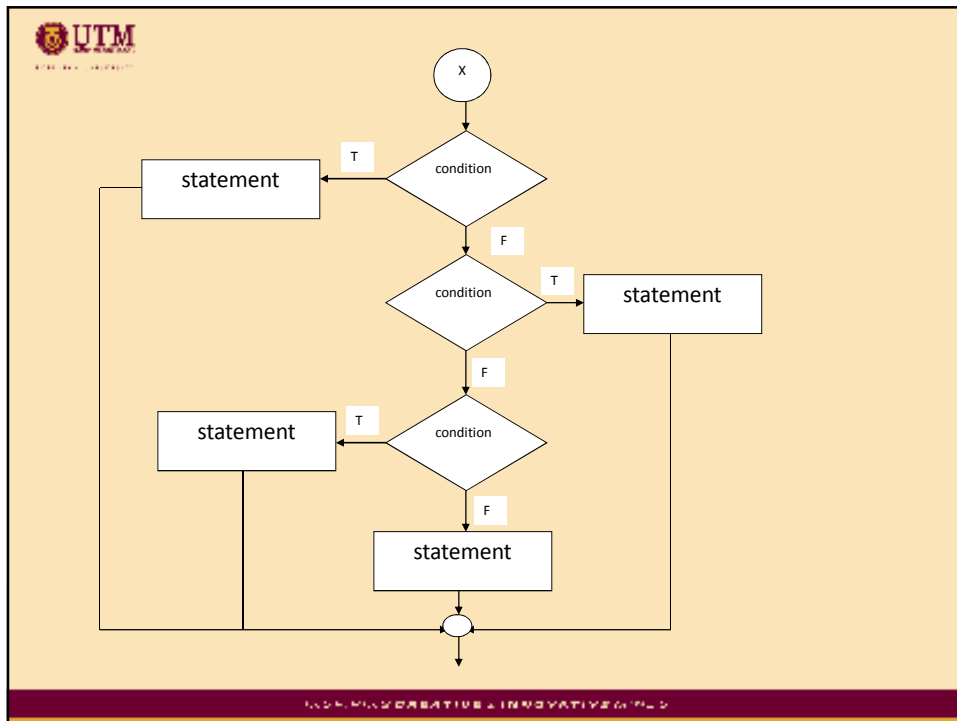Considered as one statement

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UTM

Selection Structure (*cont*..)

- Pseudo code – nested if using if-else if- else if - else.

```
Algorithm: if-else if – else if –
else
:
n. if condition
      n.m statement
n+1  else if condition
      n+1.1 statement
      :
n+2  else if condition
      n+2.1 statement
n+3  else
      n+3.1 statement
n+4 end_if
:
```

Example

- Suppose we want to associate noise loudness measured in decibels with the effect of the noise. The following table shows the relationship between noise levels and human perception of noises.

Loudness in decibels (db)	Perception
50 or lower	Quiet
51-70	Intrusive
71 – 90	Annoying
91- 110	Very annoying
Above 110	uncomfortable

In-Class Exercise

- Write a pseudo code and draw a flow chart for a program that will implement the following decision table. The program will print the transcript message based on the input grade point.

Grade Point Average	Transcript Message
0.0 – 0.99	Failed
1.0 – 1.00	On probation
2.0 – 2.99	Average
3.0 – 3.49	Dean's List
3.5 – 4.00	Highest Honors

In-Class Exercise

- Do Lab 3, Exercise 2, No. 5 (pg. 40)

In-Class Exercise

1. An internet service provider has three different subscription packages for its customers. Write a pseudo code and draw a flowchart for a program to calculate a customer's monthly bill. It should ask which package the customer has purchased and how many hours were used. It should then display the amount due. Be sure the user only select package A, B, or C. Treat any other character as an error. The number of hours used in a month CANNOT exceed 744.

Package	Package Details
A	For RM 9.95 per month 10 hours of access are provided. Additional hours are RM2 per hour.
B	For RM 14.95 per month 20 hours of access are provided. Additional hours are RM1 per hour.
C	For RM 19.95 per month unlimited access is provided.

In-Class Exercise (cont.)

2. Trace the algorithm with the following data:

A	24
B	20
C	745
D	24