





## Syllabus Content:

### 2.3.5 Built-in functions

Use a subset of the built-in functions and library routines supported by the chosen programming language. This should include those used for:

-  string/character manipulation
-  formatting of numbers
-  random number generator
-  use the information provided in technical documentation describing functions/procedures

Programming environments provide many built-in functions. Some of them are always available to use; some need to be imported from specialist module libraries.

## Built-in functions in Visual Basics

**Built-in functions** - *Arithmetic functions: round, truncation.*

**Example Program - Built-in functions** - *Arithmetic functions: round, truncation.*

```

Module module1
  Sub main()

      Dim num As Double
      Dim rounded As Integer
      Dim squareert As Double
      Dim trunc As Integer

      Console.Write("Enter a real number")

      num = Console.ReadLine()
      rounded = Math.Round(num)
      squareert = Math.Sqrt(num)

      Console.WriteLine("round: " & rounded & vbNewLine & "Square Root: " & squareert)

      trunc = Math.Truncate(num)

      Console.WriteLine("The number truncated is " & trunc)
      Console.WriteLine("This is not always the same as rounded")
      Console.ReadKey()

  End Sub
End Module

```

**Example Program - String handling functions** *length, position, substring, concatenation.*

```

Module module1
  Sub main()
    Dim theString As String
    theString = "Hello Dave, you're my wife now!"
    Console.WriteLine(theString)
    Console.WriteLine(theString.Length) 'display the string's length
    Console.WriteLine(theString.ToUpper) 'display the string in upper case
    Console.WriteLine(theString.ToLower) 'display the string in lower case
    Console.WriteLine(theString.Contains("Dave")) 'is Dave there?
    Console.WriteLine(theString.IndexOf("D")) 'position of D
    Console.WriteLine(theString.Substring(12)) 'displays the substring starting at
position 12
    Dim newString As String
    newString = "Speak to Dave! " & theString 'string concatenation
    Console.WriteLine(newString)
    Console.ReadKey() 'pause and wait so user can read output.
  End Sub
End Module

```

**Example Program - String conversion functions** *to/from integer, real, date/time.*

```

Module module1
  Sub main()
    Dim theInt, theReal, theDate As String
    theInt = "23021980"
    theReal = "230.21980"
    theDate = "23-02-1980"
    'whole numbers
    Console.WriteLine(theInt)
    Console.WriteLine(theInt + "1")
    Console.WriteLine(Convert.ToInt32(theInt))
    Console.WriteLine((Convert.ToInt32(theInt) + 1))
    Console.WriteLine()
    'real numbers
    Console.WriteLine(theReal)
    Console.WriteLine(theReal + "1")
    Console.WriteLine(Convert.ToDouble(theReal))
    Console.WriteLine(Convert.ToDouble(theReal) + 1)
    Console.WriteLine()
    'dates
    Console.WriteLine(theDate)
    Console.WriteLine(theDate + "1")
    Console.WriteLine(DateTime.Parse(theDate))
    Console.WriteLine(DateTime.Parse(theDate).AddDays(1))
    Console.ReadKey() 'pause and wait so user can read output.
  End Sub
End Module

```

# Summary of VB Functions

## Date/Time Functions

Function	Description
CDate	Converts a valid date and time expression to the variant of subtype Date
Date	Returns the current system date
DateAdd	Returns a date to which a specified time interval has been added
DateDiff	Returns the number of intervals between two dates
DatePart	Returns the specified part of a given date
DateSerial	Returns the date for a specified year, month, and day
DateValue	Returns a date
Day	Returns a number that represents the day of the month (between 1 and 31, inclusive)
FormatDateTime	Returns an expression formatted as a date or time
Hour	Returns a number that represents the hour of the day (between 0 and 23, inclusive)
IsDate	Returns a Boolean value that indicates if the evaluated expression can be converted to a date
Minute	Returns a number that represents the minute of the hour (between 0 and 59, inclusive)
Month	Returns a number that represents the month of the year (between 1 and 12, inclusive)
MonthName	Returns the name of a specified month
Now	Returns the current system date and time
Second	Returns a number that represents the second of the minute (between 0 and 59, inclusive)
Time	Returns the current system time
Timer	Returns the number of seconds since 12:00 AM
TimeSerial	Returns the time for a specific hour, minute, and second
TimeValue	Returns a time
Weekday	Returns a number that represents the day of the week (between 1 and 7, inclusive)
WeekdayName	Returns the weekday name of a specified day of the week
Year	Returns a number that represents the year

## Conversion Functions

Function	Description
Asc	Converts the first letter in a string to ANSI code
CBool	Converts an expression to a variant of subtype Boolean
CByte	Converts an expression to a variant of subtype Byte
CCur	Converts an expression to a variant of subtype Currency
CDate	Converts a valid date and time expression to the variant of subtype Date
Cdbl	Converts an expression to a variant of subtype Double
Chr	Converts the specified ANSI code to a character
CInt	Converts an expression to a variant of subtype Integer
CLng	Converts an expression to a variant of subtype Long
CSng	Converts an expression to a variant of subtype Single
CStr	Converts an expression to a variant of subtype String
Hex	Returns the hexadecimal value of a specified number
Oct	Returns the octal value of a specified number




## Format Functions

Function	Description
FormatCurrency	Returns an expression formatted as a currency value
FormatDateTime	Returns an expression formatted as a date or time
FormatNumber	Returns an expression formatted as a number
FormatPercent	Returns an expression formatted as a percentage

## Math Functions

Function	Description
Abs	Returns the absolute value of a specified number
Atn	Returns the arctangent of a specified number
Cos	Returns the cosine of a specified number (angle)
Exp	Returns $e$ raised to a power
Hex	Returns the hexadecimal value of a specified number
Int	Returns the integer part of a specified number
Fix	Returns the integer part of a specified number
Log	Returns the natural logarithm of a specified number
Oct	Returns the octal value of a specified number
Rnd	Returns a random number less than 1 but greater or equal to 0
Sgn	Returns an integer that indicates the sign of a specified number
Sin	Returns the sine of a specified number (angle)
Sqr	Returns the square root of a specified number
Tan	Returns the tangent of a specified number (angle)

**References:**

-  Cambridge International AS & A level Computer Science Course book by Sylvia Langfield and Dave Duddell
-  Visual Basics Console Cook Book
-  VB.NET **AQA** Console Book by **Dough Semple**

Computers(9608) with Majid Tahir

