**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.
* 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:**

**CustomerComm.cs**

namespace CustomerCommLib

{

public class CustomerComm

{

private IMailSender \_mailSender;

public CustomerComm(IMailSender mailSender)

{

\_mailSender = mailSender;

}

public bool SendMailToCustomer(string toAddress, string message)

{

return \_mailSender.SendMail(toAddress, message);

}

}}

**MailSender.cs**

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)

{

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);

return true;

}

}

}

**CustomerCommTests.cs**

using NUnit.Framework;

using Moq;

using CustomerCommLib;

namespace CustomerCommLib.Tests

{

[TestFixture]

public class CustomerCommTests

{

private Mock<IMailSender>? \_mockMailSender;

private CustomerComm? \_customerComm;

[OneTimeSetUp]

public void Init()

{

\_mockMailSender = new Mock<IMailSender>();

\_mockMailSender.Setup(x => x.SendMail(It.IsAny<string>(), It.IsAny<string>()))

.Returns(true);

\_customerComm = new CustomerComm(\_mockMailSender.Object);

}

[TestCase("user1@example.com", "Hello User 1")]

[TestCase("user2@example.com", "Welcome User 2")]

public void SendMailToCustomer\_ShouldReturnTrue\_WithValidInput(string email, string message)

{

var result = \_customerComm!.SendMailToCustomer(email, message);

Assert.That(result, Is.True);

}

}

}

**Output:**

****