

Errata for Visual Basic and Algorithmic Thinking for the Complete Beginner

1.2 What is Hardware?

➤ **The Central Processing Unit (CPU)**

This is the part of a computer that actually performs all the tasks defined in a program (**basic arithmetic, logical, and input/output operations.**)

5.11 Review Exercises

2. Match each element from the first column with one element from the second column.

Value	Data Type
1. The name of a person	a. Boolean
2. The age of a person	b. Real
3. The result of the division 5/2	c. Integer
4. Is it black or is it white?	d. String

13.1 Introduction

Exercise 13.1-2 Finding the Sum of Digits

First Approach

Step	Statement	Notes	number	digit1	digit2	digit3	digit4	r	sum
...
8	sum = digit1+digit2+digit3+digit4		6753	6	7	5	3	53	21
9	Console.WriteLine(sum)	Value 21 is displayed							

Second Approach

Once more, let's try to understand the second approach using an arithmetic example. Take the same number, 6753, for example.

Fourth digit = 3	The fourth digit can be isolated if you divide the given number by 10 to get the integer remainder digit4 = 6753 Mod 10
Remaining digits = 675	The remaining digits can be isolated if you divide the given number by 10 to get the integer quotient r = 6753 \ 10
Third digit = 5	The third digit can be isolated if you divide the remaining digits by 10 to get the integer remainder digit3 = 675 Mod 10

Remaining digits = 67	The remaining digits are now $r = 675 \setminus 10$
Second digit = 7	The second digit can be isolated if you divide the remaining digits by 10 to get the integer remainder $\text{digit2} = 67 \text{ Mod } 10$
First digit = 6	The last remaining digit, which happens to be the first digit, is $\text{digit1} = 67 \setminus 10$

13.2 Review Exercises

- Write a Visual Basic program that prompts the user to enter an integer representing an elapsed time in seconds and then displays it in the format "WW weeks DD days HH hours MM minutes and SS seconds." For example, if the user enters the number 2000000, the message "3 weeks 2 days 3 hours 33 minutes and 20 seconds" should be displayed.

25.1 The Pre-Test Loop Structure

Exercise 25.1.3 Designing the Flowchart and Counting the Total Number of Iterations

Now, let's create a trace table to observe the flow of execution.

Step	Statement	Notes	i	
1	i = 1		1	
2	Do While i <> 6	This evaluates to True		1 st Iteration
3	i += 2		3	
4	Do While i <> 6	This evaluates to True		2 nd Iteration
5	i += 2		5	
6	Do While i <> 6	This evaluates to True		3 rd Iteration
7	i += 2		7	
8	Do While i <> 6	This evaluates to True		.
9
10		

29.8 Converting from a While-Loop to a For-loop

Exercise 29.8-3 Converting the Visual Basic Program

```

project_29_8_3b

Sub Main()
    Dim i As Integer
    Dim s As Double

    s = 0
    i = 1
    For i = 1 To 5
        s = s + (i + 1) ^ 2
    Next

    Console.Write(s)

```

```
Console.ReadKey()  
End Sub
```

31.8 Review Exercises

7. Write a Visual Basic program that displays all four-digit integers that satisfy all of the following conditions:
- the number's first digit is greater than its second digit
 - the number's second digit is equal to its third digit
 - the number's third digit is smaller than its fourth digit
- For example, the values 7559, **3112**, and 9889 are such numbers.

37.4 Sorting Lists

Exercise 37.4-1 The Bubble Sort Algorithm – Sorting One-Dimensional Lists with Numeric Values

Fifth pass

1st Compare

Elements at index positions 4 and 5 are compared. Since the value 49 is **not** less than the value **25**, **no** swapping is done.

40.3 Formal and Actual Arguments

Remember! There is a one-to-one match between the formal and the actual arguments. The value of argument *a* is passed to argument **n1**, the value of argument *b* is passed to argument **n2**, and so on. Moreover, the data type of the formal and the data type of the corresponding actual argument must match. You cannot, for example, pass a string to an argument of type integer!

43.1 Simple Exercises with Subprograms

Exercise 43.1-5 How Many Times Does Each Number of the Dice Appear?

```
'Variable n1 is assigned the number of times that value 1 exists in array a  
n1 = search_and_count(1, a)  
  
'Variable n2 is assigned the number of times that value 2 exists in array a  
n2 = search_and_count(2, a)  
.  
.  
.  
'Variable n6 is assigned the number of times that value 6 exists in array a  
n6 = search_and_count(6, a)  
  
'Display how many times each of the six numbers appears in array a  
Console.WriteLine(n1 & " " & n2 & " " & n3)  
Console.WriteLine(n4 & " " & n5 & " " & n6)  
  
'Find maximum of n1, n2,... n6  
max = n1  
max_i = 1  
  
If n2 > max Then  
    max = n2  
    max_i = 2
```

```
End If

If n3 > max Then
    max = n3
    max_i = 3
End If

.
.
.
```

43.2 Exercises of a General Nature with Subprograms

Exercise 43.2-3 Progressive Rates and Electricity Consumption

project_43_2_3

```
...

Function find_amount(kwh As Integer) As Double
    Dim amount As Double

    If kwh <= 400 Then
        amount = kwh * 0.08
    ElseIf kwh <= 1500 Then
        amount = 400 * 0.08 + (kwh - 400) * 0.22
    ElseIf kwh <= 3000 Then
        amount = 400 * 0.08 + 1100 * 0.22 + (kwh - 1500) * 0.35
    Else
        amount = 400 * 0.08 + 1100 * 0.22 + 1500 * 0.35 + (kwh - 3000) * 0.5
    End If

    amount += 0.26 * amount
    Return amount
End Function

...
```