

Zarka Private University
Faculty of Science - Department of Computer Science
First Examination – Second Semester 2003 - 2004
Special Languages 1 (VB.NET) 0306215

Date: Monday, March 29 2003

Time: 04:00 PM

Instructor: Salah F. Saleh

Duration: 1 Hour

Q1) [9 Marks]

Write a VB.NET class library application that contains the following classes:

- **Student**

This class has the properties: *Name*, *Number*, and *Address*. Also, it contains a constructor to initialize the variables of the object.

- **UnderGraduateStudent**

This class has the properties: *No_of_Hours*, *AccumulationAverage*, and *Stage*, and a constructor for initialization. The class has to contain the following events:

1. *Warning* event: This event happens upon changing the *AccumulationAverage* if the it is less than 60 with a parameter represents the type of the warning according to the following:

$$\text{WarningType} = \begin{cases} 3 & \text{if } \text{AccumulationAverage} < 50 \\ 2 & \text{if } \text{AccumulationAverage} < 55 \\ 1 & \text{if } \text{AccumulationAverage} < 60 \end{cases}$$

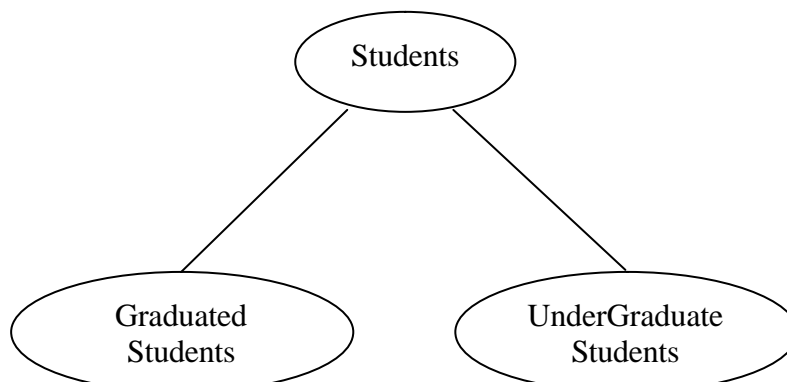
2. *Complete* event: This event happens when the number of credit hours of the student become greater than or equal 132.

- **GraduatedStudent**

This class has the properties: *GraduationYear*, *GraduationAverage*, and *HasJob*; and a constructor for initialization. *HasJob* variable is either 1 (the student has a job) or 0 (jobless). The class has to contain two events:

1. *GotJob* event: This event happens when the student get a job.
2. *LostJob* event: This event happens when the student loss his job.

The inheritance hierarchy is as follows:



Q2) [6 Marks]

Write Visual Basic.NET application that uses the classes in the DLL file of the Q1 and has the following interface:

The screenshot shows a Windows application window with a blue title bar containing the text "Exam 1 - Question 2". The window has a light beige background and is divided into two main sections by a horizontal line. The top section is titled "Under Graduate Student Information" and contains four text boxes: "Student Number", "Student Name", "Hours", and "Average". To the right of these text boxes are three buttons: "Add Student", "Get", and "Change". The bottom section is titled "Graduated Student Information" and contains four text boxes: "Student Number", "Student Name", "Graduation Year", and "Average". To the right of these text boxes are three buttons: "Add Student", "Get", and "Change". Below the "Graduation Year" text box is a checkbox labeled "Has Job". At the bottom center of the window is an "Exit" button. The window has standard Windows window controls (minimize, maximize, close) in the top right corner.

The program has to declare an array that may contain under graduate students or post graduate students. And the buttons act as follows:

- *Add Student*
It adds an under graduate student object or a graduated student object into the array with the values on the left.
- *Get*
It retrieves the information of the under graduate student or graduated student whose number in the student number text box.
- *Change*
It resaves the information of an under graduate student or graduated student.

If any event happened, display a message box to tell what is happened.

Good Luck