



SCHOOL OF SCIENCE AND TECHNOLOGY

Semester 2, 2025

FINAL EXAMINATION PAPER

ITC216: SOFTWARE DESIGN AND PROGRAMMING

Important Instructions to Students:

1. Read the questions, instructions carefully and answer the questions.
2. You are allowed an **extra 10 minutes reading time** (during this time, you are not allowed to write with pen) and **180 minutes (3 Hours) to complete this paper**.
3. Silent, non-programmable calculators are allowed, but not supplied.
4. Write all your answers in the answer booklet provided. If you need extra sheets, please ask from the supervisor. Write your name, course code and student identification number in the answer booklet and in the attendance sheet.
5. This paper contains two (2) sections A and B. All questions are compulsory to answer.
6. Write all your answers legibly. The marker has the right to award zero for answers that are not legible.
7. This is a **Closed Book Examination**. The University views plagiarism, cheating and dishonest practice as serious offences and if found, offenders are penalized.

Examination Paper Content (Format):

<u>Section</u>	<u>Question</u>	<u>Content</u>	<u>Marks</u>	<u>Suggested Time</u>
A	1-30	Multiple Choice	30	54 minutes
B	31-37	Long Answer Questions	70	126 minutes
		TOTAL	100	180 Minutes

1. Which of the following is not a valid name for an object?
 - A. picMy.Dog
 - B. btnCalcSalesTax
 - C. lbl2019
 - D. lblProjected2024
2. Which of the following statements is false?
 - A. The text contained in an identifying label should be left-aligned within the label.
 - B. An identifying label should be positioned either above or to the right of the control it identifies.
 - C. Identifying labels should use sentence capitalization.
 - D. Identifying labels should end with a colon (:).
3. Which of the following specifies the letter *D* as the access key?
 - A. &Display
 - B. #Display
 - C. ^Display
 - D. D&isplay
4. Identifying labels typically have their AutoSize property set to which of the following?
 - A. Auto
 - B. False
 - C. NoSize
 - D. True
5. Which of the following reads a line of text from a sequential access file and assigns the line (excluding the newline character) to the strText variable?
 - A. inFile.Read(strText)
 - B. inFile.ReadLine(strText)
 - C. strText = inFile.ReadLine
 - D. strText = inFile.Read(line)
6. What does the Peek method return when the end of the file is reached?
 - A. -1
 - B. 0
 - C. the last character in the file
 - D. the newline character
7. If Option Strict is set to On, which of the following statements assigns the sum of two Integer variables to the Text property of the lblTotal control?
 - A. lblTotal.Text = (intN1 + intN2).ToString
 - B. lblTotal.Text = intN1.ToString + intN2.ToString
 - C. lblTotal.Text = intN1 + intN2.ToString
 - D. lblTotal.Text = ToString(intN1 + intN2)

8. Which of the following can be used to determine whether the employ.txt file exists?
- A. If IO.File.Exists("employ.txt") Then
 - B. If IO.File("employ.txt").Exists Then
 - C. If IO.Exists("employ.txt") = True Then
 - D. If IO.Exists.File("employ.txt") = True Then
9. What type of object is created by the OpenText method?
- A. File
 - B. SequenceReader
 - C. StreamWriter
 - D. StreamReader
10. What type of object is created by the AppendText method?
- A. File
 - B. SequenceReader
 - C. StreamWriter
 - D. StreamReader
11. Which window is used to set the characteristics that control an object's appearance and behavior?
- A. Characteristics
 - B. Object
 - C. Properties
 - D. Toolbox
12. Which of the following is used to declare a procedure-level String variable?
- A. Dim String strCity
 - B. Dim strCity As String
 - C. Private strCity As String
 - D. Local strCity As String
13. Which of the following For clauses indicates that the loop instructions should be processed as long as the intX variable's value is less than 100?
- A. For intX As Integer = 10 To 100
 - B. For intX As Integer = 10 To 99
 - C. For intX As Integer = 10 To 101
 - D. For intX As Integer = 99 To 10
14. Which of the following statements selects the fourth item in the lstNames control?
- A. lstNames.SelectIndex = 3
 - B. lstNames.SelectIndex = 4
 - C. lstNames.SelectedIndex = 3
 - D. lstNames.SelectedItem = 4

15. What will the following code display in the lblAsterisks control?

```
For intX As Integer = 1 To 2
    For intY As Integer = 1 To 3
        lblAsterisks.Text = lblAsterisks.Text & "*"
    Next intY
    lblAsterisks.Text = lblAsterisks.Text & ControlChars.NewLine
Next intX
```

- A. ***

- B. ***

- C. **
**
**
- D. ***

16. What will the following code display in the lblSum control?

```
Dim intSum As Integer
Dim intY As Integer
Do While intY < 3
    For intX As Integer = 1 To 4
        intSum += intX
    Next intX
    intY += 1
Loop
```

```
lblSum.Text = intSum.ToString
```

- A. 5
- B. 8
- C. 15
- D. 30

17. If a list box's Sorted property is set to False, how will the numbers 4, 35, 3, 1, and 12 be displayed in the list box?

- A. 4, 35, 3, 1, 12
- B. 1, 3, 4, 12, 35
- C. 1, 12, 3, 35, 4
- D. 35, 12, 4, 3, 1

18. How many times will the string literal "Hi" appear in the lblMsg control?

```
For intCount As Integer = 6 To 13 Step 2
    lblMsg.Text = lblMsg.Text &
        "Hi" & ControlChars.NewLine
Next intCount
```

- A. three
- B. four
- C. five
- D. eight

19. Which of the following indicates whether a variable is being passed by value or by reference?
- A. the calling statement
 - B. the receiving procedure's header
 - C. the statements entered within the receiving procedure
 - D. the calling procedure's header
20. Which of the following statements invokes the GetArea Sub procedure, passing it two variables by value?
- A. GetArea(dblLength, dblWidth) As Double
 - B. GetArea(ByVal dblLength, ByVal dblWidth)
 - C. GetArea ByVal(dblLength, dblWidth)
 - D. GetArea(dblLength, dblWidth)
21. Which of the following is a valid header for a procedure that receives a copy of the value stored in a String variable?
- A. Private Sub DisplayName(ByCopy strName As String)
 - B. Private Sub DisplayName ByVal(strName As String)
 - C. Private Sub DisplayName(ByVal strName As String)
 - D. Private Sub DisplayName(ByRef strName As String)
22. Which of the following is a valid header for a procedure that receives an integer followed by a number with a decimal place?
- A. Private Sub GetFee(intBase As Value, decRate As Value)
 - B. Private Sub GetFee(ByRef intBase As Integer, ByRef decRate As Decimal)
 - C. Private Sub GetFee(ByVal intBase As Integer, ByVal decRate As Decimal)
 - D. Private Sub GetFee(ByCopy intBase As Integer, ByCopy decRate As Decimal)
23. Which of the following is a valid header for a procedure that is passed the number 15?
- A. Private Function GetTax(ByVal intRate As Integer)
 - B. Private Function GetTax(ByAdd intRate As Integer) As Decimal
 - C. Private Sub CalcTax(ByCopy intRate As Integer)
 - D. Private Sub CalcTax(ByVal intRate As Integer)
24. If a statement passes a variable's address, how is the variable said to be passed?
- A. by address
 - B. by content
 - C. by reference
 - D. by value
25. A Sub procedure named GetEndInv is passed four Integer variables from its calling statement. The first three variables store the following three values: beginning inventory, number sold, and number purchased. The procedure should use these values to calculate the ending inventory, and then store the result in the fourth variable. Which of the following procedure headers is correct?
- A. Private Sub GetEndInv(ByVal intB As Integer, ByVal intS As Integer, ByVal intP As Integer, ByRef intFinal As Integer)
 - B. Private Sub GetEndInv(ByVal intB As Integer, ByVal intS As Integer, ByVal intP As Integer, ByVal intFinal As Integer)
 - C. Private Sub GetEndInv(ByRef intB As Integer, ByRef intS As Integer, ByRef intP As Integer, ByVal intFinal As Integer)
 - D. Private Sub GetEndInv(ByRef intB As Integer, ByRef intS As Integer, ByRef intP As Integer, ByRef intFinal As Integer)

26. Which of the following statements changes the contents of the strWord variable from “led” to “lead”?
- A. strWord = strWord.AddTo(2, "a")
 - B. strWord = strWord.Insert(2, "a")
 - C. strWord = strWord.Insert(3, "a")
 - D. strWord = strWord.Into(3, "a" + "c")
27. The strAmount variable contains the string “678.95”. Which of the following statements changes the contents of the variable to the string “678.95!!!”?
- A. strAmount = strAmount.PadRight(9, "!")
 - B. strAmount = strAmount.PadRight(9, "!" + "c")
 - C. strAmount = strAmount.PadRight(3, "!" + "c")
 - D. strAmount = strAmount.PadRight(3, "!")
28. Which of the following statements can be used to determine whether the strRate variable contains the percent sign?
- A. blnResult = strRate.Contain("%")
 - B. intResult = strRate.Index("%")
 - C. intResult = strRate.GetIndex("%")
 - D. intResult = strRate.IndexOf("%")
29. If the strPresident variable contains the string “Abraham Lincoln”, what value will the strPresident.IndexOf("ham") method return?
- A. True
 - B. -1
 - C. 4
 - D. 5
30. If the strName variable contains the string “Sharon Kelper”, which of the following statements changes the contents of the variable to the string “Sharon P. Kelper”?
- A. strName = strName.Insert(6, " P.")
 - B. strName = strName.Insert(7, " P.")
 - C. strName = strName.Insert(8, "P. ")
 - D. strName = strName.Insert("P. ", 7)

31. For an application that calculates and displays two raise amounts, which are based on an employee's current salary. The current salary will be entered by the user. The two raise rates are 5% and 8%. In addition to the raise amounts, the application should also calculate and display the employee's new salaries. The user can click a button in the interface to clear the user input and calculate results from the screen. **[6 Marks]**

- A. Sketch the user interface
- B. Prepare a planning chart
- C. Write a series of pseudocodes

32. You are required to print out the following numbers using a series of loops: "10 90 80 7 61 5 43 33 26 13"

[10 Marks]

- Pretest Do While Loop
- Pretest Do Until Loop
- Posttest Do While Loop
- Posttest Do Until Loop
- For Next Loop

33. Based on the following planning chart, design and develop a Windows Forms Application. Sketch the interface and code the appropriate buttons. **[6 marks]**

Planning Chart for the Moonbucks application	
Purpose: Calculate and display the projected increase and sales amounts.	
How?	
User-provided	
1. current sales amount	user will enter in txtCurrent
Application-provided	
1. 10% projected increase amount	btnCalc_Click will calculate and display in lblIncrease
2. projected sales amount	btnCalc_Click will calculate and display in lblProjected
3. button for ending the application	btnExit_Click will end the application

34. Williams Cable Company wants an application that displays a customer's monthly cable bill, which is based on the information shown in the below figure. Code the application. Be sure to code the CheckedChanged procedures for the radio buttons and checkboxes. [12 Marks]

Packages	Monthly charge (\$)
Basic	24.99
Silver	42.99
Gold	84.99
Diamond	99.99

Additional features	Monthly charge (\$)
Cinematic movie channels	9.50
HBI movie channels	9.50
Showtimer movie channels	10.50
Local stations	6.00

Williams Cable Company

Cable packages

☒ Basic

☐ Silver

☐ Gold

☐ Diamond

Additional features

☐ Cinematic movie channels

☐ HBI movie channels

☐ Showtimer movie channels

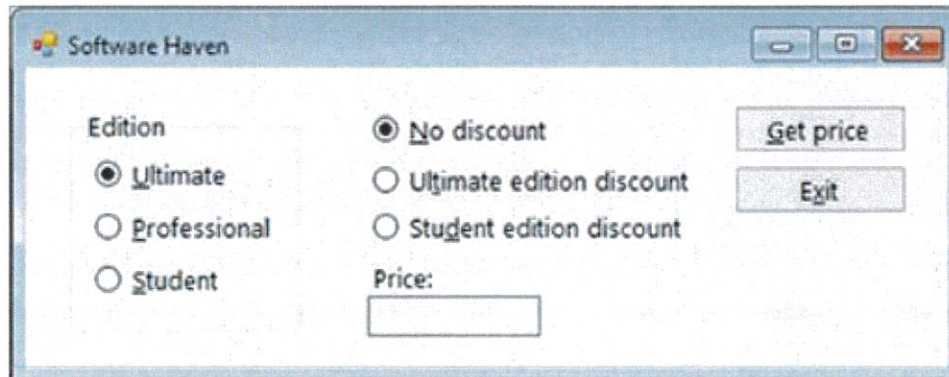
☐ Local stations

Cable bill:

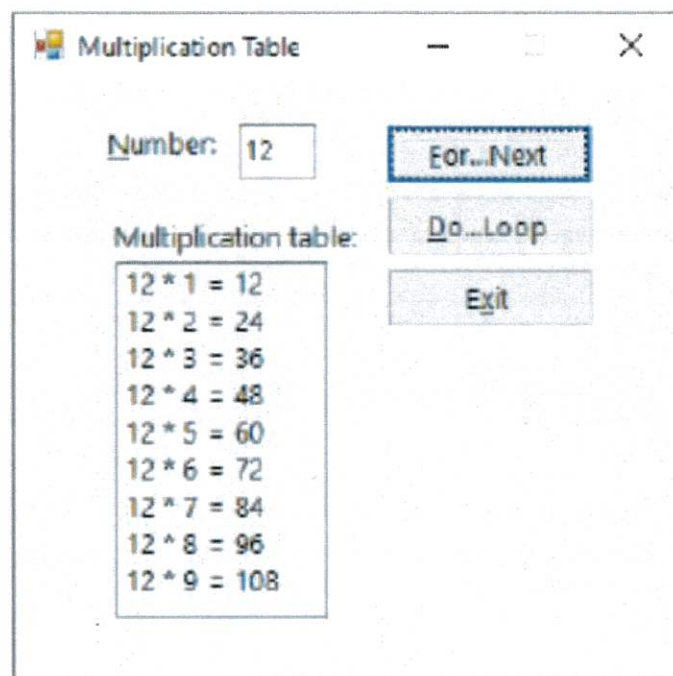
Calculate cable bill

Exit

35. Software Haven sells a software package that is available in three editions. The application should display the price of the edition a customer wants to purchase. The retail prices for the Ultimate, Professional, and Student editions are \$899.99, \$599.99, and \$99.99, respectively. Some customers may have a coupon worth 10% off the price of the Ultimate edition, while others may have a coupon worth 20% off the price of the Student edition. Code the application. Be sure to code each radio button's CheckedChanged procedure. [12 Marks]



36. Code the application to display a multiplication table similar to the one shown in Figure. Use the For ... Next statement in the btnForNext_Click procedure, and use the Do ... Loop statement in the btnDoLoop_Click procedure. Save the solution and then start and test the application. [12 Marks]



37. The Donut Shoppe sells four varieties of doughnuts: Glazed (\$1.05), Sugar (\$1.05), Chocolate (\$1.25), and Filled (\$1.50). It also sells regular coffee (\$1.50) and cappuccino (\$2.75). The store manager wants you to create an application that displays a customer's subtotal, 6% sales tax, and total due. When coding the application, use one independent Sub procedure to determine the subtotal, which is the total cost without the sales tax. Use a function to determine the sales tax.

[12 Marks]

Donut Shoppe

Our doughnuts and coffee are the best in town!

Doughnut choices

☒ Glazed (\$1.05)

☐ Sugar (\$1.05)

☐ Chocolate (\$1.25)

☐ Filled (\$1.50)

Subtotal:

Sales tax:

Total due:

Coffee choices

☒ None

☐ Regular (\$1.50)

☐ Cappuccino (\$2.75)

Calculate

Exit

End of Exam