**WEEK-2\_Write Testable Code with Moq**

Scenario

You are tasked to write a unit test code for the below scenario.

The application in which you are teamed up with, deals with a mail server communication in which your application tries to send mail to its users upon every transaction. Your role is to write unit testing the module that contains send mail functionality. You wanted to perform testing the module without sending any email.

After investigating the problem scenario, you found a solution and that is creating mock objects of these external dependencies in the unit testing project so that you can achieve speedier test execution and loose coupling of code.

Note: Duration to complete this exercise is 30 min.

Task1

In this task, you will create a class library that will be used for unit testing.

* Create a Class Library (Language C#) project using Visual Studio IDE, and name it as CustomerCommLib.
* Rename the default Class1 class name as MailSender.
* Include the following namespaces with ‘using’ directive.
  + System.Net
  + System.Net.Mail
* Define an interface as follow.

public interface IMailSender

{

        bool SendMail(string toAddress, string message);

}

* And provide implementation of IMailSender in the MailSender class as seen below.

namespace CustomerCommLib

{

public class MailSender:IMailSender

{

public bool SendMail(string toAddress, string message)

{

MailMessage mail = new MailMessage();

SmtpClient SmtpServer = new SmtpClient("smtp.gmail.com");

mail.From = new MailAddress("your\_email\_address@gmail.com");

mail.To.Add(toAddress);

mail.Subject = "Test Mail";

mail.Body = message;

SmtpServer.Port = 587;

SmtpServer.Credentials = new NetworkCredential("username", "password");

SmtpServer.EnableSsl = true;

SmtpServer.Send(mail);

}

}

}

The above class can’t be unit testing since the code access the STMP mail server.

* Create another class called CustomeComm which is the class under test in the given scenario.

namespace CustomerCommLib

{

public class CustomerComm

{

IMailSender \_mailSender;

public CustomerComm(IMailSender mailSender)

{

\_mailSender=mailSender;

}

public bool SendMailToCustomer()

{

//Actual logic goes here

//define message and mail address

\_mailSender.SendMail(cust123@abc.com,”Some Message”);

return true;

}

}

}

In the above code we injected the dependency (IMailSender) through constructor of CustomerComm class so that we can pass the mock object of the dependency wherever it is necessary.

We have successfully created a class that's written in such a way that we can run a unit test against it and an exception won't be thrown. We achieve this by mocking the call to IMailSender.SendMail() and adding a mocked return value of true to it.

* Finally build your project and be ready for the unit testing with NUnit and Moq.

Task2

In this task, you will create unit test project which make use of NUnit framework and Moq.

* Create a new class library project called CustomerComm.Tests and add the following external dependencies to it using NuGet Package Manager.
  + NUnit
  + NUnit Test Adapter
  + Moq
* Add the references of assemblies as appropriate including CustomerCommLib.
* Write unit test code and mock the MailSender (IMailSender) class.
* Use TestFixture, OneTimeSetUp and TestCase attribute classes on top of test class, init method and test method respectively.
* Configure the mock object in such away that SendMail() method will accept any two string arguments and always return true when SendMailToCustomer() gets invoked.
* Finally assert the return value to “true”.

Code:

using System.Net;

using System.Net.Mail;

namespace CustomerCommLib

{

public interface IMailSender

{

bool SendMail(string toAddress, string message);

}

public class MailSender : IMailSender

{

public bool SendMail(string toAddress, string message)

{

try

{

MailMessage mail = new MailMessage();

SmtpClient smtpServer = new SmtpClient("smtp.gmail.com");

mail.From = new MailAddress("your\_email\_address@gmail.com"); // Replace with your email

mail.To.Add(toAddress);

mail.Subject = "Test Mail";

mail.Body = message;

smtpServer.Port = 587;

smtpServer.Credentials = new NetworkCredential("username", "password"); // Replace with your credentials

smtpServer.EnableSsl = true;

smtpServer.Send(mail);

return true; // Mail sent successfully

}

catch (SmtpException ex)

{

// Handle SMTP exceptions if needed (log or rethrow)

return false; // Mail sending failed

}

}

}

}

OUTPUT:

