



UNIVERSITY OF RUHUNA

Faculty of Engineering

End-Semester 04 Examination in Engineering: September 2023

Module Number: EE4207

Module Name: GUI Programming(C/18)

[Three Hours]

[Answer all questions, each question carries 10 marks]

Q1. Answer this question using the knowledge on Entity framework.

a) What is Code First approaches in application development?

[2.0 Marks]

b) Explain Lazy Loading in Entity Framework using the below code snippet. (One Author can have many Books.)

```
1 using (var context = new BookContext())
2 {
3     var author = context.Authors.FirstOrDefault();
4     if (author != null)
5     {
6         Console.WriteLine("Author: " + author.Name);
7         foreach (var book in author.Books)
8         {
9             Console.WriteLine("Book Title: " + book.Title);
10        }
11    }
12 }
```

[3.0 Marks]

c) What is Entity Framework migration, and why is it important in database management?

[2.0 Marks]

d) What is the purpose of the Up() and Down() methods in an Entity Framework migration?

[2.0 Marks]

e) Explain the purpose and usage of the Add-Migration command in Entity Framework Migrations.

[1.0 Mark]

Q2. Answer this question using the knowledge of Entity framework.

- a) Write the DbContext class and model classes for the ER diagram shown in Figure Q2. [4.0 Marks]
- b) Use attributes to define the mentioned primary keys and indexes. Index on the customer name. [2.0 Marks]
- c) What are the positive and negative effects of using indexes? [2.0 Marks]
- d) Write the commands for creating the migrations and applying them to the database. [2.0 Marks]

Q3. Answer this question using your knowledge of WPF.

- a) What is XAML, and how is it used in WPF? [2.0 Marks]
- b) Draw the displayed output of the following code.

```
<Window x:Class="MyWpfApp.MainWindow"
  xmlns="http://schemas.microsoft.com/winfx/2006/xaml/presentation"
  xmlns:x="http://schemas.microsoft.com/winfx/2006/xaml"
  Title="MainWindow" Height="350" Width="525">
  <Grid>
    <Grid.RowDefinitions>
      <RowDefinition Height="Auto"/>
      <RowDefinition Height="Auto"/>
      <RowDefinition Height="Auto"/>
    </Grid.RowDefinitions>

    <TextBlock Text="Welcome to My WPF App!" FontWeight="Bold"
      FontSize="24" HorizontalAlignment="Center"
      VerticalAlignment="Center" Margin="0,20,0,10" Grid.Row="0"/>

    <TextBox Width="200" Height="30" PlaceholderText="Enter your name"
      HorizontalAlignment="Center" VerticalAlignment="Center"
      Margin="0,10,0,10" Grid.Row="1"/>

    <Button Content="Submit" Width="100" Height="40"
      HorizontalAlignment="Center" VerticalAlignment="Center"
      Margin="0,10,0,20" Grid.Row="2"/>
  </Grid>
</Window>
```

[4.0 Marks]

- c) In the provided XAML code below, there's a TextBox binding to a property named TextValue. Explain how two-way data binding is achieved for this TextBox. Describe the significance and role of Mode=TwoWay and UpdateSourceTrigger=PropertyChanged in this binding scenario.

```
<Window x:Class="WpfApp.MainWindow"
  xmlns="http://schemas.microsoft.com/winfx/2006/xaml/presentation"
  xmlns:x="http://schemas.microsoft.com/winfx/2006/xaml"
  xmlns:local="clr-namespace:WpfApp"
  Title="MainWindow" Height="150" Width="300">
  <Grid>
    <TextBox Width="200" Height="30" PlaceholderText="Enter text here"
      Text="{Binding Path=TextValue, Mode=TwoWay,
        UpdateSourceTrigger=PropertyChanged}"/>
  </Grid>
</Window>
```

[4.0 Marks]

Q4. Answer the following questions with your knowledge of HTML, CSS, and JavaScript.

- a) You are tasked with styling a simple blog webpage. The webpage consists of article summaries and a navigation menu. The requirements are as follows:
- Each article summary should have a border, some padding, and a different background color.
 - The navigation menu items should be styled to have a background color on hover, and the text should change to white on hover.
 - Apply a different font to the article titles and a different font size to the navigation menu items.

Write the CSS to achieve the specified styles based on above requirements.

[3.0 Marks]

- b) Write an HTML5 program to display the information shown in Figure Q4 with the given formatting.

[4.0 Marks]

- c) Explain the tags used in the following HTML segment.

```

<!DOCTYPE html>
<html>
<head>
  <title>
    Sample Program
  </title>
</head>

<body>
  <!-- It is a Paragraph tag for creating the paragraph -->
  <p>
HTML stands for Hyper Text Markup Language It is used to create web pages
and applications. This language is easily understandable by the user and
modifiable. It is actually a Markup language; hence it provides a flexible
way for designing web pages along with the text.
  </p>

  <label for="inputText">Enter something:</label>
  <input type="text" id="inputText" name="inputText"><br><br>

  <button type="button" onclick="alertInput()">Submit</button>

  <script>
    function alertInput() {
      var userInput = document.getElementById("inputText").value;
      alert("You entered: " + userInput);
    }
  </script>
</body>
</html>

```

[3.0 Marks]

Q5. Answer this question with your knowledge of Xamarin.

a) Mention two features provided by Xamarin forms.

[2.0 Marks]

b) Draw the UI for the following code snippet.


```

<?xml version="1.0" encoding="utf-8" ?>
<ContentPage xmlns="http://xamarin.com/schemas/2014/forms"
  xmlns:x="http://schemas.microsoft.com/winfx/2009/xaml"
  xmlns:d="http://xamarin.com/schemas/2014/forms/design"
  xmlns:mc="http://schemas.openxmlformats.org/markup-compatibility/2006"
  mc:Ignorable="d"
  x:Class="QuickDemo.Views.LoginPage"
  Shell.NavBarIsVisible="False">
  <ContentPage.Content>

    <StackLayout Padding="10,0,10,0" VerticalOptions="Center">

      <Label Text="Username" TextColor="Black"/>
      <Entry Text="{Binding Username}" />
      <Label Text="Password" TextColor="Black"/>
      <Entry Text="{Binding Password}" />
      <Button VerticalOptions="Center" Text="Login" Command="{Binding
LoginCommand}"/>

    </StackLayout>

  </ContentPage.Content>
</ContentPage>

```

[3.0 Marks]

- c) Write the XAML code to get the output shown in Figure Q5. The width of first column is two times as other columns. Height of the first row is two times the other rows. The dimension of the window is 400x400 pixels. (Hint: Use Grid Layout).

[5.0 Marks]

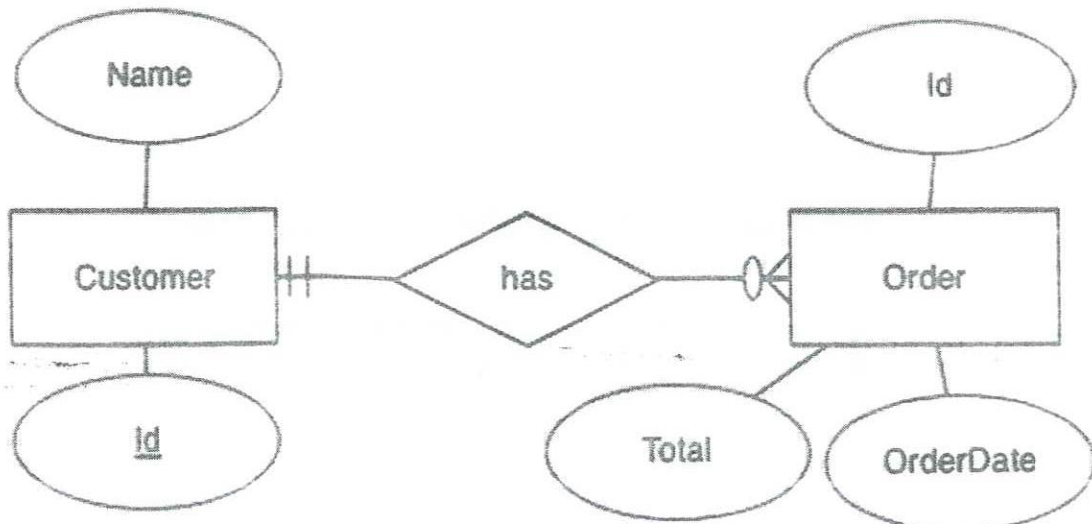


Figure Q2. ER diagram.

EE5201 – Machine Learning

This is a 2-credit module offered in semester 4. The module is offered by the Department of **Electrical and Information Engineering**.

The module lecture timetable is as following.

Date	Time	Description
05/10/2023	6.30PM – 8.30PM	Introduction to Linear Algebra
12/08/2023	6.30PM – 8.30PM	Introduction to Python
19/12/2023	6.30PM – 8.30PM	Linear Regression

Figure Q4.

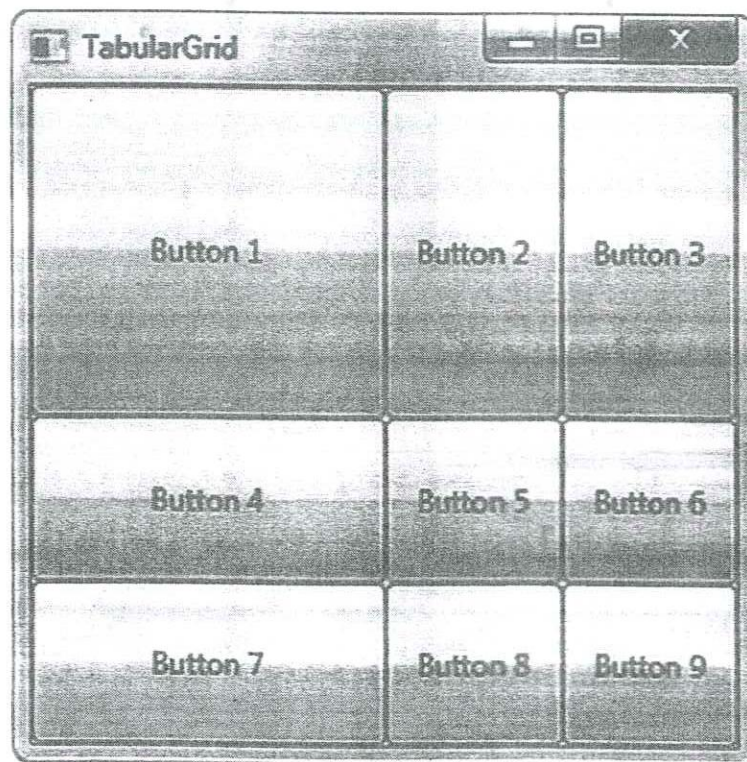


Figure Q5.