INSTITUTE OF TECHNOLOGY SLIGO

AUGUST EXAMINATIONS 2021/2022

MODULE: COMP07105-30546 - Rich Application Development 301

PROGRAMME(S):

SG_KSODV_H08	Bachelor of Science (Honours) in Computing in Software Development
SG_KSODV_B07	Bachelor of Science in Computing in Software Development
SG_KGADV_B07	Bachelor of Science in Computing in Games Development
SG_KCMPU_H08	Bachelor of Science (Honours) in Computing
SG_KCMPU_B07	Bachelor of Science in Computing

STAGE: 3

EXAMINER(S):

Mr. Paul Powell	(Internal)
Carmel O'Hare	(External)

TIME ALLOWED: 3 Hours

INSTRUCTIONS: **Answer all questions.**
This is an Open book exam. You may use any resources at your disposal, but you may not converse with any other person. Accept the starting project from the GitHub classroom link provided at *https://classroom.github.com/a/ikViYfnS* After each part of question 1 is complete commit and push the changes resulting in that part as your ID followed by the Part name (E.G S99999999 Part 1a) before continuing onto the next part of the question. NOTE Marks will be deducted for code that is not working and clearly explained using comments. Marks will be deducted for not using the Activity tracker package provided. You must Submit a supporting Video explaining your work submitted within 12 hours of finishing your exam.

PLEASE DO NOT TURN OVER THIS PAGE UNTIL YOU ARE INSTRUCTED TO DO SO.
The use of programmable or text storing calculators is expressly forbidden.

There are no additional requirements for this paper.

QUESTION 1 ***[TOTAL MARKS: 100]***

Q 1(a) **[10 Marks]**

1. Using the Starting solution provided, create the project structure as shown in **Appendix A Figure 1.** In the Startup.cs class file of the MVC app add the following Track Message in the Configuration Method with your Student Id and Name filled in for the appropriate parameters below

   ActivityAPIClient.Track(StudentID: *[your ID]***, StudentName:** *[Your Name]***, activityName: "Rad301 Autumn 2022", Task: "Exam Start");**

2. Run the MVC App to show the Default Page.
3. ***Commit and Push changes to GitHub*** ***as your ID followed by the Part name (E.G S99999999 Part a)***

Q 1(b) **[20 Marks]**

Examine the Data in the tables provided in **Appendix B**.

1. Add the configuration string provided in **Appendix C** to the Web Config file of the MVC project and the App.config of the class library project.
2. In the class library project create a set of Entity Framework code first classes and a Database Context class called **MemberContext** that will support the data presented in **Appendix B**
3. Enable Migrations in the class library project and in the resulting configuration class file put the following track message in the seed method.

   ActivityAPIClient.Track(StudentID: *[your ID]***, StudentName:** *[Your Name]***, activityName: "Rad301 Autumn 2022", Task: "Seeding Data Model");**

4. Create a migration called **initial-migration-SXXXXXXXX** where SXXXXXXXX is your college ID.
5. Update the database to create the database structure.
6. Seed the data presented in **Appendix B** into the appropriate tables as indicated by your model
7. ***Commit and Push changes to GitHub*** ***as your ID followed by the Part name (E.G S99999999 Part b)***

Q 1(c) **[25 Marks]**

In the Console project.

1. Add the following Activity tracking statement to the Main method

   ActivityAPIClient.Track(StudentID: *[your ID]***, StudentName:** *[Your Name]***, activityName: "Rad301 Autumn 2022 ", Task: "Running Console Queries");**

2. Write a method called **list_loan_to_approve()** that will create an instance of the member Context and print out a list of all the loans which are not approved (Approved field = null) together with member names, their Share balances.

3. Write a method called **list_loan_book()** that will create an instance of the member Context and print out a list of all the loans, and member details of Loans that are currently outstanding (IE not repaid in full).

4. Write a method called **invalid_loans()** that will return a list of loans applications that are greater than twice the share value of the member who has applied for that loan.

5. Run the console app to test your results against the data provided **Appendix B**.
6. ***Commit and Push changes to GitHub*** ***as your ID followed by the Part name (E.G S99999999 Part c)***

Q 1(d) **[20 Marks]**

In the MVC Project with Individual Account Authorisation enabled.

1. Enable Migrations
2. Add the following Track Message in the Seed Method in the Configuration File in the MVC App with your Student Id and Name filled in

   ActivityAPIClient.Track(StudentID: *[your ID]***, StudentName:** *[your ID]***, activityName: " Rad301 Autumn 2022", Task: "Seeding Application Users and roles");**

3. Add a Migration called **MVC-*Initial-Migration***-SXXXXXXX (where SXXXXXXX is your student ID) and Update the Database to create the Authorisation Tables.
4. Seed Users and roles as per the data presented in **Appendix D**.
5. Update the Track Message at the Configuration Method in the Startup.cs file of the MVC App to the Following

   ActivityAPIClient.Track(StudentID: *[your ID]***, StudentName:** *[your ID]***, activityName: "Rad301 Autumn 2022", Task: "Testing Login MVC App");**

6. Run the MVC App and login as the user **admin@terenurecc.ie**
7. ***Commit and Push changes to GitHub*** ***as your ID followed by the Part name (E.G S99999999 Part 1d)***

Q 1(e) **[25 Marks]**

Create a controller called **MemberApplicationHistory** based on the Member Table that will allow a logged in user in a Committee Admin role to view the Loan history for a chosen member. In the constructor for the **MemberApplicationHistory** controller put the following tracker call

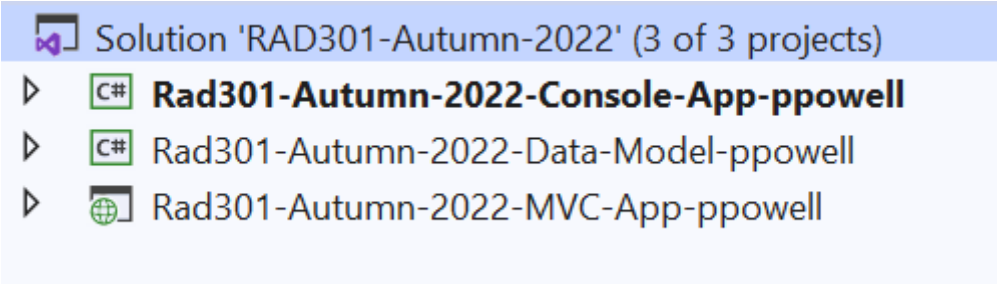
ActivityAPIClient.Track(StudentID: "", StudentName: "",

activityName: " Rad301 Autumn 2022", Task: "Creating Member Application History Controller");

A menu option for the Controller should only appear if the currently logged in user is in the Committee Admin role. ***Commit and Push changes to GitHub*** ***as your ID followed by the Part name (E.G S99999999 Part 1e)***

[End of Question 1]

APPENDICES



Appendix A Solution Structure

Figure 1 Project Structure

The MVC Project is a .NET Framework 4.7.2 ASP.NET C# MVC Project with Authentication set to ***Individual User Accounts****.*

The Project with Data-Model in the name is a .NET 4.7.2 Framework C# class library Project.

The Project with Console in the name is a .NET 4.7.2 Framework C# Console Project.

In all Project names ***Replace*** *the* ***ppowell*** *part of the name with your student number*

Install/Update to the latest version of Entity Framework in all projects in the solution.

Using the NuGet Package manager Console Window install the following package in all projects

Install-Package Tracker -Version 1.0.7-beta

Create a Project dependency from the MVC project to the Data Model Project.
Create a Project dependency from the Console project to the Data Model Project.

Appendix B – The Business Data Model

Table 1 The Member Entities (Member Id is the Primary Key)

Member Table

Member ID	Name	Address	Phone	Share Balance
1	Elizabeth Andersen	8 Johnstown Road, Dublin	(01)-12345322	€ 200.00
2	Catherine Autier Miconi	Garden House Crowther Way, Dublin 20	(01)-62634562	€ 400.00
3	Thomas Axen	1900 Oak St., Dublin 4	(01)-89377483	€ 2,000.00
4	Jean Philippe Bagel	12 Orchestra Terrace, Dublin 20	(01)-12512338	€ 800.00
5	Anna Bedecs	Rue Joseph-Bens 532 Dublin 4	(01)-20926883	€ 600.00
6	John Edwards	125 Terenure Road, D12	(01)-61209934	€ 3,000.00
7	Alexander Eggerer	125 Terenure Drive, D12	(01)-36070308	€ 5,000.00

Table 2 The Loan Application Entities (ID is the Primary Key, Member ID is a foreign key)

Loan Application Table

ID	MemberID	Application Date	Loan Amount	Aproval Date	Approved	Approved By	Repaid In Full
1	1	14/07/2020	€ 67.00	20/07/2020	TRUE	Paul	TRUE
2	1	29/03/2020	€ 315.00	02/04/2020	TRUE	Paul	FALSE
3	2	13/03/2020	€ 2,089.00	19/03/2020			
4	3	26/09/2020	€ 6,000.00	27/09/2020			
5	4	20/06/2020	€ 157.00	22/06/2020	TRUE	Bill	FALSE
6	5	14/02/2020	€ 4,205.00	16/02/2020	TRUE	Paul	FALSE

Appendix C – Connection String for the Web Config

```
<connectionStrings>
   <add name="Rad301Autumn2022Connection"
        connectionString="Data Source=(LocalDb)\MSSQLLocalDB;
        Initial Catalog=RAD301Autumn2022DB-PPOWELL;
        Integrated Security=True"
        providerName="System.Data.SqlClient" />
  </connectionStrings>
```

NOTE: Replace **ppowell** with your College ID in the Initial Catalog entry

Appendix D – Additional Application User details

Table 3 Application User details with Roles indicated

Firstname	Secondname	Email Address	UserName	Password	Role
Paul	Dalton	admin@terenurecc.ie	admin@terenurecc.ie	Admin$1	Committee Admin, Employee
Bill	Bloggs	bloggsb@terenurecc.ie	bloggsb@terenurecc.ie	Employee$1	Committee Admin, Employee
Mary	Bligh	blighb@terenurecc.ie	blighb@terenurecc.ie	Employee$2	Employee
Martha	Rotter	rotterm@terenurecc.ie	rotterm@terenurecc.ie	Employee$3	Employee

[END OF EXAM]