



# UNIVERSITY OF RUHUNA

## Faculty of Engineering

End-Semester 04 Examination in Engineering: November 2022

Module Number: EE4207

Module Name: GUI Programming(C/18)

[Three Hours]

[Answer all questions, each question carries 10 marks]

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

a) What is the difference between Code First and Database First approaches in application development? [2.0 Marks]

b) Explain Lazy Loading in Entity Framework using the below code snippet.

```
MyDbContext context = new MyDbContext(); //Line 1
var Customers = context.Customers.ToList(); //Line 2
foreach (Customer cust in Customers) //Line 3
{
    foreach(Address add in cust.Addresses){} //Line 4
}
```

[3.0 Marks]

c) Explain the purpose of migrations and MigrationHistory table in the context of deploying to multiple environments.

[3.0 Marks]

d) Explain about the Up() and Down() methods generated in the migrations.

[2.0 Marks]

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 meant by CRUD operations.

[2.0 Marks]

b) Draw the displayed output of the following code.

```
<Window //some code removed
  Title="MainWindow" FontSize="25" Height="200" Width="300">
  <Grid>
    <Grid.RowDefinitions>
      <RowDefinition></RowDefinition>
      <RowDefinition></RowDefinition>
      <RowDefinition></RowDefinition>
    </Grid.RowDefinitions>

    <TextBox Grid.Row="0" Text="{Binding Path=BoundNumber,
Mode=TwoWay}"></TextBox>
    <Slider Grid.Row="1" Value="{Binding Path=BoundNumber,
Mode=TwoWay}"></Slider>
    <Button Grid.Row="2" Name="Reset"
Click="Reset_Click">Reset</Button>
  </Grid>
</Window>
```

[4.0 Marks]

c) Complete the missing logic in the following code using your knowledge of WPF.

```
public partial class MainWindow : INotifyPropertyChanged
{
    public MainWindow()
    {
        DataContext = this;
        InitializeComponent();
    }

    private void Reset_Click(object sender, RoutedEventArgs e)
    {
        // Complete logic here to reset the values to 0
    }

    private int _boundNumber;
    public int BoundNumber
    {
        get { return _boundNumber; }
        set
        {
            // Complete the logic here to make sure other binded
components update
        }
    }

    public event PropertyChangedEventHandler PropertyChanged;
    private void OnPropertyChanged([CallerMemberName] string
propertyName = null)
```

```

        {
            PropertyChanged?.Invoke(this, new
PropertyChangedEventArgs(propertyName));
        }

```

[4.0 Marks]

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

a) What are the advantages of using jQuery framework over just JavaScript? [1.0 Mark]

b) What are the ways a CSS file can be applied to an HTML file. [2.0 Marks]

c) Write an HTML5 program to display the information shown in Figure Q4 with the given formatting. [4.0 Marks]

d) Explain the tags used in the following HTML segment.

```

<Html>
<Head>
    <title>
        Sample Program
    </title>
</Head>

<Body>
    <!-- It is a Paragraph tag for creating the paragraph -->
    <p>
        <b> HTML </b> stands for <i> <u> Hyper Text Markup Language. </u> </i> It
is used to create a web pages and applications. This language is easily
understandable by the user and also be modifiable. It is actually a Markup
language, hence it provides a flexible way for designing the web pages along with
the text.
    </p>
        <!-- It is a Paragraph tag for creating the paragraph -->
        HTML file is made up of different elements. <b> An element </b> is a
collection of <i> start tag, end tag,
        attributes and the text between them</i>.
    </p>
</Body>
</Html>

```

[3.0 Marks]

Q5. Answer this question with your knowledge of Xamarin.

a) Mention two features provided by Xamarin forms.

b) Draw the UI for the following code snippet.

[2.0 Marks]

```

<?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 (hint: Use Grid Layout).

[5.0 Marks]

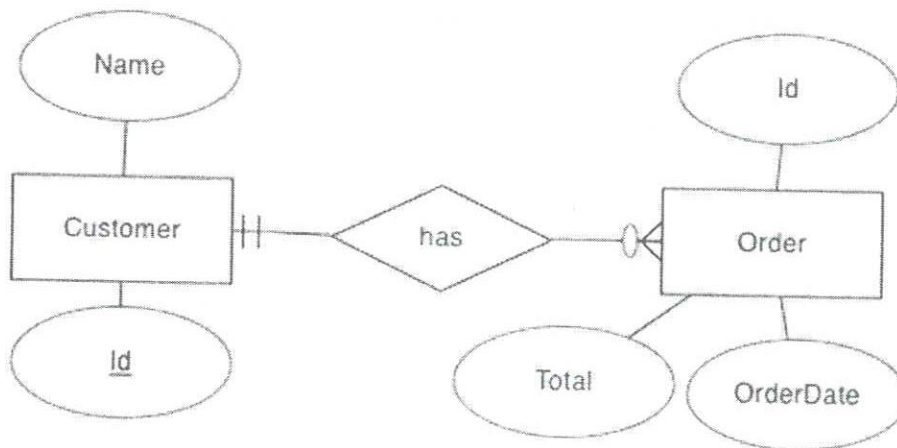


Figure Q2. ER diagram.

# EE4207 - GUI Programming

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
08/01/2022	6.30PM – 8.30PM	Desktop Application Development
08/08/2022	6.30PM – 8.30PM	Web Application Development
08/12/2022	6.30PM – 8.30PM	Mobile Application Development

Figure Q4.

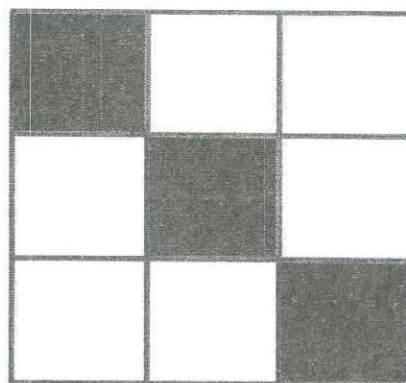


Figure Q5.