**Assessment Task #2 – Portfolio Questions**

**Project One**

***Pre-test Loop with Sentinel***

1. Explain the purpose of the following functions:

* Val() Stops reading the string when it receives a number it doesn’t recognise
* Str() Takes stored value and converts it to String
* InputBox() A box that allows for user input

2. List the arguments of the *inputbox* function

“Enter a Number (999 to quit)”

InputLoop

3. Write the first and last line of the loop and explain why it is pre-test

Do While Dblnumber <> 999

Loop

It is pre-test because the succession conditions are at the beginning

4. Why is an “&” used on the last line

The label displays the total after the loop to concatenate space between the total input and the string(dbltotal)

***Post-test Loop***

5. Explain the purpose of the following lines of code:

* intNumTries = 0

How many tries the user has, the count advancing forward once each time the user inputs the incorrect password

* StrPassword = "Beavis"

The string above is the password required for the succession criteria to be met and the user allowed to progress in the form

6. Write the first and last line of the loop and explain why it is post test

Do

Loop Until Strusertry= Strpassword or Intnumtries= 3

This is post test because the loop succession criteria is looped until the succession criteria is met. The condition is placed at the end of the loop.

7. What is the condition that the loop repeats?

The loop repeats until the user inputs the correct password or the total number of incorrect tries is equivalent to 3

8. The loop is nested inside another control structure – what is it?

If Else

***Counted Loop***

9. Explain the difference between integer datatype and long integer data type

Integer Data type= 4-byte/ 32-bit integer

Long data type= 8-byte/64-bit integer

10. Write the first and last line of the loop and explain why it is a counted loop

First- For intloopctr= 1 to intinputnbr

Last-Next

The first line states that the first integer is 1. The uptime is forced until the number that is input meets the arithmetic algorithm’s total. The Next indicates that the next line beyond will be begun once the loop has met it’s total Succession criteria

11. Why is the comment useful in this code

Shows the max input for a long integer

12. Try entering a number like 25 and describe what happens

Arithmetic overflow due to the integer datatype not supporting that large of a number

***Multiway Selection***

13. Why is the textbox value put into a variable

The textbox value is a variable so that the computer can read it and grab a value from the given selections, producing an output value.

14. Write the first and last line of the multiway and explain why it is multiway

Select Case Grade

End Select

For the system to be multiway it must contain more than, or equivalent to, 3 options.

15. How many ways is multiway in this case?

5 possible ways (A,B,C,D,E,F)

16. Why is the difference between single and double data type

Single holds IEEE 32-bit 4 byte

Double holds 64-bit 8 byte

17. What is the purpose of *Case Else* statement

If there is a value inputted that does not meet requirements, it gives an output that states that.

***Two-Dimensional Arrays***

18. Describe what data the first dimension of the CD collection array is storing

The first dimension stores the band, dimension 0 being the first band, band 1 being the rolling stones, etc.

19. Describe what the second dimension of the CD collection array is storing

The second dimension stores the tracks.

20. Identify the lower and upper bound of the first dimension of the array

The lower bound is 0 and the upper bound is 1

21. Identify the lower and upper bound of the second dimension of the array

The Lower bound is the numerical value for the bands at the lowest point (0), and the highest point is the highest numerical value (5)

22. Why are two loops needed to print the array contents

The outer loop sorts through the first dimension of bands, and the inner loop sorts the racks separately for each band.

23. Identify the purpose of *& vbNewLine*

This command is used so when a value is put out the algorithm will start a new line for the next value until all are printed.

**Project Two**

***Reading and Writing Files***

24. Read page 10 (Portfolio – streaming lines of text) and describe the purpose of the System.IO class

The purpose of System.IO is to hand the system an unchanged method for creating, deleting, moving, copying, and opening of a file.

25. Define a streamreader and why it is used in VB programming

Streamreader implements a rext reader that reads characters from a stream of bytes. It is used so that Visual Basic can read text files and understand information that is not hard coded into the system.

26. Describe the purpose of each variable

MyObjectRead- Holds the Streamreader

Mytext- Contains the characters from ‘Textbox1’ so it can be written on the file

MyFileName- The name of the File

MyFilePath- The path the system takes to reach the desired file

27. Identify a Boolean function and describe its purpose and its argument

If File.Exists(myFileNameAndPath) = True Then

myObjectRead = File.OpenText(myFileNameAndPath)

fileContents = myObjectRead.ReadToEnd

myObjectRead.Close()

Textbox1.text = fileContents

Else

MsgBox(“Sorry, this file does not exist: “ & vbCrLf & myFileNameAndPath)

This Booleaan function’s purpose is to understand whether or not the file exists. If it does, the reader will transfer the data into a textbox, but if it does not, a message box will appear saying it does not exist.

28. Identify a METHOD of a streamreader

The streamreader uses the method ReadToEnd() which will read files from start to finish. In terms of this project, it is used as: filecontents= myobjectread.readtoend()

29. Describe the purpose of each variable

MyObjectRead- Holds the Streamreader

Mytext- Contains the characters from ‘Textbox1’ so it can be written on the file

MyFileName- The name of the File

MyFilePath- The path the system takes to reach the desired file

30. Identify two Boolean functions and describe their purpose and argument

If-Then-Else. If the statement is true/false, then execute the desired command. If the statement is opposite that of the If statement, then Else is triggered rather than the Then statement.

31. Identify three METHODs of a streamreader

.Close()

.ReadToEnd()

.Dispose()

***Files and textboxes***

32. Identify the purpose of each sub above

Cmdreadfixedwidth reads a file path to a selected file with a fixed width, then displays the information with two difference messageboxes. If the fixed width is not met then the messagebox displays an error.

The purpose of cmdAppend is what ever is written in the text box next to the button is enter into the

designated text file and then enters to start a new line. The text is just added on to the existing text.

The purpose of cmdDelimiter is to separate text from a text file by using commos and displaying each text

in a separate message box.

The purpose of cmdWrite is to write the text from the text box on the left into a text file of choice on the

computer.

The purpose of cmdRead is to read the text file of choice into the text box to the left to view.

33. Identify the files used above and the purpose of each

The text file testfw is used in cmdreadfixedwidth to reased the fixed width text in the file.

The file test is used in cmdappend so whatever is written in the box is written on the test file with delimiters

The text file testoutput is used in cmdwrite so whatever is written in the text box is displayed on the text file

The text file testoutput is used in cmdread so whatever is written in the file is displayed in the box next to the button.

34. What is a delimiter?

A character that marks the end of a unit of data (e.g. ,)

35. Research the purpose of a *textFieldParser*

Provides methods and properties for structured text files

36. Identify an alternative method of parsing a line compared to fixed width

Parsing a line is essentially a new text section is placed on a new line, and it does not matter how many words are within the line, each line will be displayed in a message box.

Fixed width only allows the first amount of width to be displayed, and then the second. It is unable to do large amounts of data and each section is placed within separate message boxes.

37. Identify a Boolean function used in file management and its argument

IF System.IO.File.Exists(FILE\_NAME) = True THEN

Dim objWriter As New System.IO.StreamWriter(FILE\_NAME)

This argument checks to see if the file exists or not. If it does, it executes the succession criteria and activates the desired code. If false, a different set of code is executed.

38. Explain the purpose of one binary selection

The binary selection of If-Then-Else statement is used within the cmdwrite button, having the purpose of checking for the existence of a file on the system and will variably execute different code dependant on the file’s outcome.

39. explain the purpose of *Chr(13)*

The purpose is ASCII code for enter. The purpose is to show where a new line of text is started.

40. Compare Write and Append

Write overwrites what is already in the file. Append adds onto the existing file and the data held within.

41. Identify the purpose of the Message box

The purpose is to display text where it is easily visible. You can see the different sorts of data being displayed.

**Project Three**

***Structures***

42. What is your module called? FRMSTRUCT

43. What is the STRUCTURE called? Unitstruct

44. Identify the fields which make up the structure

Public the three values as a string

(ValueOne-Three)

45. Identify an array of structure (called an array of records)

.values()

46. How does the structure use a one-dimensional array to split a line of text from the file into

Fields?

The array uses Split(), the line of text being split by a semi-colon which is a Delimiter.

***Sorts and Searches***

47. Identify two sorts

Bubble and Insert Sort

48. Identify two searches

Binary and Linear search

49. How would you generate a random number between 1 and 10?

Int(10 \* Rnd()+1)

50. Identify the first and last line of each loop in each of the subs

Bubble Sort:

Do While intx <= 99

intx = intx + 1 Loop

Insert Sort:

Do While intx <= 999

intx = intx +1 Loop

Linear Search:

For c = 0 to 3

Next c

51. How do you add items to a listbox?

Listbox.items.add()

52. How do you clear items from a listbox?

Listbox.Items.Clear()

53. How do you add an array to a listbox?

Listbox.items.add(strArray(intx))

54. In the bubble sort why is an array used?

So you can figure out the max number of unsorted numbers and not just infinite numbers, which could cause an Arithmetic overflow

55. In the bubble sort why are two counted loops used?

The first loop ensures that random numbers are input into the list box, until the total reaches 99.

The other loops ensures the loop reaches 100.

56. How do you perform a swap with code

intSpare = arrNumber(intCounter)

arrNumber(intCounter) = arrNumber(intCount2)

arrNumber(intCount2) = intspare

***Insert Sort***

57. Explain how a shuffle is different to a swap

A shuffle moves variables one by one into the total array. Swap grabs two variables and swaps their positions to sort variables.

58. Describe the logic of a bubble sort

A bubble sort arranges data into either numerical or alphabetical order. Pairs of adjacent items are compared to see if they are out of order. If they are, they are swapped. Once the list ends, the process begins again at the start, going through it again until all numbers are swapped, until no more needs to be swapped, indicating that the list is sorted.

***Binary Search***

59. Why would a programmer code in the contents of an array rather than read it from a file?

Less errors are made when reading from a file. It gives a Stable grouping of contents, Since if there are are a few items it would be too complicated to have a readable external file. The array would be only edited within code, while the text file is accessible by others. When reading from a text file, you must also code the location, which can cause issues if not done correctly.

60. What flag is used?

Blnfound= false

61. Why is the array already sorted?

Binary works by assuming that the middle of the array has the average value. If it is not sorted, this assumption will not work, since the median can be anywhere and cutting the array down the middle means you could get rid of the number you were looking for.

62. Describe the logic of a binary search

Splits the list into two parts and compares them. As the list must be sorted beforehand, one half of the list is safely discarded after each comparison. Eventually, the item is found.

***Linear Search***

63. Explain the difference between a binary search and a linear search

Binary splits the list into two parts and compares them while linear scans the list from top to bottom, left to right. Binary is quicker since it gets rid of unnecessary information, whereas linear must go through the entire list to find the item desired.

64. Describe the logic of a linear search

A linear search examines each item, one at a time, from beginning to end. No need for the list to be ordered, as it just goes through the list from top to bottom and finds the item desired.

***Debugging***

65. Why do programmers use a watch window?

Allows programmers to watch the changes in the value of variables or expressions

66. How do you display the watch window

Start debug, click on debug,windows,watch and the watch bar will launch.

67. What does *step into* mean

Moves to the next line of code, executing it to see what happens

68. What is the shortcut for step into?

F11

***Breakpoints***

69. Why do programmers use breakpoints?

Pauses the code at that position so developers can see the code running correctly and the position of any errors that could occur during runtime.

70. How do you create a breakpoint?

Right-click near the numbered lines, on the ribbon, and then the system will highlight that piece of code so the system understands that there is a breakpoint there.

71. What is the purpose of variable pass

Variable pass is the variable that is ‘passed’ around the code. It’s value is increased incrementally by every step, showing in the total at the end of the execution.

72. What is the final value of pass?

27, any higher and an Arithmetic overflow is triggered

***Try and Catch Errors***

73. Why do programmers use *Catch ex*?

It allows the code to ttake the runtime error, if the number is too big to display, and displays a message identifying the gap in the Algorithm’s logic and how to prevent it, displaying the code again. This allows errors to occur during runtime to notify the user and continue running, unless it is an error the programmer did not consider.

74. Identify an overflow exception

The overflow exception is triggered when a number bigger than 2 billion results from the code, displaying the message “only numbers up to 2 billion”. An example is a result that exceeds the limitations, like a number totalling 6 billion, so the message would be displayed.

***Multimedia Player***

75. Why do programmers use an instance of windows media player?

Using an instance saves time when creating the code as the programmer does not have to create from

scratch. It also allows for an easy multimedia player to be used, that users will be familiar with as it is so

common.

76. How do you create it?

Click the toolbox and navigate to components, then you right-click on components and select choose items. From there, go to COM components and find the item ‘windows media player’. Tick it, press OK, and a new item will appear in your toolbox, a Windows media player.

***Unbound Data Grids***

77. Identify the name of the structure

PersonInfo

78. Identify the fields in the structure

Name,Telephone number

79. Identify the array of structures

The array is called .Info()

80. Why is Info *redimmed* after the input box is run

So the new number of N can be read and given a new value.

81. Why is the counted loops counter (l) used for in relation to the array

The counted loop I is so the array can count from 0 to N-1 without putting every single value in manually. When one array is complete, it counts up and repeats until the final number is met.

82. Identify the flag

Fig=false

83. Identify the type of sort used

Bubble sort through swapping

***Access Link***

84. What is the benefit of keeping the access database separate from the project – i.e. not importing

it

85. Research SQL databases and give one difference with an Access database