PROG8170

Programming: SQA Techniques

**Assignment #4 – Automation Functional Testing**

**Due at the time specified in eConestoga for your class**

**100 Marks – worth 10%**

*This is an individual based assignment. Do your own work and do not share your work with others outside of your group. 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.*

In this assignment we will move from unit testing, and integration testing, into system testing. To this end, you will test a prototype of a browser-based Web application using Selenium.

The software will determine (a) if insurance is to be provided and if so, (b) the insurance rate/quote of an individual based on their age, number accidents and their driving experience. The **business requirements** are as follows:

* *If the driver has 3 or more accidents on record, refuse to provide them with insurance. Otherwise, provide them with insurance.*
* *If the driver has no driving experience, apply a base rate of $6000 annually. If a driver has 1 to 9 years of experience, apply a base rate of $4500 annually. Otherwise, apply a base rate of $3000 annually.*
* *If a driver is 30 years old or older and have at least two years of driving experience, apply a rate reduction of 27% of the base rate.*

**From the business requirements listed above, develop a set of three decision tables**:

* The first decision table listing out all of the possible / valid combinations
* The second decision table properly showing the “don’t care” situations
* The third decision table showing the reduced set of columns.

After having created your decision tables, derive the test cases from the third decision table in a tabular format. Ensure to show the Test ID, Test Steps and Expected Outcomes in these tests.

You may use Excel to create your decision tables as well as the derived test cases, but they all need to be copied and pasted into your MS Word document.

The **design requirements** for this application requires the following **mandatory** input fields:

* Name (separated by First Name and Last Name)
* Address
* City
* Province
* Postal Code (acceptable format: ANA NAN – where “A” is any alphabetic character and “N” is a valid numeric digit e.g. N2L 3G1 would be the only acceptable format)
* Phone number with acceptable formats: 123-123-1234, or (123)123-1234 only.
* Email address (consisting of [username@domain.ext](mailto:username@domain.ext) such as [baljeet@mail.com](mailto:baljeet@mail.com))
* Age (a positive integer greater than or equal to 16)
* Experience (a positive integer greater than or equal to 0)
  + **Note:** the difference between (age) & (experience) has to be greater than or equal to 16
    - For instance, a person who is 50 years old cannot have more than 34 years’ experience
* Number of Accidents (again, a positive integer greater than or equal to 0)

**Now, create fifteen (15) system test cases (using the Selenium Web Driver and NUnit**) to test this application (available in eConestoga). You must have the following nine mandatory tests as part of your fifteen tests (in order):

1. Your first and last name with all remaining fields with valid data, Age = 25, Driving Experience = 3, Accidents = 0
2. Your first and last name with all remaining fields with valid data, Age = 25, Driving Experience = 3, Accidents = 2
3. Your first and last name with all remaining fields with valid data, Age = 35, Driving Experience = 10, Accidents = 4
4. Invalid phone number with all remaining fields with valid data, Age = 27, Driving Experience = 3, Accidents = 0
5. Invalid email address with all remaining fields with valid data, Age = 28, Driving Experience = 3, Accidents = 0
6. Invalid postal code with all remaining fields with valid data, Age = 35, Driving Experience = 17, Accidents = 1
7. Age omitted with all remaining fields with valid data, Driving Experience = 5, Accidents = 0
8. Number of at-fault accidents omitted with all remaining fields with valid data, Age = 37, Driving Experience = 8
9. Years of Driving Experience omitted with all remaining fields with valid data, Age = 45, Accidents = 0

The remaining six (6) tests are of your choosing but must fully test all remaining business requirements mentioned above, derived in your test cases and must be unique and cannot repeat the tests already performed. **Note:** an “Invalid” test is NOT the same as an “Omit” test.

You will need to append a number corresponding to the above test to the first portion of your test name (what you’re testing) so that the tests are in the proper order such as: **InsuranceQuote01\_..., InsuranceQuote02**\_...etc…

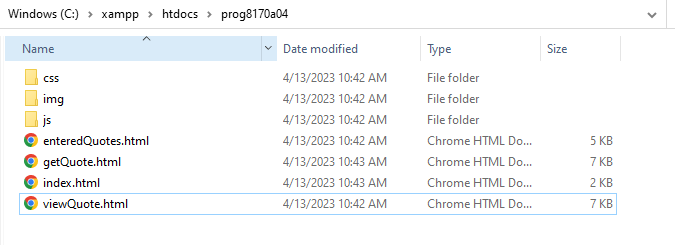
There is no need to test your application with anything other than Firefox (or Chrome) as your Web client. You may use the Selenium IDE to create your tests, but ultimately, these tests must run through the Visual Studio Test Explorer.

Take a video (using a screen recorder such as Zoom) of your tests running and upload along with your submission. Save the recording locally to your computer and then upload it.

Please ensure to use the proper naming and formatting conventions for the tests.

**To deploy this application:**

1. Ensure that your Apache server is running on your XAMPP,
2. Download the prog8170a04 – section 01.zip from eConestoga
3. Extract this file underneath the XAMPP\htdocs folder. You should see something similar to the following:



1. In your browser, go to the following link: [http://localhost/prog8170a0](http://localhost/prog8170a03)4 and ensure that it is working before starting to create any of your testcases.

**For this assignment you must also use a form of version control**. You must use Git through Git Bash or GitHub. Provide a screenshot of at least three commits you have made (for example, as you’re creating your test cases). Ensure that you are providing meaningful commit messages.

**Submissions**

The format for submitting the assignment is as follows: eConestoga submissions:

1. **A single MS** Word document named:

**FirstName\_LastName\_StudentID\_Assignment4.docx**

Where FirstName, LastName and StudentID are your particulars.

that contains (in order):

* 1. Assignment Title Page with your name, student ID, “Assignment #3” in the title and date
  2. Decision tables along with the derived test cases
  3. Source code for all C# system tests (copied and pasted from Visual Studio, no screenshots)
  4. A screenshot of your Visual Studio Test Explorer that shows the full name (as much as possible) of your tests and the results of their execution. Do not submit individual screenshots but rather one, showing all fifteen tests.
  5. Your commits from the Version Control System (Git/GitHub).

1. **Video (in .mp4 or .avi format):** of all your tests running (-20% penalty for not uploading this video)
2. **Source Code (zipped)**: A single compressed (.zip format) archive file containing your source code for your test case code. Do not include the MS Word document in the .zip file - keep them separate (-10% penalty if otherwise)

**Late penalties will apply for any late submissions.**

**A -10% penalty will be applied for any files that are zipped up or not using the correct naming format.**

**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.**