



**COLLEGE OF BUSINESS, PEACE, LEADERSHIP AND GOVERNANCE**

**DEPARTMENT OF COMPUTER SCIENCE AND INFORMATION SYSTEMS**

**NICS202: PROGRAMMING 1**

**APRIL/MAY 2021 MAIN EXAMINATIONS**

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**24 HOURS**

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***INSTRUCTIONS***

1. Answer any **ONE** question.
  2. Compile your answer into one consolidated PDF format document.
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## QUESTION 1[100]

(a) Using windows form application design Hospital billing as shown below.

Insert code to the buttons to perform the necessary calculations as shown on the form [40]

The screenshot shows a Windows Form application titled "HOSPITAL BILLING SYSTEM APPLICATION". The form is divided into several sections:

- BILL NO:** 0124555 (text box)
- DATE:** Monday, 15 March, 2021 (calendar picker)
- PATIENT DETAILS:**
  - PATIENT ID:** 078455A (text box)
  - NAME:** John Muleka (text box)
  - Date of Birth:** Tuesday, 10 June, 1980 (calendar picker)
  - SEX:** ☒ MALE ☐ FEMALE (radio buttons)
- CHARGES:**
  - ROOM CHARGES \$:** 500 (text box)
  - DOCTOR FEES \$:** 1500 (text box)
  - PATHOLOGY \$:** 1000 (text box)
  - MISCELLANEOUS CHARGES \$:** 500 (text box)
  - VAT in \$:** 200 (text box)
- TOTAL PATIENT BILL:** \$3300.00 (text box)
- Buttons:** CALCULATE BILL (green), CLEAR (blue), EXIT (red)

(b) Validate the all textbox Not to accept text data type and produce an appropriate message.[10]

(c) Design and code the login form that allows users to log in to your system to access the billing form above [40]

Username is **admin** Password is **123#**

If correct username and correct password are entered and user click ok the billing form shown above will be displayed.

Include buttons clear and exit on the Logic firm.[10]

## Question Two [100 Marks]

(a) The following is a grading system used at a University.

Mark	Grade
91-100	A+
81-90	A
75-80	A-
70-74	B+
65-69	B
60-64	B-
56-59	C+
53-55	C
50-52	C-
0-49	F

(i) List the inputs, process and outputs of the program.[6]

(ii) Write the algorithm for the program.[10]

(iii) Design and code a windows application program to calculate the grade from mark entered by the user [40]

**NB** .Include for marks out of range and display an Appropriate Message if invalid mark is entered.

(b) A bank has 4 types of accounts with annual interest's rates as follows:

1. Savings 8%
2. Savings with cheque book 5%
3. Current 4%
4. Fixed deposits 10%

Design and code a VB.net program that allows the input of the current balance in textbox, txtBalance and input type of account in textbox, txtAccount and displays the total interest obtainable in label lblOutput, when the button, btnCalculate is clicked.[44]

. Ensure that the following validations occur:

- (i) The textboxes should not be left empty.
  - (ii) Balance should be numeric and positive.
  - (ii) Account type should be in the appropriate range.
- Provide appropriate error messages if the above conditions are

Use the interface below

Balance:	<input type="text"/>
Account Type (1-4):	<input type="text"/>
<input type="button" value="Calculate"/>	<input type="text"/>

### Question Three (10 marks)

- (a) You are being asked by the Ministry Health to design a Covid symptom Tester software to be used in public places to check peoples' temperature.

The system uses a robot controlled application in which a person temperature is taken by the robot if the temperature is normal between 36 to 37 °C the machine **dispenses sanitizer** to the person and displays a message on the screen **Normal Temperature access granted**. However when the temperature is above 37°C A message will displayed on the **screen see your doctor an get tested for COVID**

Using windows form application design and code the Covid symptoms application.

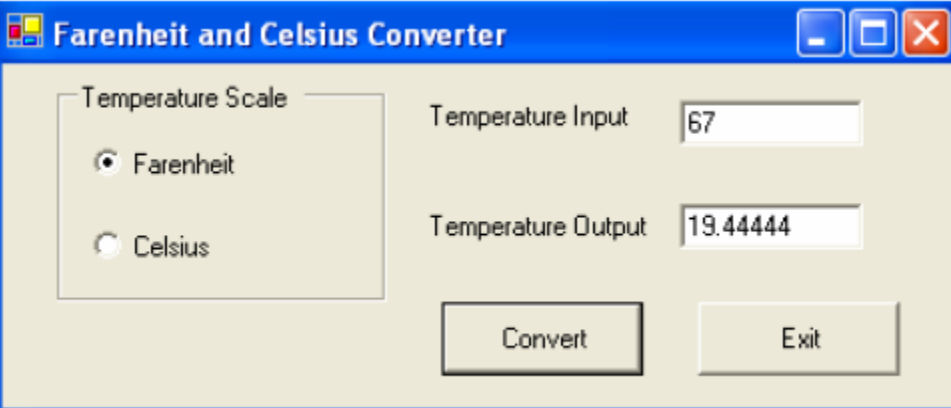
- (i) Sketch Graphical user interface for the application.[10]
- (ii) Identify the Inputs, Process and output for the above application.[6]
- (iii) Write the Algorithm for the above application.[10]
- (iv) Design and code the program using windows application form. [30]
- (v) Briefly write user manual for the above application.[10]

(b) Given the following formula to convert from Fahrenheit to Celsius:

$\text{DegreesF} = \text{DegreesC} * 9/5 + 32$  and

from Celsius to Farenheit:  $\text{Degrees C} = 5/9 * \text{DegreesF} - 32$ .

Design the interface below that allows a user to enter a temperature (txtIn) and to indicate the temperature scale (Celsius or Farenheit) of entered data (radCelsius or radFarenheit). When the btnConvert button is clicked, the entered data is captured and either a Celsius or Farenheit calculatedd (which displays the converted temperature – displayed in txtOut).



- (i) Write the codes associated with the btnConvert button.[34]
- (ii) Write code for the exit button

**End of Examination**