PROG8170

SQA Techniques

Midterm Exam

Due at the time mentioned in eConestoga

100 Marks – Worth 30%

This is an individual based examination. Do your own work and do not share your work with others. Sharing work is an Academic Offense and is subject to a penalty. Be aware that all source code and other documentation is automatically checked by eConestoga upon submission.

*You must also record yourself through a Zoom (preferably Cloud) meeting showing **just** your computer desktop. Not meeting this requirement will cause a zero (0) mark to be provided.*

After submitting the file(s) required for this examination, you can insert the link to your recorded Zoom video in the Comments field of your submission into the "Midterm Videos" assignment folder – link is provided in the description of this assignment folder. Please do this within three (3) hours of the end of the exam time.

This is an OPEN book exam – only material from our eConestoga course may be viewed/reference but not downloaded.

You are to also use the provided MS Word document template for your responses. This document will then be uploaded into eConestoga as part of your submission. Not using this document or altering it will provide a -15% penalty.

After downloading this MS Word document template, please save and rename it as follows:

FirstName_LastName_StudentID_Midterm.docx

Where FirstName, LastName and StudentID (the seven-digit Conestoga ID) are your particulars.

This examination consists of three (3) questions.

Question #1 – Test Case Development (30 marks)

Develop six (6) test cases for covering the following requirements for a mobile application that controls the operation of a high definition, 4K television (TV):

- The application is available on the Apple Store for a free download
- The application allows the user to turn on and off the TV
- The application uses Bluetooth to operate the TV and the device must be within range of it.
  - Upon initial use, the device must pair with the TV over Bluetooth to be operational
- This application allows the user to change channels both up and down as well as to input a three-digit channel. The TV then changes to the channel requested. The valid list of channels is from 1 to 175 inclusively with channels 152, 154 and 158 being reserved channels for government usage.
- The application allows the user to change the volume of the TV up to a maximum volume of 20 and down to a minimum volume of 0 (at which point, the speaker shuts off)

The application is the first version and has not been released previously. For this first release, it is only supported on the iPhone 13 device with iOS 16.

Ensure to develop your test cases in a tabular format showing the Test ID, Test Steps and Expected Outcomes for each test.

Provide your answers in the "Question #1" section of the MS Word template.

Question #2 – Test Execution / Defect Logging (30 marks)

Test the Measurement Conversion application located in eConestoga. You can find the "measurement-conversion-section01.zip" file in the Midterm Assignment Folder (same folder as this document). Download and unzip this file on to your harddrive – instructions are provided below on how to setup / use this file.

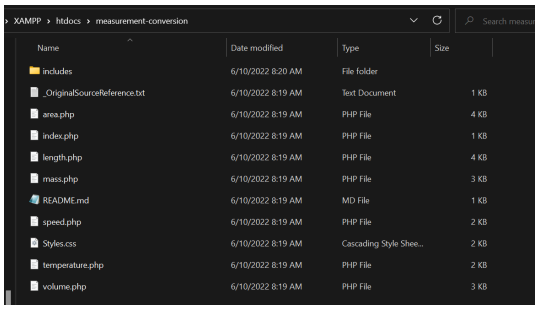
Report five (5) defects you find and one (1) feature request using Azure DevOps. You must use at least three (3) different severity levels for your defects. The requirements of this application are to properly convert measurements from one unit into another. Name your project in Azure DevOps: **YourFirstName_Midterm** (where YourFirstName is your first name)

You may use the following link to confirm your conversions: Unit Converter (unitconverters.net)

For this question you will need XAMPP running on your system.

After starting Apache in XAMPP, follow the following steps:

1st Step: Download the “measurement-conversion.zip” file to your computer.
2nd Step: Extract this .zip file directly into your XAMPP\htdocs folder. You should see the following in your file system:



3rd Step: Open a browser and go to the URL "http://localhost/measurement-conversion/"
Once the application is running, log the defects you encounter in this application using Azure DevOps.

Once you’ve found all the defects/FRs with this application, provide screenshots of the following in to the “Question #2” section of the MS Word template provided for this exam:

- as individual screenshots of each defect in Azure DevOps
- a query from Azure DevOps showing following fields (in order):
  - ID
  - Title
  - Severity
  - Area Path
  - Created By:
  - Created Date:
- as well as an overall view - chart from Azure DevOps of all of the defects grouped by Severity

Finally, analyze the defects logged from this application and provide a recommendation (one – two paragraphs) for whether this application is ready to be released – be sure to defend your position by providing concrete examples of why or why not based on the defects found.

Question #3 – Unit Testing (40 marks)

In eConestoga, you will find a Visual Studio C# .NET Framework Class Library named "PROG81701Midterm.zip".

The requirements for this code are to convert a numeric temperature (in degrees Celsius) provided into the "`TemperatureConverter()`" method into an alphabetic output depicting how cold is it outside. The acceptable range for inputs is from 0.0 to 40.0. Any input outside of this range will present the user with an error.
Download and unzip this solution on to your computer and bring it up in Visual Studio.

Develop fifteen (15) unit test cases for this Class Library – you need to have three (3) test cases per `outputTemp` value that are covering off each case from a boundary value analysis perspective.

Your test cases should contain all the proper NUnit test annotations as well as naming conventions. Each test should be laid out in a clear A-A-A format. Ensure that your tests pass successfully by executing your tests using NUnit (Test Explorer).

Once your tests have run successfully, using the same MS Word template (in the section marked "Question #3") include (in order):

- A screen capture of your successful test run (making sure that the full name of each test is visible).
- A copy of your unit test code from Visual Studio (i.e do not screenshot the test code but copy and paste it).

Include a .zip file with your Visual Studio class library and corresponding unit test cases.

Submissions

The format for submitting the midterm is as follows:

eConestoga submissions:

- A single MS Word document from the template provided and renamed:
  - **FirstName_LastName_StudentID_Midterm.docx** that contains:
    - Assignment Title Page filled in with your name, and student ID.
    - Answers to the above questions
- A single .zip file that contains your code for Question 3 named as follows:
  - **FirstName_LastName_StudentID_Midterm.zip**

The above two files must be submitted prior to the end of the exam time into the **"Midterm"** assignment folder.

- A Zoom video link provided in a text document or as an .mp4 file into the
  - **"Midterm Videos"** assignment folder in eConestoga no later than three (3) hours after the end of your scheduled exam.

Late penalties will apply for any late submissions into eConestoga: -20% within the first five minutes, -100% afterwards. NOTE: the MS Word document and zipped source code must be submitted prior to the due date / time otherwise penalties will be applied.

A -10% penalty will be applied for not following any of the provided instructions.

As this is a technical report, proper spelling and grammar will also be required and marks may be lost for reports that have poor spelling and / or grammar.

A more detailed marking scheme is shown in the Rubric associated with the Assignment Folder in eConestoga.