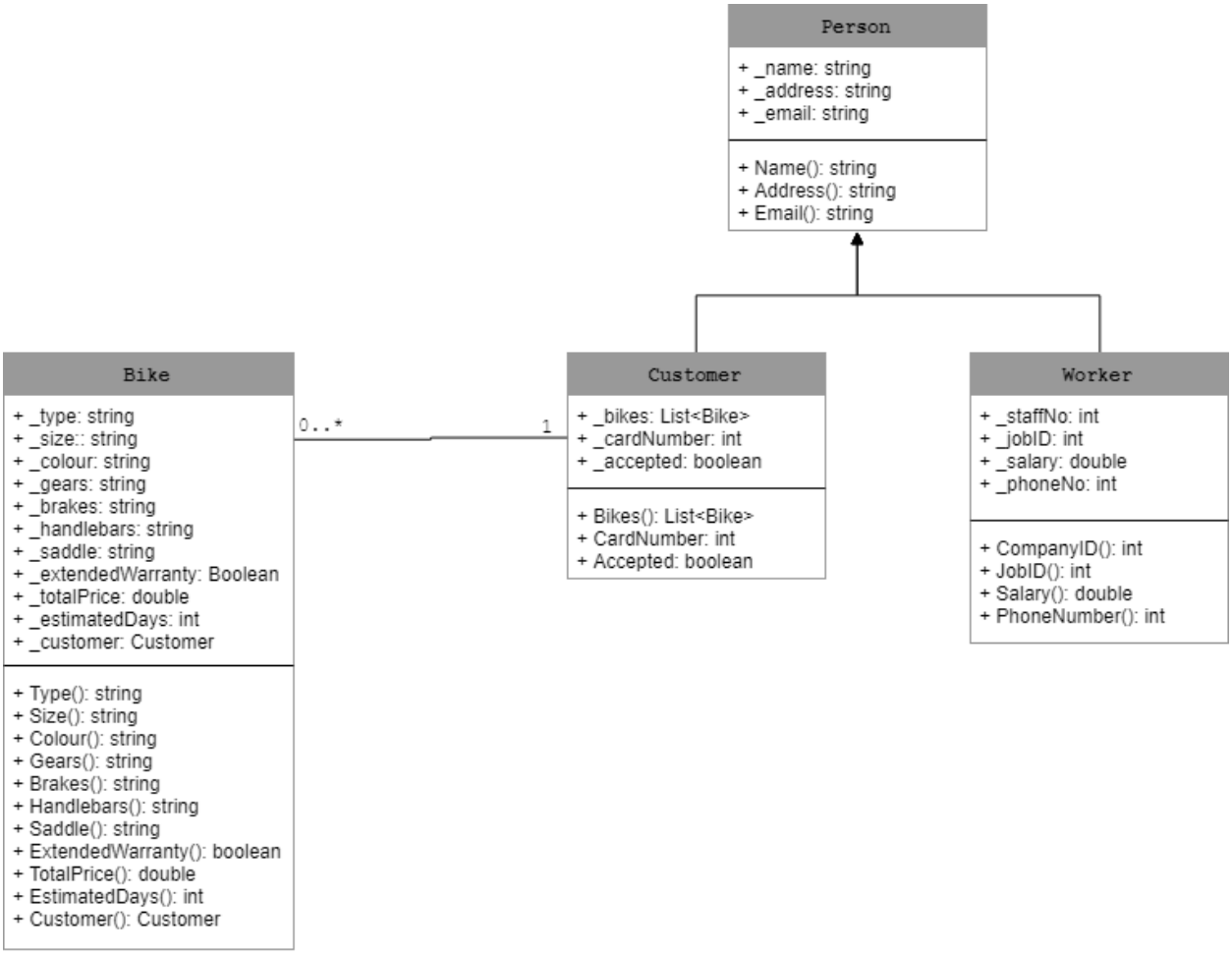
Software Engineering Methods Coursework

Part 2

a) UML Class diagram



b) Implementation and test units

Classes:

```
namespace SEM_cw2
{
    public class Person
    {

        private string _name;
        private string _address;
        private string _email;

        public string Name
        {
            get { return _name; }
```

```
            set { _name = value; }
        }
        public string Address
        {
            get { return _address; }
            set { _address = value; }
        }
        public string Email
        {
            get { return _address; }
            set { _address = value; }
        }

    }
}
```

```
using System;
using System.Collections.Generic;

namespace SEM_cw2
{
    public class Customer : Person
    {
        private List<Bike> _bikes;
        private int _cardNumber;
        private Boolean _accepted;

        public List<Bike> Bikes
        {
            get { return _bikes; }
            set { _bikes = value; }
        }

        public int CardNumber
        {
            get { return _cardNumber; }
            set { _cardNumber = value; }
        }

        public Boolean Accepted
        {
            get { return _accepted; }
            set { _accepted = value; }
        }

    }
}
```

```
namespace SEM_cw2
{
    public class Worker : Person
    {

        private int _staffNo;
        private int _jobID;
        private double _salary;
        private int _phoneNo;
```

```
        public int StaffNumber
        {
            get { return _staffNo; }
            set { _staffNo = value; }
        }
        public int JobID
        {
            get { return _jobID; }
            set { _jobID = value; }
        }
        public double Salary
        {
            get { return _salary; }
            set { _salary = value; }
        }
        public int PhoneNumber
        {
            get { return _phoneNo; }
            set { _phoneNo = value; }
        }

    }
}
```

```
using System;

namespace SEM_cw2
{
    public class Bike
    {
        private int _id;
        private string _type;
        private string _wheels;
        private string _size;
        private string _colour;
        private string _gears;
        private string _brakes;
        private string _handlebars;
        private string _saddle;

        private Boolean _extendedWarranty;

        private double _totalPrice;

        private double _estimatedDays;

        private Customer _customer;

        public int ID
        {
            get { return _id; }
            set { _id = value; }
        }
        public string Type
        {
            get { return _type; }
            set
```

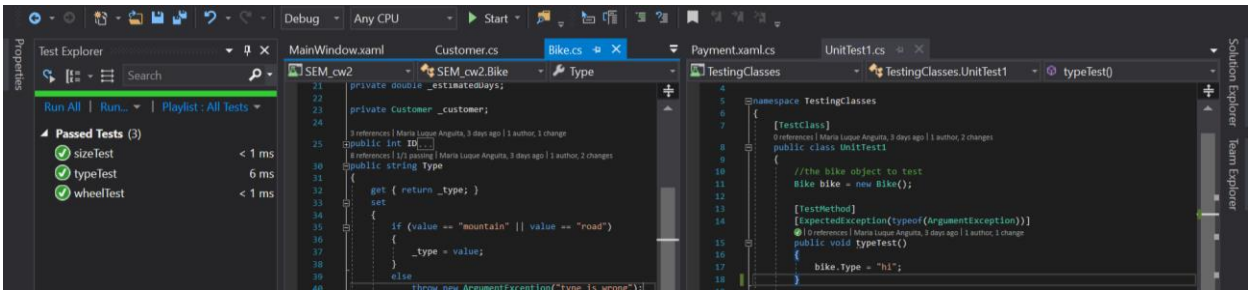
```
            {
                if (value == "mountain" || value == "road")
                {
                    _type = value;
                }
                else
                    throw new ArgumentException("type is wrong");
            }
        }
        public string Wheels
        {
            get { return _wheels; }
            set
            {
                if (value == "small" || value == "large")
                {
                    _wheels = value;
                }
                else
                    throw new ArgumentException("wheel type is wrong");
            }
        }
        public string Size
        {
            get { return _size; }
            set
            {
                if (value == "small" || value == "medium" || value == "large")
                {
                    _size = value;
                }
                else
                    throw new ArgumentException("size is wrong");
            }
        }
        public string Colour
        {
            get { return _colour; }
            set { _colour = value; }
        }
        public string Gears
        {
            get { return _gears; }
            set
            {
                if (value == "Type A" || value == "Type B")
                {
                    _gears = value;
                }
                else
                    throw new ArgumentException("gear is wrong");
            }
        }
        public string Brakes
        {
            get { return _brakes; }
            set
            {
```

```
                if (value == "Type A" || value == "Type B")
                {
                    _brakes = value;
                }
                else
                    throw new ArgumentException("brake type is wrong");
            }
        }
        public string Handlebars
        {
            get { return _handlebars; }
            set
            {
                if (value == "Type A" || value == "Type B")
                {
                    _handlebars = value;
                }
                else
                    throw new ArgumentException("handlebar type is wrong");
            }
        }
        public string Saddle
        {
            get { return _saddle; }
            set
            {
                if (value == "Type A" || value == "Type B")
                {
                    _saddle = value;
                }
                else
                    throw new ArgumentException("saddle type is wrong");
            }
        }
        public Boolean ExtendedWarranty
        {
            get { return _extendedWarranty; }
            set { _extendedWarranty = value; }
        }
        public double TotalPrice
        {
            get { return _totalPrice; }
            set { _totalPrice = value; }
        }
        public double EstimatedDays
        {
            get { return _estimatedDays; }
            set { _estimatedDays = value; }
        }
        public Customer Customer
        {
            get { return _customer; }
            set { _customer = value; }
        }

    }
}
```

Test unit for Bike class:

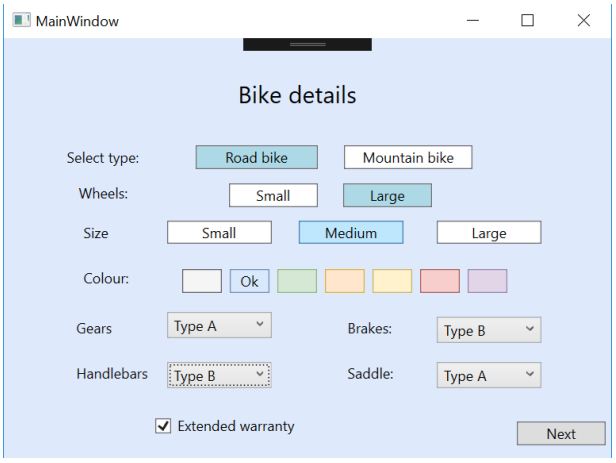
```
using System;
using Microsoft.VisualStudio.TestTools.UnitTesting;
using SEM_cw2;

namespace TestingClasses
{
    [TestClass]
    public class UnitTest1
    {
        //the bike object to test
        Bike bike = new Bike();

        [TestMethod]
        [ExpectedException(typeof(ArgumentException))]
        public void typeTest()
        {
            bike.Type = "hi";
        }

        [TestMethod]
        public void typeTest2()
        {
            bike.Type = "small";
        }

        [TestMethod]
        [ExpectedException(typeof(ArgumentException))]
        public void wheelTest()
        {
            bike.Wheels = "asdasd";
        }

        [TestMethod]
        [ExpectedException(typeof(ArgumentException))]
        public void sizeTest()
        {
            bike.Wheels = "asdsad";
        }

    }
}
```

Results:

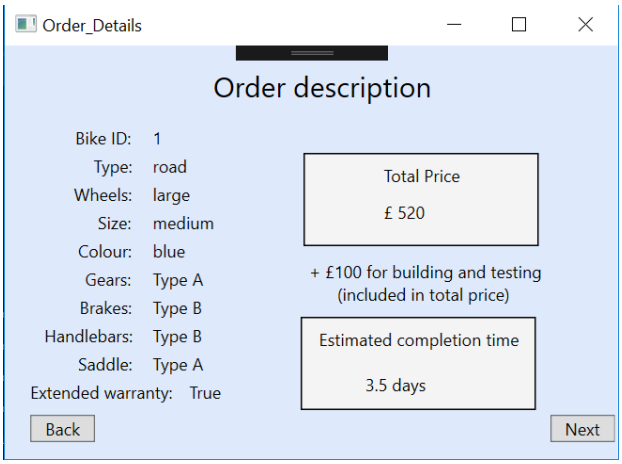


c) User Interface

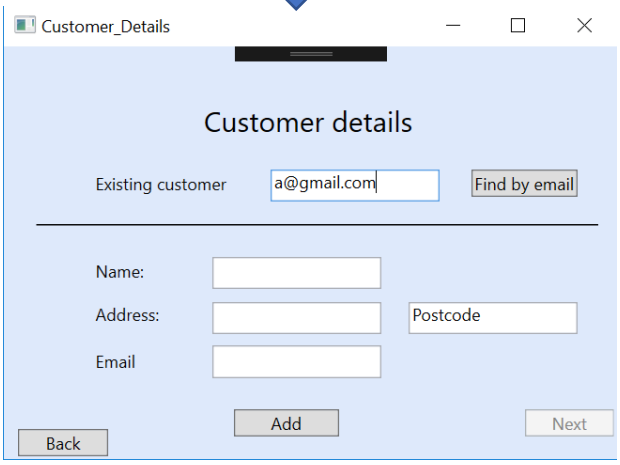
1.



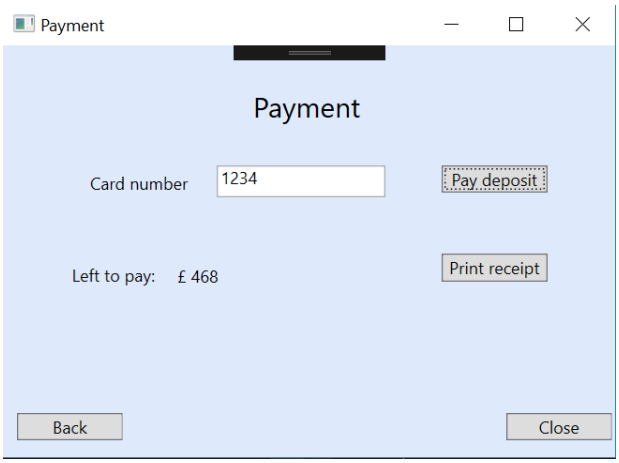
2.



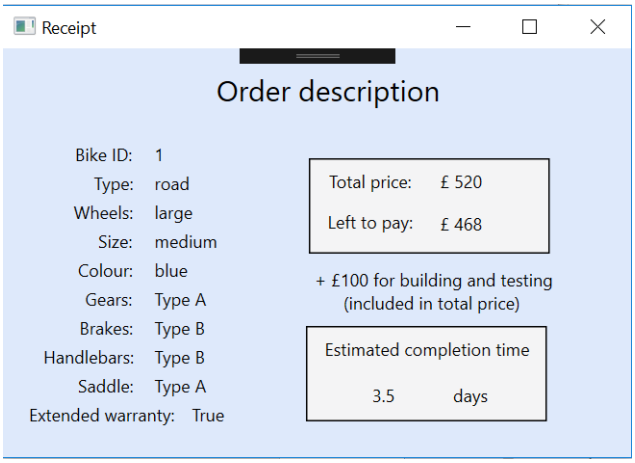
3.



4.

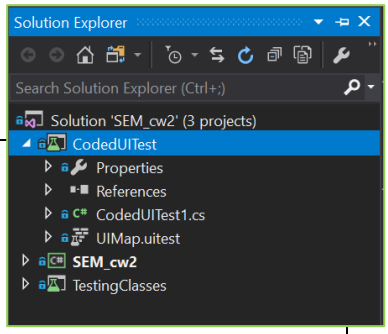


5.



User Interface Testing:

Done using coded UI tests (CUITs) provided by Visual Studio.




```
using System;
using System.Collections.Generic;
using System.Text.RegularExpressions;
using System.Windows.Input;
using System.Windows.Forms;
using System.Drawing;
using Microsoft.VisualStudio.TestTools.UITesting;
using Microsoft.VisualStudio.TestTools.UnitTesting;
using Microsoft.VisualStudio.TestTools.UITest.Extension;
using Keyboard = Microsoft.VisualStudio.TestTools.UITesting.Keyboard;


namespace CodedUITest
{
    /// <summary>
    /// Summary description for CodedUITest1
    /// </summary>
    [CodedUITest]
    public class CodedUITest1
    {
        public CodedUITest1()
        {
        }

        [TestMethod]
        public void CodedUITestMethod1()
        {
            this.UIMap.choose_bike_details();
            this.UIMap.viewOrder_enterCustomerDetails();
            this.UIMap.payDeposit_viewReceipt_addBike();
        }

        /// <summary>
        ///Gets or sets the test context which provides
        ///information about and functionality for the current test run.
        ///</summary>
        public TestContext TestContext
        {
            get
            {
                return testContextInstance;
            }
            set
            {
                testContextInstance = value;
            }
        }
        private TestContext testContextInstance;

        public UIMap UIMap
        {
            get
            {
                if (this.map == null)
                {
```

```
                    this.map = new UIMap();
                }

                return this.map;
            }
        }

        private UIMap map;
    }
}
```