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NATIONAL UNIVERSITY OF IRELAND, GALWAY

SUMMER EXAMINATIONS 2000

THIRD YEAR EVENING B.A.(Economic and Social Studies)

Programming Languages 1 (CT224)

Prof. D. Bell
Dr. G. Lyons
Ms. S. Hughes

Time allowed: **Two hours**

Answer 3 questions
All questions carry equal marks.

1. **(a)** What are the fundamental differences between a procedural language and an event-driven language? Explain with examples.

(b) Explain the main steps in application development in Visual Basic?

(c) What are objects in VB? Explain with examples.

(d) Sketch the user interface and write the code for a Visual Basic application which presents a multi-line text box for the user to type into. Provide menu controls allowing the user to turn on and off the text bold and underline properties. Provide the user with check boxes as an alternative way of changing these two text properties.

2. **(a)** What is meant by a decision structure? In relation to Visual Basic, list and give examples of three decision structures.

(b) What is concatenation and when is it used?

(c) A Power Company requires an application to calculate bills according to the following schedule:

Customer Use Code	Charge
Residential	6.052p per Kwh used
Commercial	£60 for the 1st 1000 Kwh and 4.5p for each additional Kwh
Industrial	£76 for the 1st 1000 Kwh and 6.5p for each additional Kwh

Design a program, which will read in the power consumption amount and Customer Use Code and then computes and prints the required bill. The program should also ensure that only numeric values are entered.

P.T.O.

3. **(a)** Design a program which will prompt an operator for a students number and the students exam score out of 100. The program is then to match the exam score to a letter grade and print the grade to the screen. The letter grade is to be calculated as follows:

Exam score	**Assigned Grade**
90 and above	A
80-89.9	B
70-79.9	C
60-69.9	D
Below 60	F

(b) Design a program to create a table of equivalent Celsius and Fahrenheit temperatures. The program should accept one Celsius temperature and display the values of Celsius and Fahrenheit in increments of 5 stopping after 100 degrees above the initial Celsius value entered.

4. **(a)** Distinguish between pre- and post-test loops, giving the advantages and disadvantages of each. Illustrate your answer with examples and flowcharts.

(b) Given that the user enters in Year (Yr) as 85 and Century (cent) as 1900, evaluate the following expression using a truth diagram:

If NOT (yr > 90 OR yr <=80) OR cent < 1900

(c) Write an application in Visual Basic that simulates an ATM machine. The application will prompt for a pin number and will continue prompting the user until he/she has entered the correct pin.

5. **(a)** What is meant by the term "array". Give examples of situations where arrays would be useful or necessary.

(b) Given that **numbers** is an array, explain what is happening in the following piece of code?(Comment on each line of the code and describe the overall effect)

```
Dim i As Integer
Dim Pass As Integer
Dim Temp As Integer
Dim NoSwitches As Boolean
  Pass = 0
  Do
    Pass = Pass + 1
    NoSwitches = True
    For i = cMin To (cMax - Pass)
      If Numbers(i) > Numbers(i + 1) Then
        NoSwitches = False
        Temp = Numbers(i)
        Numbers(i) = Number(i + 1)
        Numbers(i + 1) = Temp
      End If
    Next i
Loop Until NoSwitches
```