PROG8171-Software Quality

Assignment #4 – Automation Functional Testing

AMARNATH KATHIRESAN – 8894874 - 04/09/24

1. **Decision Tables and Derived Test Cases**

* **Decision Table – 1:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| *All*  *Possible/*  *Valid Combinations for Insurance Provision.* | **S.No** | **Age** | **Driving Experience** | **Number of Accidents** | **Insurance Provided** | **Annual Rate** |
| **1** | **<30** | **0** | **0-2** | **Yes** | **$7000** |
| **2** | **<30** | **0** | **>=3** | **No** | **N/A** |
| **3** | **<30** | **1-9** | **0-2** | **Yes** | **$5500** |
| **4** | **<30** | **1-9** | **>=3** | **No** | **N/A** |
| **5** | **<30** | **>=10** | **0-2** | **Yes** | **$4000** |
| **6** | **<30** | **>=10** | **>=3** | **No** | **N/A** |
| **7** | **>=30** | **<2** | **0-2** | **Yes** | **$7000** |
| **8** | **>=30** | **<2** | **>=3** | **No** | **N/A** |
| **9** | **>=30** | **>=2** | **0-2** | **Yes (Reduced Rate 29%)** | **$4950** |
| **10** | **>=30** | **>=2** | **>=3** | **No** | **N/A** |

**Table 1 : Decision Table - 1**

* **Decision Table – 2:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| *Identification of  'Don't Care' Scenarios in Insurance Decisions* | **S.No** | **Age** | **Driving Experience** | **Number of Accidents** | **Insurance Provided** | **Annual Rate** |
| **1** | **<30** | **0** | **0-2** | **Yes** | **$7000** |
| 2 | <30 | 0 | >=3 | No | N/A |
| **3** | **<30** | **1-9** | **0-2** | **Yes** | **$5500** |
| 4 | <30 | 1-9 | >=3 | No | N/A |
| **5** | **<30** | **>=10** | **0-2** | **Yes** | **$4000** |
| 6 | <30 | >=10 | >=3 | No | N/A |
| **7** | **>=30** | **<2** | **0-2** | **Yes** | **$7000** |
| 8 | >=30 | <2 | >=3 | No | N/A |
| **9** | **>=30** | **>=2** | **0-2** | **Yes (Reduced Rate 29%)** | **$4950** |
| 10 | >=30 | >=2 | >=3 | No | N/A |

**Table 2 : Decision Table - 2**

* **Decision Table – 3:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Streamlined Analysis of Key Factors in  Insurance Determination* | **S.No** | **Age>=30** | **Driving Experience** | **Insurance Provided** | **Annual Rate** |
| **1** | **No** | **0** | **Yes** | **$7000** |
| **2** | **No** | **1-9** | **Yes** | **$5500** |
| **3** | **No** | **>=10** | **Yes** | **$4000** |
| **4** | **Yes** | **<2** | **Yes** | **$7000** |
| **5** | **Yes** | **>=2** | **Yes (Reduced Rate 29%)** | **$4950** |

**Table 3 : Decision Table - 3**

* **Derived Test Cases:**

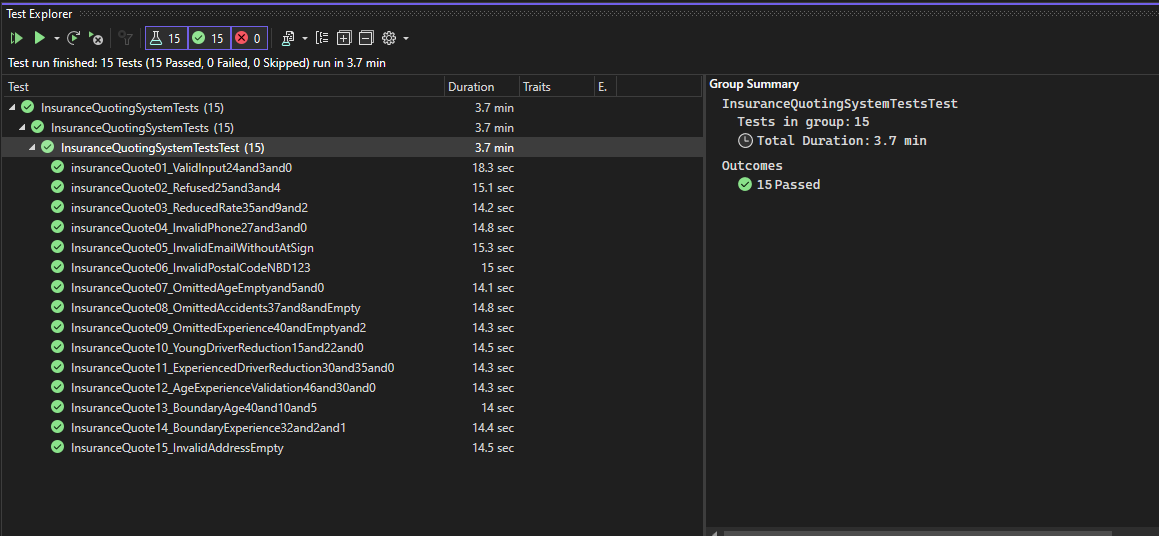
|  |  |  |
| --- | --- | --- |
| **Test ID** | **Test Steps** | **Expected Outcome** |
| InsuranceQuote01\_ValidInput | 1. Enter valid name, address, city, province, and postal code. 2. Enter Age = 24, Experience = 3, Accidents = 0. 3. Submit the quote request. | Verify that the system displays a quote with insurance provided and the annual rate should be $5500. |
| InsuranceQuote02\_Refused | 1. Enter valid name, address, city, province, and postal code. 2. Enter Age = 25, Experience = 3, Accidents = 4. 3. Submit the quote request. | Verify that the System displays a message that states that insurance is refused.  No annual rate should be displayed |
| InsuranceQuote03\_ReducedRate | 1. Enter valid name, address, city, province, and postal code. 2. Enter Age = 35, Experience = 9, Accidents = 2. 3. Submit the quote request. | Verify that the System displays a quote that includes the insurance provided.  Annual rate should be $4950 (29% reduction). |
| InsuranceQuote04\_InvalidPhone | 1. Enter valid name, address, city, province, and postal code. 2. Enter Age = 27, Experience = 3, Accidents = 0. 3. Enter an invalid phone number (e.g., 123-456). 4. Submit the quote request. | Verify that the system displays an error message indicating an invalid phone number format. |
| InsuranceQuote05\_InvalidEmail | 1. Enter valid name, address, city, province, and postal code. 2. Enter Age = 28, Experience = 3, Accidents = 0. 3. Enter an invalid email address (e.g., missing "@"). 4. Submit the quote request. | Verify that the system displays an error message indicating an invalid email address format. |
| InsuranceQuote06\_InvalidPostalCode | 1. Enter valid name, address, city, province, and postal code  with invalid format (e.g., ABC 123). 2. Enter Age = 35, Experience = 15, Accidents = 1. 3. Submit the quote request. | Verify that the system displays an error message indicating an invalid postal code format. |
| InsuranceQuote07\_OmittedAge | 1. Enter valid name, address, city, province, and postal code. 2. Enter Experience = 5, Accidents = 0 (leave Age blank). 3. Submit the quote request. | Verify that the system displays an error message indicating a missing age. |
| InsuranceQuote08\_OmittedAccidents | 1. Enter valid name, address, city, province, and postal code. 2. Enter Age = 37, Driving Experience = 8 (leave Accidents blank). 3. Submit the quote request. | Verify that the system displays an error message indicating missing information about the number of accidents. |
| InsuranceQuote09\_OmittedExperience | 1. Enter valid name, address, city, province, and postal code. 2. Enter Age = 40, Accidents = 2 (leave Experience blank). 3. Submit the quote request. | Verify that the system displays an error message indicating missing information about the driving experience. |
| InsuranceQuote10\_YoungDriverReduction | 1. Enter valid name, address, city, province, and postal code. 2. Enter Age = 15, Experience = 2, Accidents = 0. 3. Submit the quote request. | Verify that the system displays an error message indicating the minimum age requirement (16 years old). |
| InsuranceQuote11\_ExperiencedDriverReduction | 1. Enter valid name, address, city, province, and postal code. 2. Enter Age = 30, Experience = 35 (invalid - experience cannot  be greater than age),Accidents = 0. 3. Submit the quote request. | Verify that the system displays an error message indicating invalid experience exceeding age. |
| InsuranceQuote12\_AgeExperienceValidation | 1. Enter valid name, address, city, province, and postal code. 2. Enter Age = 46, Experience = 30 (16-year difference),Accidents = 0. 3. Submit the quote request. | Verify that the system processes the quote request (valid  for someone over 30 with at least 2 years of experience). |
| InsuranceQuote13\_BoundaryAge | 1. Enter valid name, address, city, province, and postal code. 2. Enter Age = 40, Experience = 10, Accidents = 5. 3. Submit the quote request. | Verify that the system displays a message denying  insurance (denied for over 30 with 3 or more accidents). |
| InsuranceQuote14\_BoundaryExperience | 1. Enter valid name, address, city, province, and postal code. 2. Enter Age = 32, Experience = 2 (minimum), Accidents = 1. 3. Submit the quote request. | Verify that the system processes the quote(valid for someone over 30 with at least 2 years of experience). |
| InsuranceQuote15\_InvalidAddress | 1. Enter valid name, city, province, postal code. 2. Enter Age = 45, Experience = 10, Accidents = 1. 3. Omit street name from the address. 4. Submit request. | Verify that the system displays an error message indicating a missing street name in the address. |

**Table 4 : Derived Test Cases**

1. **C# System Test Scripts**

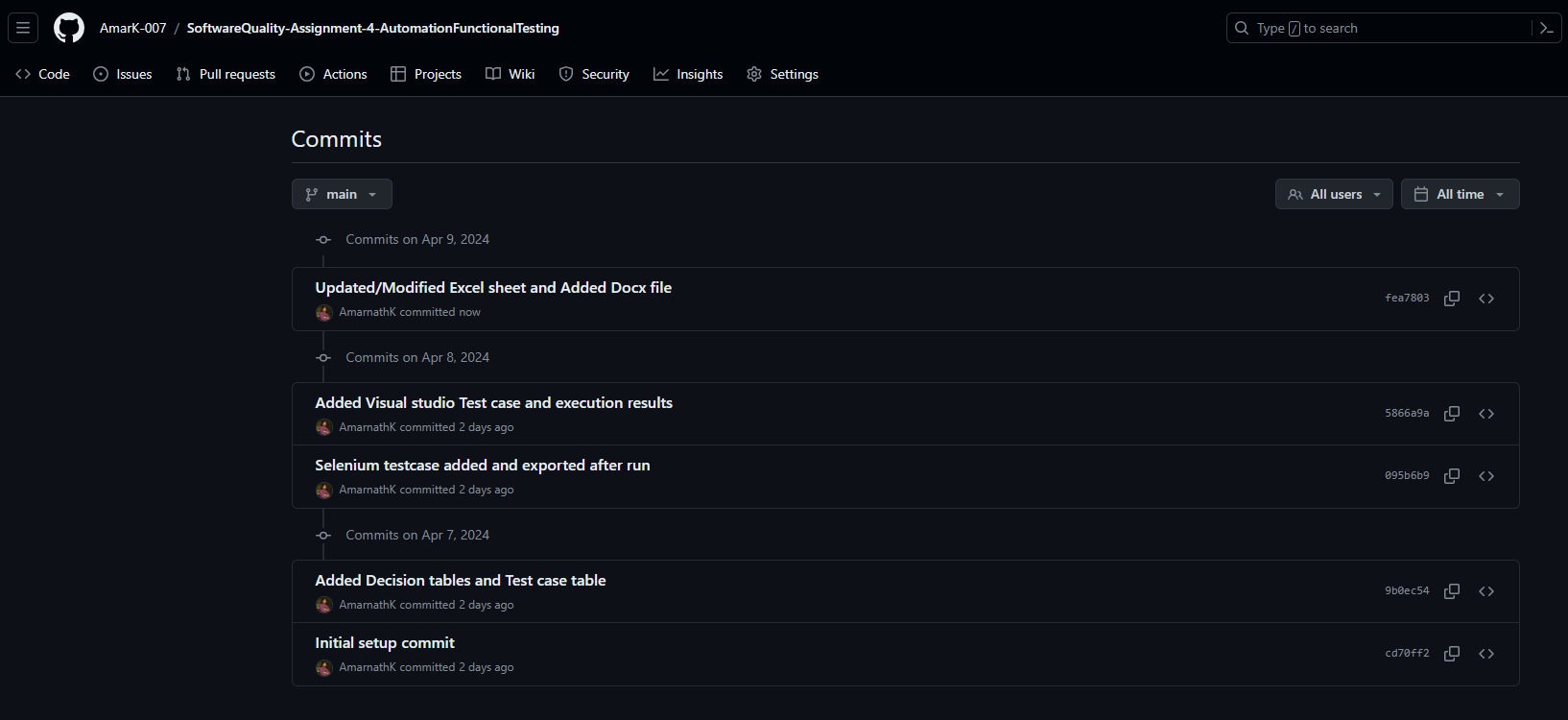
using System;  
using System.Collections.Generic;  
using System.Linq;  
using System.Text;  
using System.Threading.Tasks;  
using System.Collections;  
using System.Threading;  
using OpenQA.Selenium;  
using OpenQA.Selenium.Firefox;  
using OpenQA.Selenium.Remote;  
using OpenQA.Selenium.Support.UI;  
using OpenQA.Selenium.Interactions;  
using NUnit.Framework;  
  
namespace InsuranceQuotingSystemTests {  
[TestFixture]  
public class InsuranceQuotingSystemTestsTest {  
 private IWebDriver driver;  
 public IDictionary<string, object> vars { get; private set; }  
 private IJavaScriptExecutor js;  
 [SetUp]  
 public void SetUp() {  
 driver = new FirefoxDriver();  
 js = (IJavaScriptExecutor) driver;  
 vars = new Dictionary<string, object>();  
 }  
 [TearDown]  
 protected void TearDown() {  
 driver.Quit();  
 }  
 string baseURL = "http://localhost/prog8171a04/";  
[Test]  
 public void insuranceQuote01\_ValidInput24and3and0() {  
 // Arrange  
 driver.Navigate().GoToUrl(baseURL);  
 driver.Manage().Window.Size = new System.Drawing.Size(973, 1032);  
  
 // Act  
 driver.FindElement(By.CssSelector(".btn")).Click();  
 driver.FindElement(By.Id("firstName")).Click();  
 driver.FindElement(By.Id("firstName")).SendKeys("Amarnath");  
 driver.FindElement(By.Id("lastName")).Click();  
 driver.FindElement(By.Id("lastName")).SendKeys("Kathiresan");  
 driver.FindElement(By.Id("address")).Click();  
 driver.FindElement(By.Id("address")).SendKeys("365 Albert St");  
 driver.FindElement(By.Id("city")).Click();  
 driver.FindElement(By.Id("city")).SendKeys("Waterloo");  
 driver.FindElement(By.Id("postalCode")).Click();  
 driver.FindElement(By.Id("postalCode")).SendKeys("N2L 0G7");  
 driver.FindElement(By.Id("phone")).Click();  
 driver.FindElement(By.Id("phone")).SendKeys("226-898-4990");  
 driver.FindElement(By.Id("email")).Click();  
 driver.FindElement(By.Id("email")).SendKeys("k.amarnath7@gmail.com");  
 driver.FindElement(By.Id("age")).Click();  
 driver.FindElement(By.Id("age")).SendKeys("24");  
 driver.FindElement(By.Id("experience")).Click();  
 driver.FindElement(By.Id("experience")).SendKeys("3");  
 driver.FindElement(By.Id("accidents")).Click();  
 driver.FindElement(By.Id("accidents")).SendKeys("0");  
 driver.FindElement(By.Id("btnSubmit")).Click();  
  
 // Assert  
 {  
 string value = driver.FindElement(By.Id("finalQuote")).GetAttribute("value");  
 Assert.That(value, Is.EqualTo("$5500"));  
 }  
 }  
  
[Test]  
 public void insuranceQuote02\_Refused25and3and4() {  
 // Arrange  
 driver.Navigate().GoToUrl(baseURL);  
 driver.Manage().Window.Size = new System.Drawing.Size(973, 1032);  
  
 // Act  
 driver.FindElement(By.CssSelector(".btn")).Click();  
 driver.FindElement(By.Id("firstName")).Click();  
 driver.FindElement(By.Id("firstName")).SendKeys("amarnath");  
 driver.FindElement(By.Id("lastName")).Click();  
 driver.FindElement(By.Id("lastName")).SendKeys("Kathiresan");  
 driver.FindElement(By.Id("address")).SendKeys("U683, Floor 8, 365-6 Albert St");  
 driver.FindElement(By.Id("city")).SendKeys("Waterloo");  
 driver.FindElement(By.Id("postalCode")).SendKeys("N2L 0G7");  
 driver.FindElement(By.Id("email")).Click();  
 driver.FindElement(By.Id("email")).SendKeys("k.amarnath7@gmail.com");  
 driver.FindElement(By.Id("phone")).Click();  
 driver.FindElement(By.Id("phone")).SendKeys("226-898-4990");  
 driver.FindElement(By.Id("age")).Click();  
 driver.FindElement(By.Id("age")).SendKeys("25");  
 driver.FindElement(By.Id("experience")).Click();  
 driver.FindElement(By.Id("experience")).SendKeys("3");  
 driver.FindElement(By.Id("accidents")).Click();  
 driver.FindElement(By.Id("accidents")).SendKeys("4");  
 driver.FindElement(By.Id("btnSubmit")).Click();  
 driver.FindElement(By.CssSelector(".container")).Click();  
 driver.FindElement(By.CssSelector(".container")).Click();  
  
 // Assert  
 {  
 string value = driver.FindElement(By.Id("finalQuote")).GetAttribute("value");  
 Assert.That(value, Is.EqualTo("No Insurance for you!! Too many accidents - go take a course!"));  
 }  
  
 }  
  
[Test]  
 public void insuranceQuote03\_ReducedRate35and9and2() {  
 // Arrange  
 driver.Navigate().GoToUrl(baseURL);  
 driver.Manage().Window.Size = new System.Drawing.Size(1936, 1048);  
  
 // Act  
 driver.FindElement(By.CssSelector(".btn")).Click();  
 driver.FindElement(By.Id("firstName")).Click();  
 driver.FindElement(By.Id("firstName")).SendKeys("Amarnath");  
 driver.FindElement(By.Id("lastName")).SendKeys("Kathiresan");  
 driver.FindElement(By.Id("address")).SendKeys("U683, Floor 8, 365-6 Albert St");  
 driver.FindElement(By.Id("city")).SendKeys("Waterloo");  
 driver.FindElement(By.Id("postalCode")).SendKeys("N2L 0G7");  
 driver.FindElement(By.Id("age")).Click();  
 driver.FindElement(By.Id("email")).Click();  
 driver.FindElement(By.Id("email")).SendKeys("k.amarnath7@gmail.com");  
 driver.FindElement(By.Id("phone")).Click();  
 driver.FindElement(By.Id("phone")).SendKeys("226-898-4990");  
 driver.FindElement(By.Id("age")).Click();  
 driver.FindElement(By.Id("age")).SendKeys("35");  
 driver.FindElement(By.Id("experience")).Click();  
 driver.FindElement(By.Id("experience")).SendKeys("9");  
 driver.FindElement(By.Id("accidents")).Click();  
 driver.FindElement(By.Id("accidents")).SendKeys("2");  
 driver.FindElement(By.Id("btnSubmit")).Click();  
  
 // Assert  
 {  
 string value = driver.FindElement(By.Id("finalQuote")).GetAttribute("value");  
 Assert.That(value, Is.EqualTo("$3905"));  
 }  
 }  
  
[Test]  
 public void insuranceQuote04\_InvalidPhone27and3and0() {  
 // Arrange  
 driver.Navigate().GoToUrl(baseURL);  
 driver.Manage().Window.Size = new System.Drawing.Size(973, 1032);  
  
 // Act  
 driver.FindElement(By.CssSelector(".btn")).Click();  
 driver.FindElement(By.Id("firstName")).Click();  
 driver.FindElement(By.Id("firstName")).SendKeys("Amarnath");  
 driver.FindElement(By.Id("lastName")).SendKeys("Kathiresan");  
 driver.FindElement(By.Id("address")).SendKeys("U683, Floor 8, 365-6 Albert St");  
 driver.FindElement(By.Id("city")).SendKeys("Waterloo");  
 driver.FindElement(By.Id("postalCode")).SendKeys("N2L 0G7");  
 driver.FindElement(By.Id("email")).Click();  
 driver.FindElement(By.Id("phone")).Click();  
 driver.FindElement(By.Id("phone")).SendKeys("22689849");  
 driver.FindElement(By.Id("email")).Click();  
 driver.FindElement(By.Id("email")).SendKeys("k.amarnath7@gmail.com");  
 driver.FindElement(By.Id("age")).Click();  
 driver.FindElement(By.Id("age")).SendKeys("27");  
 driver.FindElement(By.Id("experience")).Click();  
 driver.FindElement(By.Id("experience")).SendKeys("3");  
 driver.FindElement(By.Id("accidents")).Click();  
 driver.FindElement(By.Id("accidents")).SendKeys("0");  
 driver.FindElement(By.Id("btnSubmit")).Click();  
 driver.FindElement(By.CssSelector("body")).Click();  
  
 // Assert  
 Assert.That(driver.FindElement(By.Id("phone-error")).Text, Is.EqualTo("Phone Number must follow the patterns 111-111-1111 or (111)111-1111"));  
 }  
  
[Test]  
 public void InsuranceQuote05\_InvalidEmailWithoutAtSign() {  
 // Arrange  
 driver.Navigate().GoToUrl(baseURL);  
 driver.Manage().Window.Size = new System.Drawing.Size(1936, 1048);  
  
 // Act  
 driver.FindElement(By.CssSelector(".btn")).Click();  
 driver.FindElement(By.Id("firstName")).Click();  
 driver.FindElement(By.Id("firstName")).SendKeys("Amarnath");  
 driver.FindElement(By.Id("lastName")).SendKeys("Kathiresan");  
 driver.FindElement(By.Id("address")).SendKeys("U683, Floor 8, 365-6 Albert St");  
 driver.FindElement(By.Id("city")).SendKeys("Waterloo");  
 driver.FindElement(By.Id("postalCode")).SendKeys("N2L 0G7");  
 driver.FindElement(By.Id("email")).SendKeys("k.amarnath7gmail.com");  
 driver.FindElement(By.Id("age")).Click();  
 driver.FindElement(By.Id("age")).SendKeys("28");  
 driver.FindElement(By.Id("experience")).Click();  
 driver.FindElement(By.Id("experience")).SendKeys("3");  
 driver.FindElement(By.Id("accidents")).Click();  
 driver.FindElement(By.Id("accidents")).SendKeys("0");  
 driver.FindElement(By.Id("addForm")).Click();  
 driver.FindElement(By.Id("btnSubmit")).Click();  
 driver.FindElement(By.Id("phone")).Click();  
 driver.FindElement(By.Id("phone")).Click();  
 driver.FindElement(By.Id("phone")).Click();  
 driver.FindElement(By.Id("phone")).SendKeys("226-898-4990");  
 driver.FindElement(By.Id("btnSubmit")).Click();  
 driver.FindElement(By.CssSelector("body")).Click();  
 driver.FindElement(By.Id("email-error")).Click();  
  
 // Assert  
 Assert.That(driver.FindElement(By.Id("email-error")).Text, Is.EqualTo("Must be a valid email address"));  
 }  
  
[Test]  
 public void InsuranceQuote06\_InvalidPostalCodeNBD123() {  
 // Arrange  
 driver.Navigate().GoToUrl(baseURL);  
 driver.Manage().Window.Size = new System.Drawing.Size(682, 649);  
  
 // Act  
 driver.FindElement(By.CssSelector(".btn")).Click();  
 driver.FindElement(By.Id("firstName")).Click();  
 driver.FindElement(By.Id("firstName")).SendKeys("Amarnath");  
 driver.FindElement(By.Id("lastName")).SendKeys("Kathiresan");  
 driver.FindElement(By.Id("address")).SendKeys("U683, Floor 8, 365-6 Albert St");  
 driver.FindElement(By.Id("city")).SendKeys("Waterloo");  
 driver.FindElement(By.Id("phone")).Click();  
 driver.FindElement(By.Id("phone")).SendKeys("226-898-4990");  
 driver.FindElement(By.Id("postalCode")).Click();  
 driver.FindElement(By.Id("postalCode")).SendKeys("NBD123");  
 driver.FindElement(By.Id("email")).Click();  
 driver.FindElement(By.Id("email")).SendKeys("k.amarnath7@gmail.com");  
 driver.FindElement(By.Id("age")).Click();  
 driver.FindElement(By.Id("age")).SendKeys("35");  
 driver.FindElement(By.Id("experience")).Click();  
 driver.FindElement(By.Id("experience")).SendKeys("15");  
 driver.FindElement(By.Id("accidents")).Click();  
 driver.FindElement(By.Id("accidents")).SendKeys("1");  
 driver.FindElement(By.CssSelector(".card-body")).Click();  
 driver.FindElement(By.Id("btnSubmit")).Click();  
 driver.FindElement(By.CssSelector("body")).Click();  
 driver.FindElement(By.CssSelector(".col-md-2")).Click();  
 // Assert  
 Assert.That(driver.FindElement(By.Id("postalCode-error")).Text, Is.EqualTo("Postal Code must follow the pattern A1A 1A1"));  
 }  
  
[Test]  
 public void InsuranceQuote07\_OmittedAgeEmptyand5and0() {  
 // Arrange  
 driver.Navigate().GoToUrl(baseURL);  
 driver.Manage().Window.Size = new System.Drawing.Size(682, 649);  
  
 // Act  
 driver.FindElement(By.CssSelector(".btn")).Click();  
 driver.FindElement(By.Id("firstName")).Click();  
 driver.FindElement(By.Id("firstName")).SendKeys("Amarnath");  
 driver.FindElement(By.Id("lastName")).SendKeys("Kathiresan");  
 driver.FindElement(By.Id("address")).SendKeys("U683, Floor 8, 365-6 Albert St");  
 driver.FindElement(By.Id("city")).SendKeys("Waterloo");  
 driver.FindElement(By.Id("postalCode")).SendKeys("N2L 0G7");  
 driver.FindElement(By.Id("phone")).Click();  
 driver.FindElement(By.Id("phone")).SendKeys("226-898-4990");  
 driver.FindElement(By.Id("email")).Click();  
 driver.FindElement(By.Id("email")).SendKeys("k.amarnath7@gmail.com");  
 driver.FindElement(By.Id("experience")).Click();  
 driver.FindElement(By.Id("experience")).SendKeys("5");  
 driver.FindElement(By.Id("accidents")).Click();  
 driver.FindElement(By.Id("accidents")).SendKeys("0");  
 driver.FindElement(By.Id("btnSubmit")).Click();  
 driver.FindElement(By.CssSelector(".card-body > .form-group:nth-child(1)")).Click();  
 // Assert  
 Assert.That(driver.FindElement(By.Id("age-error")).Text, Is.EqualTo("Age (>=16) is required"));  
 }  
  
[Test]  
 public void InsuranceQuote08\_OmittedAccidents37and8andEmpty() {  
 // Arrange  
 driver.Navigate().GoToUrl(baseURL);  
 driver.Manage().Window.Size = new System.Drawing.Size(1936, 1048);  
  
 // Act  
 driver.FindElement(By.CssSelector(".btn")).Click();  
 driver.FindElement(By.Id("firstName")).Click();  
 driver.FindElement(By.Id("firstName")).SendKeys("Amarnath");  
 driver.FindElement(By.Id("lastName")).SendKeys("Kathiresan");  
 driver.FindElement(By.Id("address")).SendKeys("U683, Floor 8, 365-6 Albert St");  
 driver.FindElement(By.Id("city")).SendKeys("Waterloo");  
 driver.FindElement(By.Id("postalCode")).SendKeys("N2L 0G7");  
 driver.FindElement(By.Id("phone")).Click();  
 driver.FindElement(By.Id("phone")).SendKeys("226-898-4990");  
 driver.FindElement(By.Id("email")).Click();  
 driver.FindElement(By.Id("email")).SendKeys("k.amarnath7@gmail.com");  
 driver.FindElement(By.Id("age")).Click();  
 driver.FindElement(By.Id("age")).SendKeys("37");  
 driver.FindElement(By.Id("experience")).Click();  
 driver.FindElement(By.Id("experience")).SendKeys("8");  
 driver.FindElement(By.Id("btnSubmit")).Click();  
 driver.FindElement(By.Id("accidents-error")).Click();  
 driver.FindElement(By.Id("accidents-error")).Click();  
 driver.FindElement(By.CssSelector("body")).Click();  
 driver.FindElement(By.CssSelector(".card-body > .form-group:nth-child(3)")).Click();  
  
 // Assert  
 Assert.That(driver.FindElement(By.Id("accidents-error")).Text, Is.EqualTo("Number of accidents is required"));  
 }  
  
[Test]  
 public void InsuranceQuote09\_OmittedExperience40andEmptyand2() {  
 // Arrange  
 driver.Navigate().GoToUrl(baseURL);  
 driver.Manage().Window.Size = new System.Drawing.Size(1936, 1048);  
  
 // Act  
 driver.FindElement(By.CssSelector(".btn")).Click();  
 driver.FindElement(By.Id("firstName")).Click();  
 driver.FindElement(By.Id("firstName")).SendKeys("Amarnath");  
 driver.FindElement(By.Id("lastName")).SendKeys("Kathiresan");  
 driver.FindElement(By.Id("address")).SendKeys("U683, Floor 8, 365-6 Albert St");  
 driver.FindElement(By.Id("city")).SendKeys("Waterloo");  
 driver.FindElement(By.Id("postalCode")).SendKeys("N2L 0G7");  
 driver.FindElement(By.Id("phone")).Click();  
 driver.FindElement(By.Id("phone")).SendKeys("226-898-4990");  
 driver.FindElement(By.Id("email")).Click();  
 driver.FindElement(By.Id("email")).SendKeys("k.amarnath7@gmail.com");  
 driver.FindElement(By.Id("age")).Click();  
 driver.FindElement(By.Id("age")).SendKeys("40");  
 driver.FindElement(By.Id("accidents")).Click();  
 driver.FindElement(By.Id("accidents")).SendKeys("2");  
 driver.FindElement(By.Id("btnSubmit")).Click();  
 driver.FindElement(By.CssSelector("body")).Click();  
 driver.FindElement(By.CssSelector(".card-body > .form-group:nth-child(2)")).Click();  
  
 // Assert  
 Assert.That(driver.FindElement(By.Id("experience-error")).Text, Is.EqualTo("Years of experience is required"));  
 }  
  
[Test]  
 public void InsuranceQuote10\_YoungDriverReduction15and22and0() {  
 // Arrange  
 driver.Navigate().GoToUrl(baseURL);  
 driver.Manage().Window.Size = new System.Drawing.Size(1936, 1048);  
  
 // Act  
 driver.FindElement(By.CssSelector(".btn")).Click();  
 driver.FindElement(By.Id("firstName")).Click();  
 driver.FindElement(By.Id("firstName")).SendKeys("Amarnath");  
 driver.FindElement(By.Id("lastName")).SendKeys("Kathiresan");  
 driver.FindElement(By.Id("address")).SendKeys("U683, Floor 8, 365-6 Albert St");  
 driver.FindElement(By.Id("city")).SendKeys("Waterloo");  
 driver.FindElement(By.Id("postalCode")).SendKeys("N2L 0G7");  
 driver.FindElement(By.Id("phone")).Click();  
 driver.FindElement(By.Id("phone")).SendKeys("226-898-4990");  
 driver.FindElement(By.Id("email")).Click();  
 driver.FindElement(By.Id("email")).SendKeys("k.amarnath7@gmail.com");  
 driver.FindElement(By.Id("age")).Click();  
 driver.FindElement(By.Id("age")).SendKeys("15");  
 driver.FindElement(By.Id("experience")).Click();  
 driver.FindElement(By.Id("experience")).SendKeys("22");  
 driver.FindElement(By.Id("accidents")).Click();  
 driver.FindElement(By.Id("accidents")).SendKeys("0");  
 driver.FindElement(By.Id("btnSubmit")).Click();  
 driver.FindElement(By.CssSelector("body")).Click();  
 driver.FindElement(By.CssSelector(".card-body > .form-group:nth-child(1)")).Click();  
  
 // Assert  
 Assert.That(driver.FindElement(By.Id("age-error")).Text, Is.EqualTo("Please enter a value greater than or equal to 16."));  
 }  
  
[Test]  
 public void InsuranceQuote11\_ExperiencedDriverReduction30and35and0() {  
 // Arrange  
 driver.Navigate().GoToUrl(baseURL);  
 driver.Manage().Window.Size = new System.Drawing.Size(1936, 1048);  
  
 // Act  
 driver.FindElement(By.CssSelector(".btn")).Click();  
 driver.FindElement(By.Id("firstName")).Click();  
 driver.FindElement(By.Id("firstName")).SendKeys("Amarnath");  
 driver.FindElement(By.Id("lastName")).SendKeys("Kathiresan");  
 driver.FindElement(By.Id("address")).SendKeys("U683, Floor 8, 365-6 Albert St");  
 driver.FindElement(By.Id("city")).SendKeys("Waterloo");  
 driver.FindElement(By.Id("postalCode")).SendKeys("N2L 0G7");  
 driver.FindElement(By.Id("phone")).Click();  
 driver.FindElement(By.Id("phone")).SendKeys("226-898-4990");  
 driver.FindElement(By.Id("email")).Click();  
 driver.FindElement(By.Id("email")).SendKeys("k.amarnath7@gmail.com");  
 driver.FindElement(By.Id("age")).Click();  
 driver.FindElement(By.Id("age")).SendKeys("30");  
 driver.FindElement(By.Id("experience")).Click();  
 driver.FindElement(By.Id("experience")).SendKeys("35");  
 driver.FindElement(By.Id("accidents")).Click();  
 driver.FindElement(By.Id("accidents")).SendKeys("0");  
 driver.FindElement(By.Id("btnSubmit")).Click();  
  
 // Assert  
 {  
 string value = driver.FindElement(By.Id("finalQuote")).GetAttribute("value");  
 Assert.That(value, Is.EqualTo("No Insurance for you!! Driver Age / Experience Not Correct"));  
 }  
 }  
  
[Test]  
 public void InsuranceQuote12\_AgeExperienceValidation46and30and0() {  
 // Arrange  
 driver.Navigate().GoToUrl(baseURL);  
 driver.Manage().Window.Size = new System.Drawing.Size(682, 649);  
  
 // Act  
 driver.FindElement(By.CssSelector(".btn")).Click();  
 driver.FindElement(By.Id("firstName")).Click();  
 driver.FindElement(By.Id("firstName")).SendKeys("Amarnath");  
 driver.FindElement(By.Id("lastName")).SendKeys("Kathiresan");  
 driver.FindElement(By.Id("address")).SendKeys("U683, Floor 8, 365-6 Albert St");  
 driver.FindElement(By.Id("city")).SendKeys("Waterloo");  
 driver.FindElement(By.Id("postalCode")).SendKeys("N2L 0G7");  
 driver.FindElement(By.Id("phone")).Click();  
 driver.FindElement(By.Id("phone")).SendKeys("226-898-4990");  
 driver.FindElement(By.Id("email")).Click();  
 driver.FindElement(By.Id("email")).SendKeys("k.amarnath7@gmail.com");  
 driver.FindElement(By.Id("age")).Click();  
 driver.FindElement(By.Id("age")).SendKeys("46");  
 driver.FindElement(By.Id("experience")).Click();  
 driver.FindElement(By.Id("experience")).SendKeys("30");  
 driver.FindElement(By.Id("accidents")).Click();  
 driver.FindElement(By.Id("accidents")).SendKeys("0");  
 driver.FindElement(By.Id("btnSubmit")).Click();  
  
 // Assert  
 {  
 string value = driver.FindElement(By.Id("finalQuote")).GetAttribute("value");  
 Assert.That(value, Is.EqualTo("$2840"));  
 }  
 }  
  
[Test]  
 public void InsuranceQuote13\_BoundaryAge40and10and5() {  
 // Arrange  
 driver.Navigate().GoToUrl(baseURL);  
 driver.Manage().Window.Size = new System.Drawing.Size(1936, 1048);  
  
 // Act  
 driver.FindElement(By.CssSelector(".btn")).Click();  
 driver.FindElement(By.Id("firstName")).Click();  
 driver.FindElement(By.Id("firstName")).SendKeys("Amarnath");  
 driver.FindElement(By.Id("lastName")).SendKeys("Kathiresan");  
 driver.FindElement(By.Id("address")).SendKeys("U683, Floor 8, 365-6 Albert St");  
 driver.FindElement(By.Id("city")).SendKeys("Waterloo");  
 driver.FindElement(By.Id("postalCode")).SendKeys("N2L 0G7");  
 driver.FindElement(By.Id("phone")).Click();  
 driver.FindElement(By.Id("phone")).SendKeys("226-898-4990");  
 driver.FindElement(By.Id("email")).Click();  
 driver.FindElement(By.Id("email")).SendKeys("k.amarnath7@gmail.com");  
 driver.FindElement(By.Id("age")).Click();  
 driver.FindElement(By.Id("age")).SendKeys("40");  
 driver.FindElement(By.Id("experience")).Click();  
 driver.FindElement(By.Id("experience")).SendKeys("10");  
 driver.FindElement(By.Id("accidents")).Click();  
 driver.FindElement(By.Id("accidents")).SendKeys("5");  
 driver.FindElement(By.Id("btnSubmit")).Click();  
  
 // Assert  
 {  
 string value = driver.FindElement(By.Id("finalQuote")).GetAttribute("value");  
 Assert.That(value, Is.EqualTo("No Insurance for you!! Too many accidents - go take a course!"));  
 }  
 }  
  
[Test]  
 public void InsuranceQuote14\_BoundaryExperience32and2and1() {  
 // Arrange  
 driver.Navigate().GoToUrl(baseURL);  
 driver.Manage().Window.Size = new System.Drawing.Size(1936, 1048);  
  
 // Act  
 driver.FindElement(By.CssSelector(".btn")).Click();  
 driver.FindElement(By.Id("firstName")).Click();  
 driver.FindElement(By.Id("firstName")).SendKeys("Amarnath");  
 driver.FindElement(By.Id("lastName")).SendKeys("Kathiresan");  
 driver.FindElement(By.Id("address")).SendKeys("U683, Floor 8, 365-6 Albert St");  
 driver.FindElement(By.Id("city")).SendKeys("Waterloo");  
 driver.FindElement(By.Id("postalCode")).SendKeys("N2L 0G7");  
 driver.FindElement(By.Id("phone")).Click();  
 driver.FindElement(By.Id("phone")).SendKeys("226-898-4990");  
 driver.FindElement(By.Id("email")).Click();  
 driver.FindElement(By.Id("email")).SendKeys("k.amarnath7@gmail.com");  
 driver.FindElement(By.Id("age")).Click();  
 driver.FindElement(By.Id("age")).SendKeys("32");  
 driver.FindElement(By.Id("experience")).Click();  
 driver.FindElement(By.Id("experience")).SendKeys("2");  
 driver.FindElement(By.Id("accidents")).Click();  
 driver.FindElement(By.Id("accidents")).SendKeys("1");  
 driver.FindElement(By.Id("btnSubmit")).Click();  
  
 // Assert  
 {  
 string value = driver.FindElement(By.Id("finalQuote")).GetAttribute("value");  
 Assert.That(value, Is.EqualTo("$3905"));  
 }  
 }  
  
[Test]  
 public void InsuranceQuote15\_InvalidAddressEmpty() {  
 // Arrange  
 driver.Navigate().GoToUrl(baseURL);  
 driver.Manage().Window.Size = new System.Drawing.Size(973, 1032);  
  
 // Act  
 driver.FindElement(By.CssSelector(".btn")).Click();  
 driver.FindElement(By.Id("firstName")).Click();  
 driver.FindElement(By.Id("firstName")).SendKeys("Amarnath");  
 driver.FindElement(By.Id("lastName")).SendKeys("Kathiresan");  
 driver.FindElement(By.Id("city")).SendKeys("Waterloo");  
 driver.FindElement(By.Id("postalCode")).SendKeys("N2L 0G7");  
 driver.FindElement(By.Id("phone")).Click();  
 driver.FindElement(By.Id("phone")).SendKeys("226-898-4990");  
 driver.FindElement(By.Id("email")).Click();  
 driver.FindElement(By.Id("email")).SendKeys("k.amarnath7@gmail.com");  
 driver.FindElement(By.CssSelector("body")).Click();  
 driver.FindElement(By.Id("age")).Click();  
 driver.FindElement(By.Id("age")).SendKeys("45");  
 driver.FindElement(By.Id("experience")).Click();  
 driver.FindElement(By.Id("experience")).SendKeys("10");  
 driver.FindElement(By.Id("accidents")).Click();  
 driver.FindElement(By.Id("accidents")).SendKeys("1");  
 driver.FindElement(By.Id("btnSubmit")).Click();  
 driver.FindElement(By.CssSelector("body")).Click();  
  
 // Assert  
 Assert.That(driver.FindElement(By.Id("address-error")).Text, Is.EqualTo("Address is required"));  
 }  
}  
}

1. **Visual Studio Test Explorer Screenshot**

****

**Figure 1 : Test Explorer Screenshots**

1. **Version Control System Commits Screenshot**

****

**Figure 2 : Version Control System Commits Screenshot**

1. **Video Demonstration and Source Code Archive**

* **Attached.**