BOP1 — BOP1 TASK 1: C# APPLICATION DEVELOPMENT

SOFTWARE II - ADVANCED C# — C969
PRFA — BOP1

COMPETENCIES

4041.4.1: : Database and File Server Applications
The graduate produces database and file server applications using advanced constructs in a high-level programming language to meet business requirements.

4041.4.2: : Lambda
The graduate incorporates lambda expressions in application development to meet business requirements more efficiently.

4041.4.3: : Collections
The graduate incorporates non-generic collections and generic collections in application development to manipulate data more efficiently.

4041.4.4: : Localization and Globalization
The graduate applies the Multi-Lingual with Localization in application development to support end-users in various geographical regions.

4041.4.5: : Advanced Exception Control
The graduate incorporates advanced exception control mechanisms in application development for improving user experience and application stability.

INTRODUCTION

Throughout your career in software design and development, you will be asked to create applications with various features and criteria based on a variety of business requirements. For this assessment, you will create your own C# application with requirements that mirror those you will encounter in a real-world job assignment.

The skills you will showcase in this assessment are also directly relevant to technical interview questions for future employment. This application should become a portfolio piece for you to show to future employers.

Several attachments and links have been included to help you complete this task. Refer to the "MySQL Virtual Access Instructions" attachment for help accessing the database for your application. Note that this database is for functional purposes only and does not include any pre-existing data. The attached "Database ERD" shows the entity relationship diagram (ERD) for this database, which you can reference as you create your application.

uCertify provides the (mySQL) database you need for this course. **Do not create your own database.**
COS -> Course Materials -> mySQL Database (Lab) -> Create DB
Use the connection string that uCertify provides in order to access the database from your PA code.

The preferred integrated development environment (IDE) for this assignment is Visual Studio. Use the web link "Visual Studio Community" and follow the instructions to install this connector. If you choose to use

another IDE, you must export your project into Visual Studio format for submission.

Your submission should include a zip file with all the necessary code files to compile, support, and run your application. The zip file submission must also keep the project file and folder structure intact for the Visual Studio IDE.

SCENARIO

You are working for a software company that has been contracted to develop a scheduling desktop user interface application. The contract is with a global consulting organization that conducts business in multiple languages and has main offices in Phoenix, Arizona; New York, New York; and London, England. The consulting organization has provided a MySQL database that your application must pull data from. The database is used for other systems and therefore its structure cannot be modified.

The organization outlined specific business requirements that must be included as part of the application. From these requirements, a system analyst at your company created solution statements for you to implement in developing the application. These statements are listed in the requirements section.

REQUIREMENTS

Your submission must be your original work. No more than a combined total of 30% of the submission and no more than a 10% match to any one individual source can be directly quoted or closely paraphrased from sources, even if cited correctly. An originality report is provided when you submit your task that can be used as a guide.

You must use the rubric to direct the creation of your submission because it provides detailed criteria that will be used to evaluate your work. Each requirement below may be evaluated by more than one rubric aspect. The rubric aspect titles may contain hyperlinks to relevant portions of the course.

You are not allowed to use frameworks or external libraries. The database does not contain data, so it needs to be populated. You must use "test" as the user name and password to login.

A. Create a log-in form that can determine the user's location and translate log-in and error control messages (e.g., "The username and password did not match.") into the user's language and in **one** additional language.

B. Provide the ability to add, update, and delete customer records in the database, including name, address, and phone number.

C. Provide the ability to add, update, and delete appointments, capturing the type of appointment and a link to the specific customer record in the database.

D. Provide the ability to view the calendar by month and by week.

E. Provide the ability to automatically adjust appointment times based on user time zones and daylight saving time.

F. Write exception controls to prevent *each* of the following. You may use the same mechanism of exception control more than once, but you must incorporate *at least* **two** different customized mechanisms of

exception control.

- scheduling an appointment outside business hours
- scheduling overlapping appointments
- entering nonexistent or invalid customer data
- entering an incorrect username and password

G. Write **two** or more lambda expressions to make your program more efficient, justifying the use of *each* lambda expression with an in-line comment.

H. Write code to provide reminders and alerts 15 minutes in advance of an appointment, based on the user's log-in.

I. Provide the ability to generate *each* of the following reports using the collection classes:

- number of appointment types by month
- the schedule for *each* consultant
- **one** additional report of your choice

J. Provide the ability to track user activity by recording timestamps for user log-ins in a .txt file, using the collection classes. *Each* new record should be appended to the log file, if the file already exists.

K. Demonstrate professional communication in the content and presentation of your submission.

File Restrictions

File name may contain only letters, numbers, spaces, and these symbols: ! - _ . * ' ( )
File size limit: 200 MB
File types allowed: doc, docx, rtf, xls, xlsx, ppt, pptx, odt, pdf, txt, qt, mov, mpg, avi, mp3, wav, mp4, wma, flv, asf, mpeg, wmv, m4v, svg, tif, tiff, jpeg, jpg, gif, png, zip, rar, tar, 7z

RUBRIC

A. LOG-IN FORM:

NOT EVIDENT	APPROACHING COMPETENCE	COMPETENT
A log-in form is not created, or no code is provided.	The log-in form has limited functionality to determine the user's location or translate log-in and error control messages into the user's language and an additional language, but the code contains errors or is incomplete.	The log-in form has functionality to determine the user's location and translate log-in and error control messages into the user's language and in 1 additional language. The code is complete and functions properly.

B. CUSTOMER RECORDS:

NOT EVIDENT		COMPETENT

No code is provided to add, update, or delete customer records.	**APPROACHING COMPETENCE** The application has limited functionality to add, update, or delete customer records in the database or does not include fields for customer name, address, or phone number. The code contains errors or is incomplete.	The application has functionality to add, update, and delete customer records in the database, including name, address, and phone number. The code is complete and functions properly.

C. APPOINTMENTS:

NOT EVIDENT No code is provided to add, update, or delete appointments.	**APPROACHING COMPETENCE** The application code has limited functionality to add, update or delete appointments, capture the type of appointment, or link the appointments to the specific customer record in the database. The code contains errors or is incomplete.	**COMPETENT** The application code has functionality to add, update, and delete appointments, capture the type of appointment, and link the appointments to the specific customer record in the database. The code is complete and functions properly.

D. CALENDAR VIEWS:

NOT EVIDENT Calendar views are not created, or no code is provided.	**APPROACHING COMPETENCE** The application has limited functionality to view the calendar by month and by week, but the code contains errors or is incomplete.	**COMPETENT** The application has functionality to view the calendar by month and by week. The code is complete and functions properly.

E. TIME ZONES:

NOT EVIDENT No code is provided to adjust appointment times based on user time zones or daylight saving time.	**APPROACHING COMPETENCE** The application has limited functionality to automatically adjust appointment times based on user time zones or daylight saving time. The code contains errors or is incomplete.	**COMPETENT** The application has functionality to automatically adjust appointment times based on user time zones and daylight saving time. The code is complete and functions properly.

F. EXCEPTION CONTROL:

NOT EVIDENT	APPROACHING COMPETENCE	COMPETENT
No exception controls are created, or no code is provided.	The application code includes some exception controls but does not prevent each of the given points or uses only 1 mechanism of exception control. The code contains errors or is incomplete.	The application code includes exception controls to prevent each of the given points and uses at least 2 different mechanisms. The code is complete and functions properly.

G. LAMBDA EXPRESSIONS:

NOT EVIDENT	APPROACHING COMPETENCE	COMPETENT
The application code uses fewer than 2 lambda expressions, or no justification is provided.	The application code includes 2 lambda expressions to make the program more efficient, but the justification of the use of each lambda expression with in-line comments is illogical or the use of lambda expressions is not appropriate. The code contains errors or is incomplete.	The application code includes 2 or more appropriate lambda expressions to make the program more efficient and provides a logical justification of the use of each lambda expression with in-line comments. The code is complete and functions properly.

H. ALERTS:

NOT EVIDENT	APPROACHING COMPETENCE	COMPETENT
No code is provided for alerts.	The application has limited functionality to provide an alert if there is an appointment within 15 minutes of the user's log-in, but the code contains errors or is incomplete.	The application has functionality for an alert if there is an appointment within 15 minutes of the user's log-in. The code is complete and functions properly.

I. REPORTS:

NOT EVIDENT	APPROACHING COMPETENCE	COMPETENT
No code is provided to generate reports.	The application has limited functionality to generate the given reports, but the code contains errors or is incomplete.	The application has functionality to generate each of the given reports. The code is complete and functions properly.

J. ACTIVITY LOG:

NOT EVIDENT	APPROACHING COMPETENCE	COMPETENT
No code is provided to track user activity in a .txt file.	The application has limited functionality to track user activity by recording timestamps for user log-ins in a .txt file or each new record creates a new file instead of being appended to the log file if the file already exists. The code contains errors or is incomplete.	The application has functionality to track user activity by recording timestamps for user log-ins in a .txt file, and each new record is appended to the log file if the file already exists. The code is complete and functions properly.

K. PROFESSIONAL COMMUNICATION :

NOT EVIDENT	APPROACHING COMPETENCE	COMPETENT
Content is unstructured, is disjointed, or contains pervasive errors in mechanics, usage, or grammar. Vocabulary or tone is unprofessional or distracts from the topic.	Content is poorly organized, is difficult to follow, or contains errors in mechanics, usage, or grammar that cause confusion. Terminology is misused or ineffective.	Content reflects attention to detail, is organized, and focuses on the main ideas as prescribed in the task or chosen by the candidate. Terminology is pertinent, is used correctly, and effectively conveys the intended meaning. Mechanics, usage, and grammar promote accurate interpretation and understanding.

WEB LINKS

Visual Studio Community

SUPPORTING DOCUMENTS

DATABASE ERD.pdf