



THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

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MAIN EXAMINATION

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AUGUST – DECEMBER 2018 TRIMESTER

FACULTY OF SCIENCE

DEPARTMENT OF COMPUTER AND LIBRARY SCIENCE

REGULAR PROGRAMME

CMT 307: . NET PROGRAMMING

Date: DECEMBER 2018	Duration: 2 Hours
1. INSTRUCTIONS: Answer Question ONE and any other TWO Questions Q1c, 2c, 3d & 5d are practical questions and therefore should be done on PC.	
2. Students SHOULD ensure all the work done on the PC has been successfully saved in their folders bearing APPROPRIATE student registration and submitted for marking at the end of the exam time	
The format of naming the folder is “CMT 307-registration number” e.g. CMT 307-XXXX if the student registration number is “XXXX”	

- Q1. a) Explain any **TWO** mechanisms used by .NET architecture to support multiple programming languages **(4 marks)**
- b) Explain the role of the following components as found in MS visual studio windows environment.
- i) XAML view **(1 mark)**
 - ii) Properties window **(1 mark)**
 - iii) Output window **(1 mark)**
- c) An upcoming matatu Sacco know as “GOLDY Sacco” wishes to automate its day to day operation by creating a windows phone application that will allow an administrator to schedule the fleet of buses they operate.

Create a windows phone project named as “Q1c” add a page known as “ScheduleBuses.xaml” which will allow the administrator capture name of

the bus, registration number, route the bus operates in, fare (per one person) for that route, bus capacity and the bus arrival time.

The page will have an application bar contain the save button. Upon clicking the button, the program shall do the following validations

- i) Check if the administrator has entered all the above data
- ii) Check if the fare and capacity are of type numeric
- iii) Check if the fare and capacity do not contain negative values

If the above three conditions are meet, all the data entered in controls shall be saved in appropriate variables, then a success confirmation message is display for the user. At the same time, the save button on the application bar becomes disabled.

A prompt should also be posed to the user in case they want to schedule another bus. If the yes button is clicked, then all the data entered on the controls should be cleared and the save button enabled again and the above cycle repeats again.

Add new page known as “search.xaml” which will be used by passengers to search for bus availability. The user should key in route name and bus arrival time. The two should be passed to a method known as *searchBus()* which displays available buses if any else, it display appropriate error message. The output should be based on scheduled buses.

The page should have its own customized application bar containing two buttons i.e. search and new buttons. Upon clicking the search button, the above logic should be executed. If the user clicks the new button, it should redirect him/her to the login page which will enable him/her enter username and password. If they match predefined values, the user can be redirected to “ScheduleBuses.xaml” page else an error message should be display to the user. **(20 marks)**

Debug your program and save the project in an appropriate folder bearing your registration

- d) Explain any **THREE** debugging tools developers can use to trace and debugging a C# program **(3 marks)**
- Q2.
- a) When you create a windows phone application, by default, three files will be added to the project. Explain the role of Two of these files **(4 marks)**
 - b) Compare and contrast .NET and J2EE architectures from the following perspective
 - i) Platform independence **(2 marks)**
 - ii) Language support **(2 marks)**

- c) KENHA wishes to create a windows phone application that will allow administrator to add projects they are embarking on so that other users can view them.

Create a new windows phone application named “Q2c” containing two pages i.e. “searchprojects.xaml” and “createprojects.xaml”. When the application starts, the “searchprojects.xaml” should be the first to launch. The page should allow a user to search for projects based on three parameters; project name, project type and location. The page should contain a customized bar containing two buttons; new and search. The three parameters, should be passed to a method known as *findproject* () which displays project start date, end date and contractor name.

The createprojects.xaml should allow a user create a new project by specifying the project, project type, start date, end date, contractor name and location. The page should have a customized application bar which contains a save button. Upon clicking the save button, the following should happen

1. Check if the user has entered all the above information. If no, appropriate error message should be displayed.
2. If all the above information has been entered by the user, the values should be assigned to appropriate variables (same shall be used during search operation by searchprojects page). A confirmation message should be offered by the system then redirect the user to searchprojects.xaml

Debug your program and save the project in an appropriate folder bearing your registration **(12 marks)**

- Q3. a) .Net Framework Class Library provides four key services to .NET programmers. Explain **TWO** of these services. **(4 marks)**
- b) Explain the two types of windows phone applications programmers can create. **(3 marks)**
- c) Explain **THREE** method signatures specified by C# programmers while writing programs in a modular way **(3 marks)**
- d) Create a new windows phone application known as “Q3” which shall allow a student to check if a given course is on offer/not on offer based on four parameter i.e. department name, unit name, semester (e.g. Jan-April,Sept-December) and academic year (e.g. 2017/18). The four parameters should be passed to a method known as *checkunit*() which displays the name of the lecturer teaching the unit, the venue and credit hours for the course if the unit is available based on the four parameters else it should display appropriate error message “

The application should also check if the user has filled all the four parameters beginning the search operation. You may use dummy values to aid in program decision. **(10 Marks)**

- Q4. a) With respect to .NET architecture, discuss how the compilation of source to binary code takes place. Compare the compilation process with that of Java programming **(7 marks)**
- b) Discuss **TWO** reasons behind the two phase compilation by the .NET framework **(4 marks)**
- c) Explain any **TWO** types of loops supported by C# programming language. For each, give an example to demonstrate its usage **(4 marks)**
- d) Explain what is meant by the term “Event Driven Programming” **(2 marks)**
- e) Explain any **THREE** factors motivating Microsoft .NET framework **(3Marks)**
- Q5. a) Explain the major difference between a stack panel control and a relative control as used as layout controls for designing the User Interface of windows phone application **(2 marks)**
- b) Explain the major difference between IL and native code in context of .NET framework **(2 marks)**
- c) While creating windows phone applications, explain any two ways through which the application can be connected to an external data source and when each technique is most applicable **(4 marks)**
- d) .NET framework consists of two major components. Explain the role played by each of them **(4 marks)**
- e) Create a new windows phone application known as “Q5e”. The application should be used allow a user to browse for image from windows phone then display the selected image on a picture box control. Include a customized application bar containing a browse button. Upon clicking the button, the user should be able to perform the above logic.

Debug your program and save the project in an appropriate folder bearing your registration **(8 marks)**

END