Universiti Malaysia PAHANG
Engineering • Technology • Creativity

COMPUTER PROGRAMMING

INPUT, OUTPUT AND ASSIGNMENT INSTRUCTION

by
LIM KAR SING

FACULTY OF CIVIL ENGINEERING & EARTH RESOURCES
UNIVERSITI MALAYSIA PAHANG

limks@ump.edu.my

VB 2010 Data Types

1.   **Numeric Data Types**

   – Numeric data types are data that consist of numbers that can be computed mathematically. In Visual Basic 2010, numeric data are divided into 7 types, depending on the range of values they can store.

   – Calculations that only involve round figures can use Integer or Long integer in the computation.

   – Programmes that require high precision calculation need to use Single and Double decision data types, they are also called floating point numbers.

   – For currency calculation , you can use the currency data types.

   – Lastly, if even more precision is requires to perform calculations that involve a many decimal points, we can use the decimal data types.

Numerical Data Type

Type	Storage	Range of Values
Byte	1 byte	0 to 255
Integer	2 bytes	-32,768 to 32,767
Long	4 bytes	-2,147,483,648 to 2,147,483,648
Single	4 bytes	-3.402823E+38 to -1.401298E-45 for negative values 1.401298E-45 to 3.402823E+38 for positive values.
Double	8 bytes	-1.79769313486232e+308 to -4.94065645841247E-324 for negative values 4.94065645841247E-324 to 1.79769313486232e+308 for positive values.
Currency	8 bytes	-922,337,203,685,477.5808 to 922,337,203,685,477.5807
Decimal	12 bytes	+/- 79,228,162,514,264,337,593,543,950,335 if no decimal is use +/- 7.9228162514264337593543950335 (28 decimal places).

VB 2010 Data Types

2. Non-numeric Data Types

- Nonnumeric data types are data that cannot be manipulated mathematically using standard arithmetic operators.

- The non-numeric data **comprises text or string data types, the Date data types, the Boolean data types that store only two values (true or false), Object data type and Variant data type**

Non-numeric Data Types

Data Type	Storage	Range
String(fixed length)	Length of string	1 to 65,400 characters
String(variable length)	Length + 10 bytes	0 to 2 billion characters
Date	8 bytes	January 1, 100 to December 31, 9999
Boolean	2 bytes	True or False
Object	4 bytes	Any embedded object
Variant(numeric)	16 bytes	Any value as large as Double
Variant(text)	Length+22 bytes	Same as variable-length string

Managing Variables

- Variables are areas allocated by the computer memory to hold data

- Each variable must be given a name.

- To name a variable in Visual Basic 2010, you have to follow a set of rules.

Valid Name	Invalid Name	
My_Car	My.Car	
ThisYear	1NewBoy	
Long_Name_Can_beUSE	He&HisFather	*& is not acceptable

- **Variable Names:**
  1. It must be less than 255 characters
  2. No spacing is allowed
  3. It must not begin with a number

Managing Variables

- **Declaring Variables:** In Visual Basic 2010, one needs to declare the variables before using them by assigning names and data types. If you fail to do so, the program will show an error. They are normally declared in the general section of the codes' windows using the **Dim** statement. The format is as follows:

Dim Variable Name As Data Type

Examples:

Dim Total As Integer
Dim Name As String
Dim password As String

Dim startDate As Date
Dim thirdnum As Integer

You may also combine them in one line , separating each variable with a comma, as follows:

Dim password As String, Name As String, thirdnum As Integer

Managing Variables

- **Assigning Values to Variables:** After declaring various variables using the Dim statements, we can assign values to those variables. The general format of an assignment is:

  Variable=Expression

- The variable can be a declared variable or a control property value. The expression could be a mathematical expression, a number, a string, a Boolean value (true or false) and etc. The following are some examples:

  firstNum=250
  User="UMP"
  Label1.Visible = True
  password.Text = UMPians
  Label4.Caption = txtCap.Text
  SecondNumber = Val(usernum1.Text)
  total = firstNumber + secondNumber+ThirdNumber

Mathematical Operations

- In Visual Basic 2010, we can write code to instruct the computer to perform mathematical operations such as addition, subtraction, multiplication, division and more.

- To write code for mathematical operations, we use various arithmetic operators.

- The Visual Basic 2010 arithmetic operators are very similar to the normal arithmetic operators. The plus and minus operators are the same while the multiplication operator use the * symbol and the division operator use the / symbol

Mathematical Operations

Operator	Mathematical function	Example
+	Addition	1+2=3
--	Subtraction	4-1=3
^	Exponential	2^4=16
*	Multiplication	4*3=12, (5*6))2=60
/	Division	12/4=3
Mod	Modulus (return the remainder from an integer division)	15 Mod 4=3 255 mod 10=5
\	Integer Division (discards the decimal places)	19\4=4