

## Problem Base Learning 1

### Instructions :

- Write programs for the following questions in VB.NET.
- Copy and paste your program coding and screenshot the output onto a Microsoft Word document.
- Save the Microsoft Word document, name the document with your name and PBL1, e.g RasyidahPBL1
- Upload the Microsoft Word document onto the class Ms.Teams.

### Questions

1. What is the difference between **Console.WriteLine** and **Console.Write**?

= Console.WriteLine starts a new line each time it is run, where as console.write uses the same line as the previous command that was run.

2. What is the difference between **Console.ReadLine** and **Console.ReadKey**?

= Console.ReadKey only reads input of only 1 character however .ReadLine takes in a whole sentence as an input.

3. What does the word **Dim** stands for and what is it used for when writing a VB program?

= Dimension, used for defining a variable before running the program

4. What is meant by a **Constant** and a **Variable** in a program?

= A constant is a variable value that cannot be changed, where as a variable is a value that can be changed through the program.

5. Write a program that will ask the user to enter their name and country of origin and display the information.

The screenshot shows a Visual Studio IDE with a VB.NET project named 'Assignment'. The code in 'Program.vb' is as follows:

```
1 Imports System
2
3 Module Program
4     Sub Main(args As String())
5         Console.WriteLine("Please enter your name: ")
6         Dim name As String = Console.ReadLine()
7         Console.WriteLine("Please enter your country of origin: ")
8         Dim country As String = Console.ReadLine()
9         Console.WriteLine("Your name is " & name & " and your country of origin is " & country)
10        Console.ReadKey()
11    End Sub
12 End Module
13
```

The 'Microsoft Visual Studio Debug Console' at the bottom shows the following output:

```
Please enter your name:
Abbas
Please enter your country of origin:
Pakistan
Your name is Abbas and your country of origin is Pakistan

C:\Users\User\Desktop\Programming\Visual Studio 2022\Assignment\bin\Debug\net6.0\Assignment.exe (process 18104) e
ith code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close th
le when debugging stops.
Press any key to close this window . . .
```

6. Write a program to allow the user to input two integer values and then the program print the results of adding, subtracting, multiplying, and dividing among the two values.

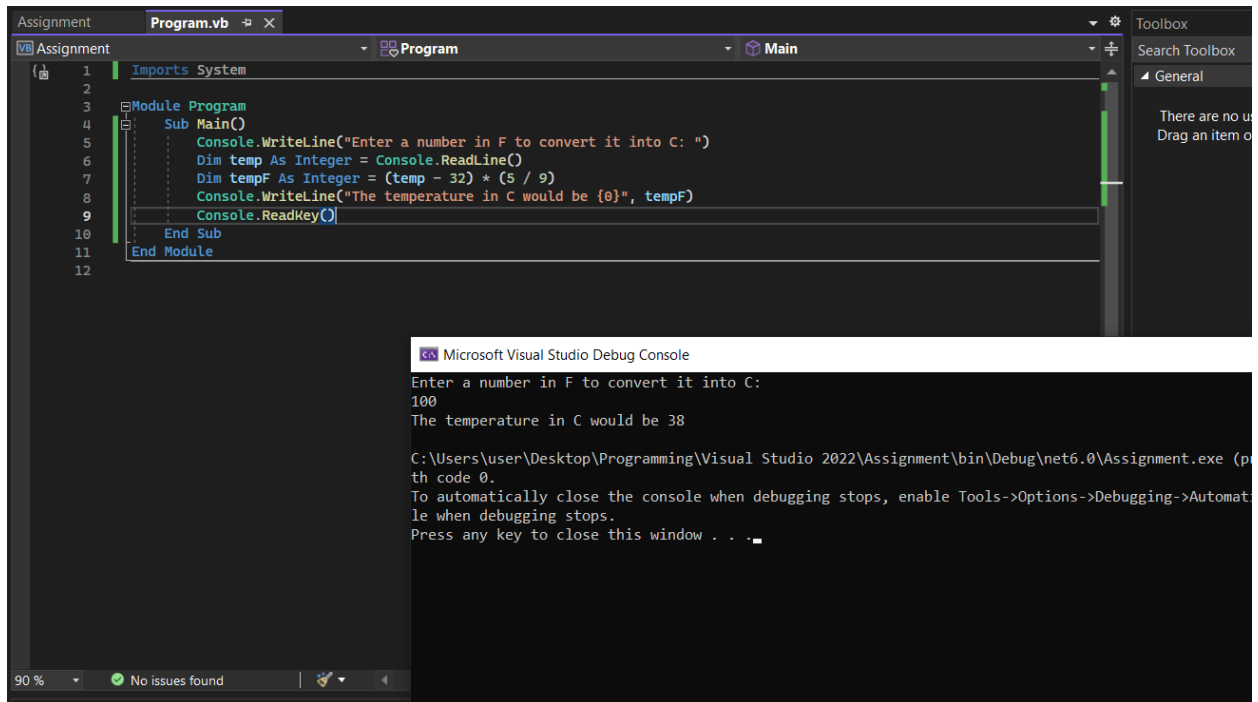
The screenshot shows a Visual Studio IDE with a VB.NET project named 'Assignment'. The code in 'Program.vb' is as follows:

```
1 Imports System
2
3 Module Program
4     Sub Main()
5         Console.WriteLine("Input a number: ")
6         Dim num1 As Integer = Console.ReadLine()
7         Console.WriteLine("Input another number: ")
8         Dim num2 As Integer = Console.ReadLine()
9         Console.WriteLine("Choose your method: 1 - Add | 2 - Subtract | 3 - Multiply | 4 - Divide")
10        Dim choice As Integer = Console.ReadLine()
11
12        If choice = 1 Then
13            Console.WriteLine(num1 + num2)
14        ElseIf choice = 2 Then
15            Console.WriteLine(num1 - num2)
16        ElseIf choice = 3 Then
17            Console.WriteLine(num1 * num2)
18        ElseIf choice = 4 Then
19            Console.WriteLine(num1 / num2)
20        Else
21            Console.WriteLine("Invalid number")
22        End If
23        Console.ReadLine()
24    End Sub
25 End Module
26
```

The 'Microsoft Visual Studio Debug Console' at the bottom shows the following output:

```
C:\Users\User\Desktop\Programming\Visual Studio 2022\Assignment\bin\Debug\net6.0\Assignment.exe
Input a number:
100
Input another number:
100
Choose your method: 1 - Add | 2 - Subtract | 3 - Multiply | 4 - Divide
1
200
```

7. Write a program to convert a temperature in degrees Fahrenheit to degrees Celsius.  
( Note : Celsius = ( 5 / 9 ) \* ( Fahrenheit - 32 ) )



The screenshot displays the Visual Studio IDE with a VB.NET program open in the 'Program.vb' file. The code is as follows:

```
1 Imports System
2
3 Module Program
4     Sub Main()
5         Console.WriteLine("Enter a number in F to convert it into C: ")
6         Dim temp As Integer = Console.ReadLine()
7         Dim tempF As Integer = (temp - 32) * (5 / 9)
8         Console.WriteLine("The temperature in C would be {0}", tempF)
9         Console.ReadKey()
10    End Sub
11 End Module
12
```

The 'Microsoft Visual Studio Debug Console' window shows the program's execution:

```
Enter a number in F to convert it into C:
100
The temperature in C would be 38

C:\Users\user\Desktop\Programming\Visual Studio 2022\Assignment\bin\Debug\net6.0\Assignment.exe (p
th code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automat
le when debugging stops.
Press any key to close this window . . .
```

8. A farmer packs eggs into trays of 30 eggs in one tray. Calculate the number trays of eggs for a given input of eggs.

Example if the farmer collects 100 eggs then there will be 3 trays of eggs.

Ask the user to input the number of eggs and the program will output the number of trays of eggs.

The screenshot displays the Visual Studio IDE with a VB.NET program named 'Program.vb' open. The code defines a 'Main' subroutine that prompts the user for the number of eggs, reads the input, and calculates the number of trays needed using  $\text{Math.Floor}(\text{eggs} / 30)$ . The program is executed, and the output is shown in the 'Microsoft Visual Studio Debug Console' window. The console shows the user input '100' and the program output 'You will need 3 trays to store those eggs'. The status bar at the bottom indicates '90 %' and 'No issues found'.

```
1 Imports System
2
3 Module Program
4     Sub Main()
5         Console.WriteLine("Enter the number of eggs: ")
6         Dim eggs As Integer = Console.ReadLine()
7         Console.WriteLine("You will need " & Math.Floor((eggs / 30)) & " trays to store those eggs")
8
9         Console.ReadKey()
10    End Sub
11 End Module
12
```

Microsoft Visual Studio Debug Console

Enter the number of eggs:  
100  
You will need 3 trays to store those eggs

C:\Users\user\Desktop\Programming\Visual Studio 2022\Assignment\bin\Debug\net6.0\Assignment.exe (process  
ith code 0.  
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically  
le when debugging stops.  
Press any key to close this window . . .

9. Write a program to calculate the salary for a worker. The salary is calculated based on the hours worked and the pay rate per hour.

Example, if the worker worked 40 hours and the rate per hour is RM10, then the salary is RM400 ( 40 hours X RM10 ).

Write a program that will ask the user to input the number of hours worked and the rate per hour. The program will then calculate and output the salary for the worker

The screenshot shows a Visual Studio window with a VB.NET program named 'Program.vb'. The code is as follows:

```

1 Imports System
2
3 Module Program
4     Sub Main()
5         Dim rate As Integer
6         Dim hours As Integer
7         Console.WriteLine("Enter the number of hours you work (per week): ")
8         hours = Console.ReadLine()
9         Console.WriteLine("Enter the rate of payment per hour: ")
10        rate = Console.ReadLine()
11        Console.WriteLine("You will earn a salary of " & (rate * hours) & "$ weekly")
12        Console.ReadKey()
13    End Sub
14 End Module

```

The Microsoft Visual Studio Debug Console shows the following output:

```

Enter the number of hours you work (per week):
50
Enter the rate of payment per hour:
100
You will earn a salary of 5000$ weekly

C:\Users\user\Desktop\Programming\Visual Studio 2022\Assignment\bin\Debug\net6.0
ith code 0.
To automatically close the console when debugging stops, enable Tools->Options->
le when debugging stops.
Press any key to close this window . . .

```

10. A marathon runner records their time for a race in hours, minutes and seconds. An algorithm is shown below in structured English.

Write a program for the following algorithm.

INPUT race time as hours, minutes and seconds

CALCULATE race time in seconds

STORE race time in seconds

OUTPUT race  
time in seconds

The screenshot shows a Visual Studio window with a C# program named 'ConsoleApp1'. The code is as follows:

```

1 #include Modules
2
3 Sub Main()
4     Console.WriteLine("Hours the race lasted for: ")
5     Dim hours As Integer = Console.ReadLine()
6     Console.WriteLine("Minutes the race lasted for: ")
7     Dim minutes As Integer = Console.ReadLine()
8     Console.WriteLine("Seconds the race lasted for: ")
9     Dim seconds As Integer = Console.ReadLine()
10
11     Dim index = (hours * 60 * 60) + (minutes * 60) + seconds
12     Console.WriteLine("The race lasted for " & index & " seconds.")
13     Console.ReadKey()
14 End Sub

```

The debug console shows the following output:

```

Hours the race lasted for:
2
Minutes the race lasted for:
32
Seconds the race lasted for:
56
The race lasted for 9176 seconds.

```