week5

October 10, 2018

1 Remember This Exercise

Create a program that perform the following tasks - Calculate the Body Mass Index - $BMI = \frac{kg}{m^2}$, where KG is weight in KG, and m is the length in meters - Based on BMI, tell the user whether he/she is: - Underweight: $BMI < 18.5$ - Healthy: $18.5 \leq BMI \leq 25$ - Overweight: $BMI > 25$

2 Problem

- How can we get the computer to make a decision based on a value?
- From last exercise, the computer should decide based on BMI whether user is underweight, healthy, or overweight
- **Solution:** Conditionals
- Also known as the if statement

3 The If Statement

- A Conditional, meaning, it contains a condition
- Condition is based on BMI
- Executes a code block **only if the condition is true**
- A code block is a section of the program containing statements

4 If Syntax

```
If condition then
    ' expressions here
    ' can be multiple lines
    ' can be anything you learned so far
    ' even another if statement!
End If
```

5 Condition Can Be

- Variables
- Expressions with comparison operators (logical or mathimatical)
- Function that returns a value

6 The Condition is False if

- Expression, variable or Function results in:
- False value
- 0 if Numeric value
- Empty string
  - Then it is considered **False condition**
  - Otherwise it is a True **condition**

7 BMI Solution

```
If lblBMI.text < 18.5 then
    MsgBox("You are underweight!")
End If
```

7.0.1 Can you write the other conditions?

8 Overweight Condition

```
If lblBMI.text > 25 then
    MsgBox("You are overweight!")
End If
```

9 Healthy Condition

- This one is a challenge because it contains 2 condition:
- bmi >= 18.5 and
- bmi <= 25
- Conditions are logical expressions
- We can combine logical expressions using logic operators **And**, **Or**

10 And Logical Operator

- Both terms must be true for the result to be true
- **True And True = True**
- True And False = False
- False And True = False
- False And False = False

11 Or Logical Operator

- If any term is true, then the result is true
- True Or True = True
- True Or False = True
- False Or True = True
- **False And False = False**

12 Healthy Condition Solution

How do we combine the conditions?

```
If lblBMI.text >= 18.5 And lblBMI.text <= 25 Then
    MsgBox("You are healthy!")
End If
```

13 Exercise

- Create a program that calculates zakat for Gold
- The **pure gold (24 karat)** weight must exceed 85g to have zakat
- For gold less than 24 karats, multiply karats by weight then divide by 24 to get the pure gold weight
- Calculate Zakat as 2.5%, otherwise, let the user know there is no zakat.