UNIVERSIDAD DE COSTA RICA
FACULTAD DE INGENIERÍA
ESCUELA DE CIENCIAS DE LA COMPUTACIÓN E INFORMÁTICA

Reporte Laboratorio 8

Ingeniería de Software

Profesor: Allan Berrocal

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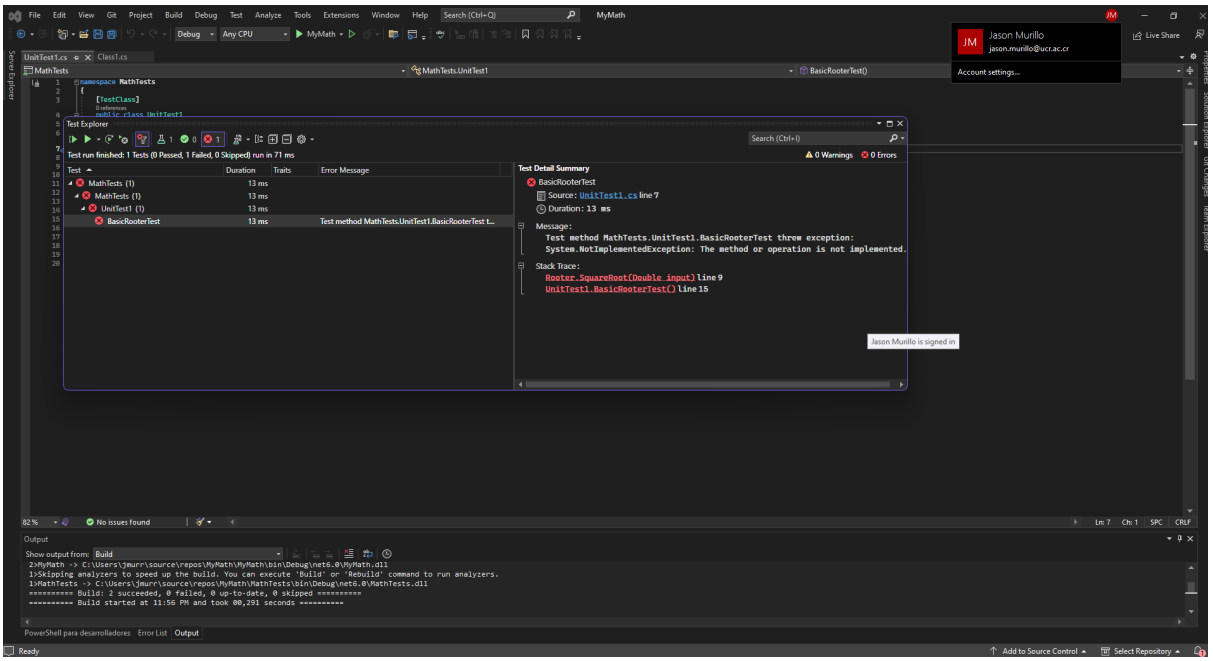
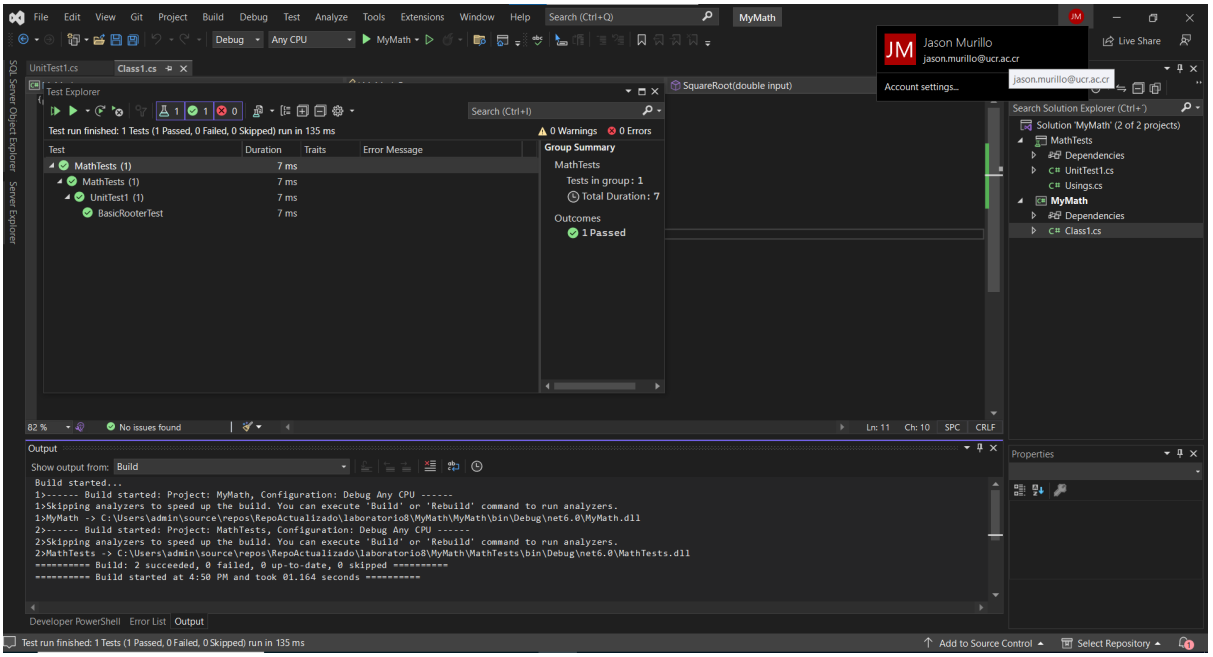
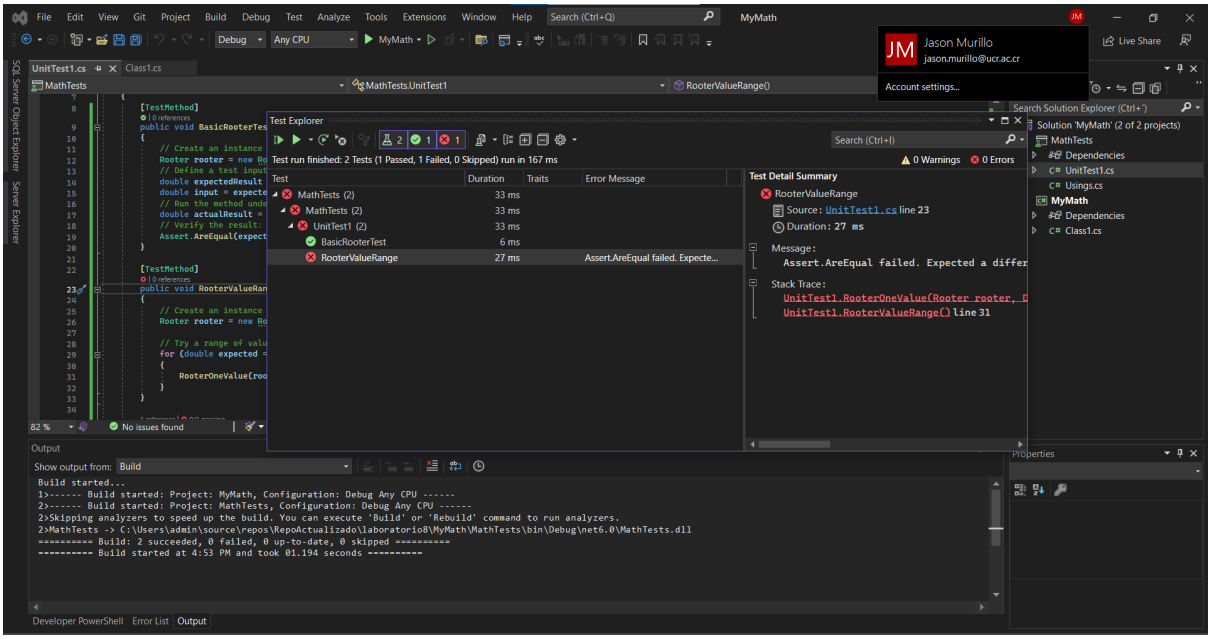
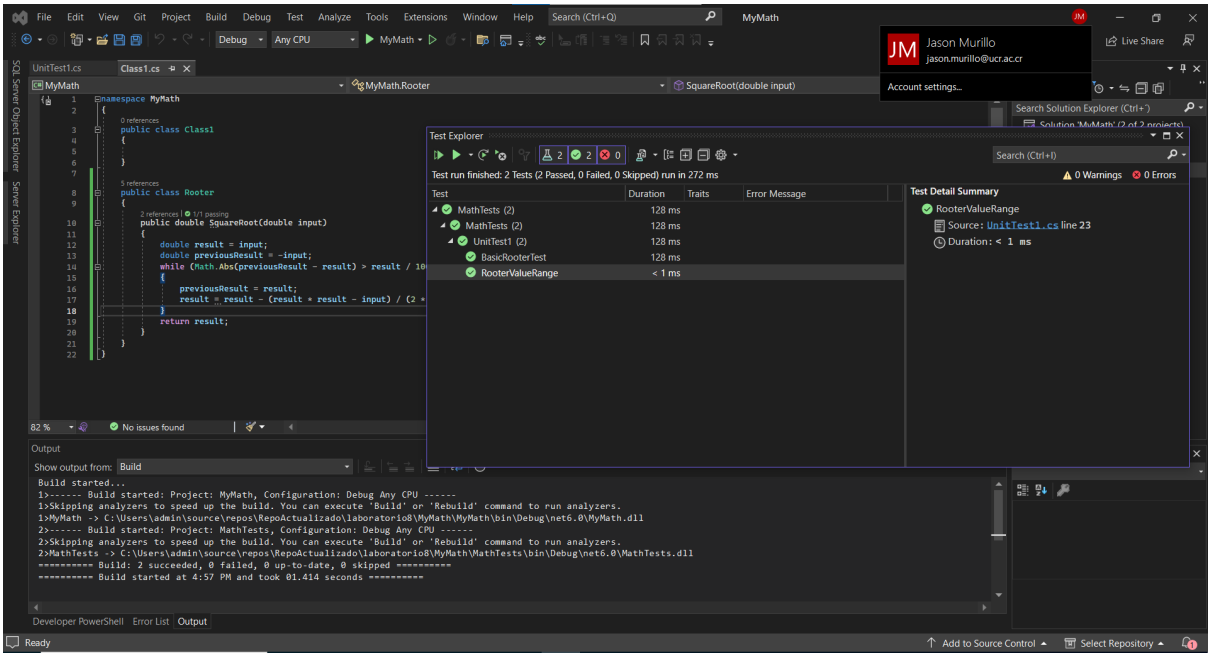
I semestre, 2023

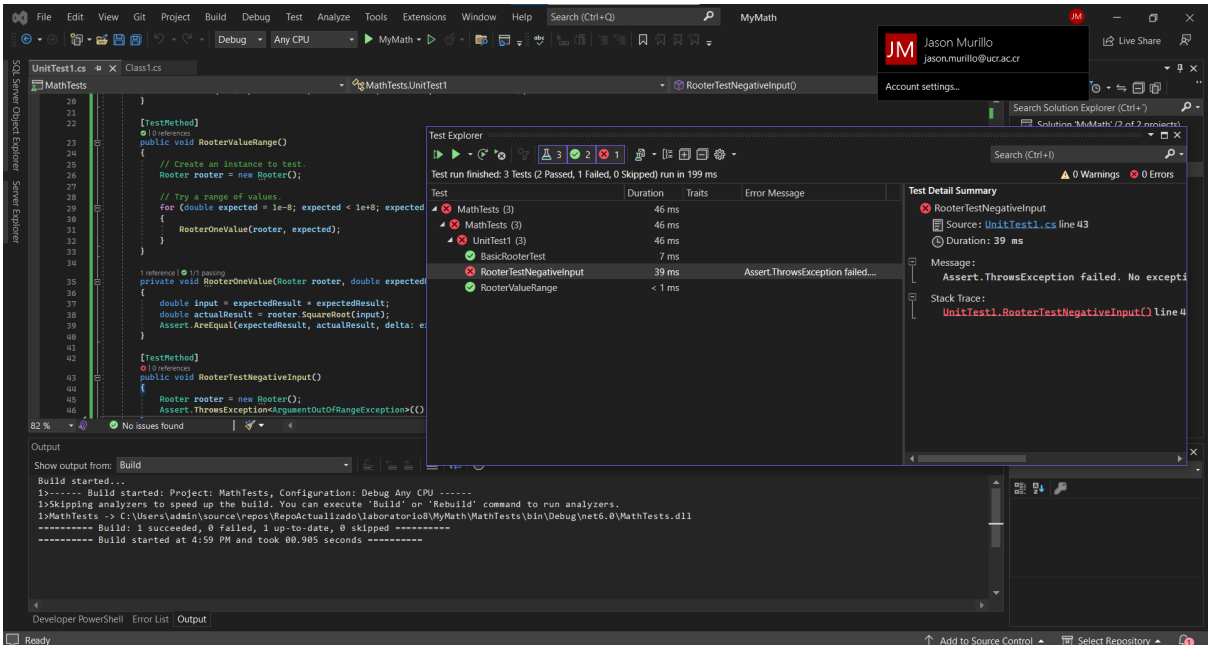
Walkthrough: Test-driven development using Test Explorer

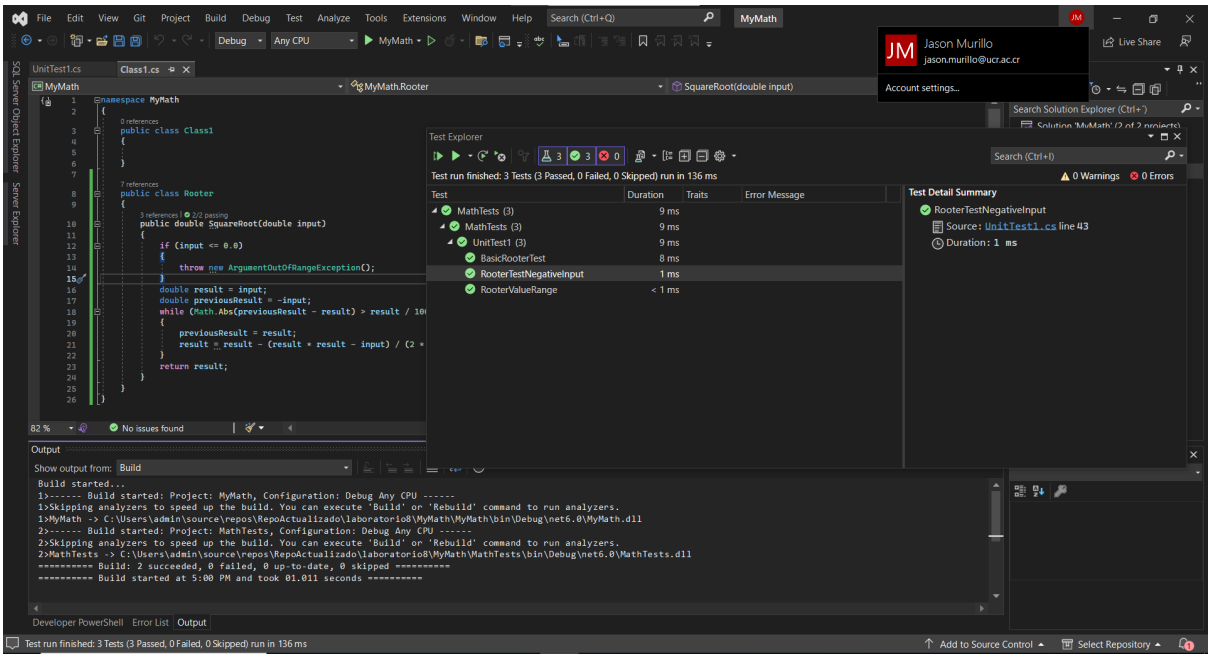


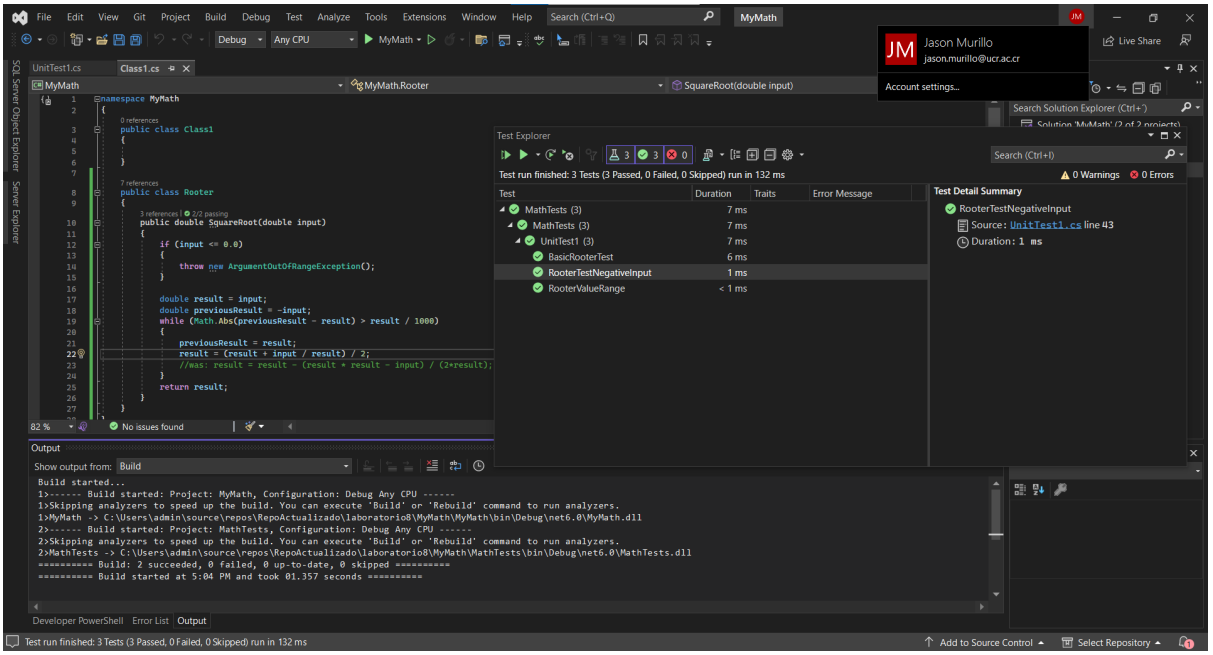



Test Explorer
Test run finished: 2 Tests (1 Passed, 1 Failed, 0 Skipped) run in 167 ms
Test Detail Summary
RooterValueRange
Source: UnitTest1.cs line 23
Duration: 27 ms
Message:
Assert.AreEqual failed. Expected a differ
Stack Trace:
UnitTest1.RooterOneValue(Rooter rooter, D
UnitTest1.RooterValueRange() line 31
Build started...
1>------ Build started: Project: MyMath, Configuration: Debug Any CPU ------
2>------ Build started: Project: MathTests, Configuration: Debug Any CPU ------
2>Skipping analyzers to speed up the build. You can execute 'Build' or 'Rebuild' command to run analyzers.
2>MathTests -> C:\Users\admin\source\repos\RepoActualizado\laboratorio8\MyMath\MathTests\bin\Debug\net6.0\MathTests.dll
========== Build: 2 succeeded, 0 failed, 0 up-to-date, 0 skipped ==========
========== Build started at 4:53 PM and took 01.194 seconds ==========


Test Explorer
Test run finished: 2 Tests (2 Passed, 0 Failed, 0 Skipped) run in 272 ms
Test Detail Summary
RooterValueRange
Source: UnitTest1.cs line 23
Duration: < 1 ms
Build started...
1>------ Build started: Project: MyMath, Configuration: Debug Any CPU ------
1>Skipping analyzers to speed up the build. You can execute 'Build' or 'Rebuild' command to run analyzers.
1>MyMath -> C:\Users\admin\source\repos\RepoActualizado\laboratorio8\MyMath\MyMath\bin\Debug\net6.0\MyMath.dll
2>------ Build started: Project: MathTests, Configuration: Debug Any CPU ------
2>Skipping analyzers to speed up the build. You can execute 'Build' or 'Rebuild' command to run analyzers.
2>MathTests -> C:\Users\admin\source\repos\RepoActualizado\laboratorio8\MyMath\MathTests\bin\Debug\net6.0\MathTests.dll
========== Build: 2 succeeded, 0 failed, 0 up-to-date, 0 skipped ==========
========== Build started at 4:57 PM and took 01.414 seconds ==========


Jason Murillo
jason.murillo@ucr.ac.cr
Account settings...
Test Explorer
Test run finished: 3 Tests (2 Passed, 1 Failed, 0 Skipped) run in 199 ms
Test
Duration
Traits
Error Message
MathTests (3) 46 ms
MathTests (3) 46 ms
UnitTest1 (3) 46 ms
BasicRooterTest 7 ms
RooterTestNegativeInput 39 ms Assert.ThrowsException failed....
RooterValueRange < 1 ms
Test Detail Summary
RooterTestNegativeInput
Source: UnitTest1.cs line 43
Duration: 39 ms
Message:
Assert.ThrowsException failed. No excepti
Stack Trace:
UnitTest1.RooterTestNegativeInput() line 4
Output
Show output from: Build
Build started...
1>------ Build started: Project: MathTests, Configuration: Debug Any CPU ------
1>Skipping analyzers to speed up the build. You can execute 'Build' or 'Rebuild' command to run analyzers.
1>MathTests -> C:\Users\admin\source\repos\RepoActualizado\laboratorio8\MyMath\MathTests\bin\Debug\net6.0\MathTests.dll
========== Build: 1 succeeded, 0 failed, 1 up-to-date, 0 skipped ==========
========== Build started at 4:59 PM and took 00.905 seconds ==========
Ready


Jason Murillo
jason.murillo@ucr.ac.cr
Account settings...
Test Explorer
Test run finished: 3 Tests (3 Passed, 0 Failed, 0 Skipped) run in 136 ms
Test
Duration
Traits
Error Message
MathTests (3) 9 ms
MathTests (3) 9 ms
UnitTest1 (3) 9 ms
BasicRooterTest 8 ms
RooterTestNegativeInput 1 ms
RooterValueRange < 1 ms
Test Detail Summary
RooterTestNegativeInput
Source: UnitTest1.cs line 43
Duration: 1 ms
Output
Show output from: Build
Build started...
1>------ Build started: Project: MyMath, Configuration: Debug Any CPU ------
1>Skipping analyzers to speed up the build. You can execute 'Build' or 'Rebuild' command to run analyzers.
1>MyMath -> C:\Users\admin\source\repos\RepoActualizado\laboratorio8\MyMath\MyMath\bin\Debug\net6.0\MyMath.dll
2>------ Build started: Project: MathTests, Configuration: Debug Any CPU ------
2>Skipping analyzers to speed up the build. You can execute 'Build' or 'Rebuild' command to run analyzers.
2>MathTests -> C:\Users\admin\source\repos\RepoActualizado\laboratorio8\MyMath\MathTests\bin\Debug\net6.0\MathTests.dll
========== Build: 2 succeeded, 0 failed, 0 up-to-date, 0 skipped ==========
========== Build started at 5:00 PM and took 01.011 seconds ==========
Test run finished: 3 Tests (3 Passed, 0 Failed, 0 Skipped) run in 136 ms



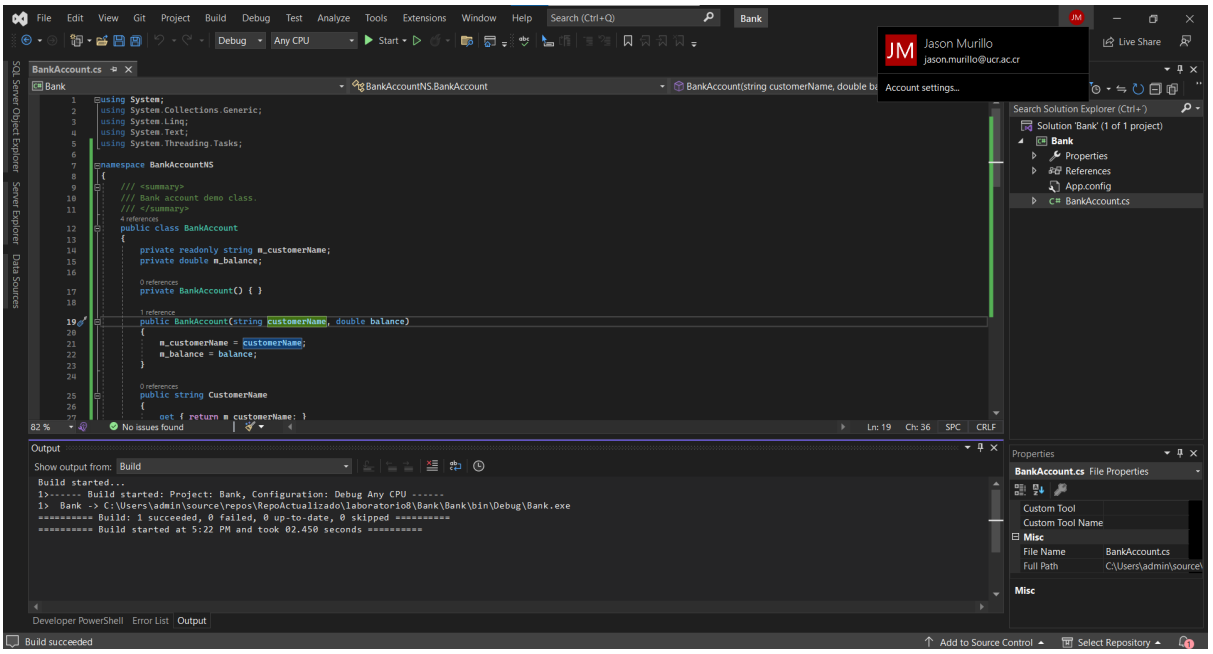
2. (8%) Respuesta a la pregunta A) ¿Por qué la prueba del paso #6 falló?

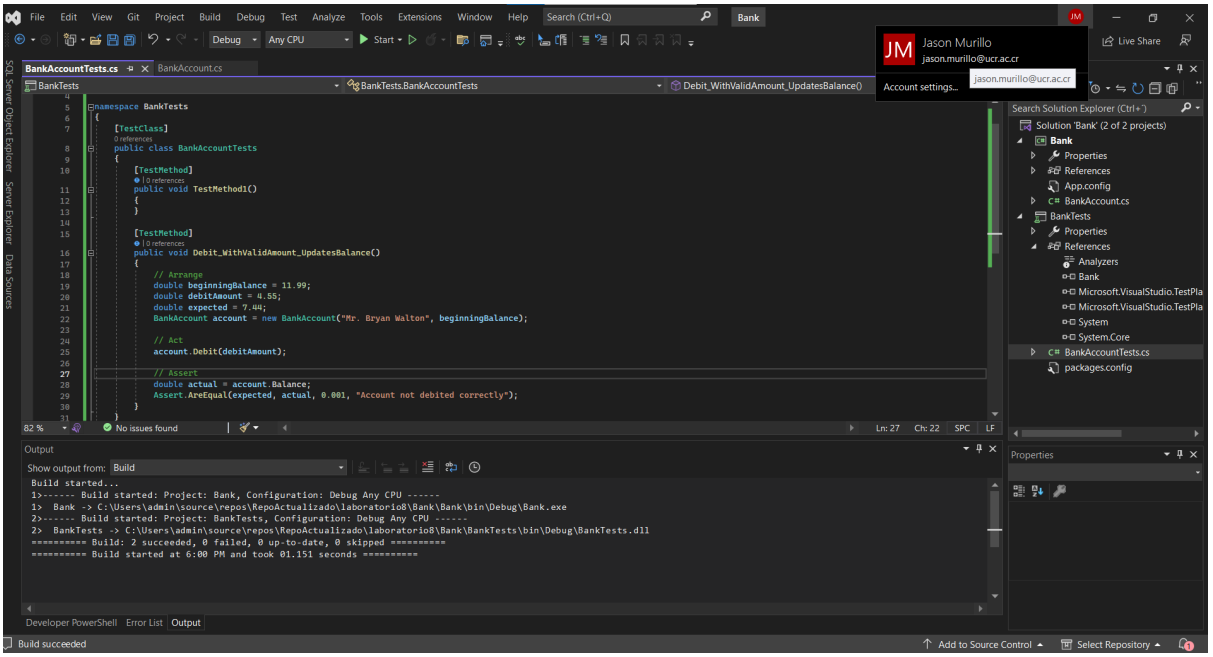
Porque no se había implementado la lógica del método square root.

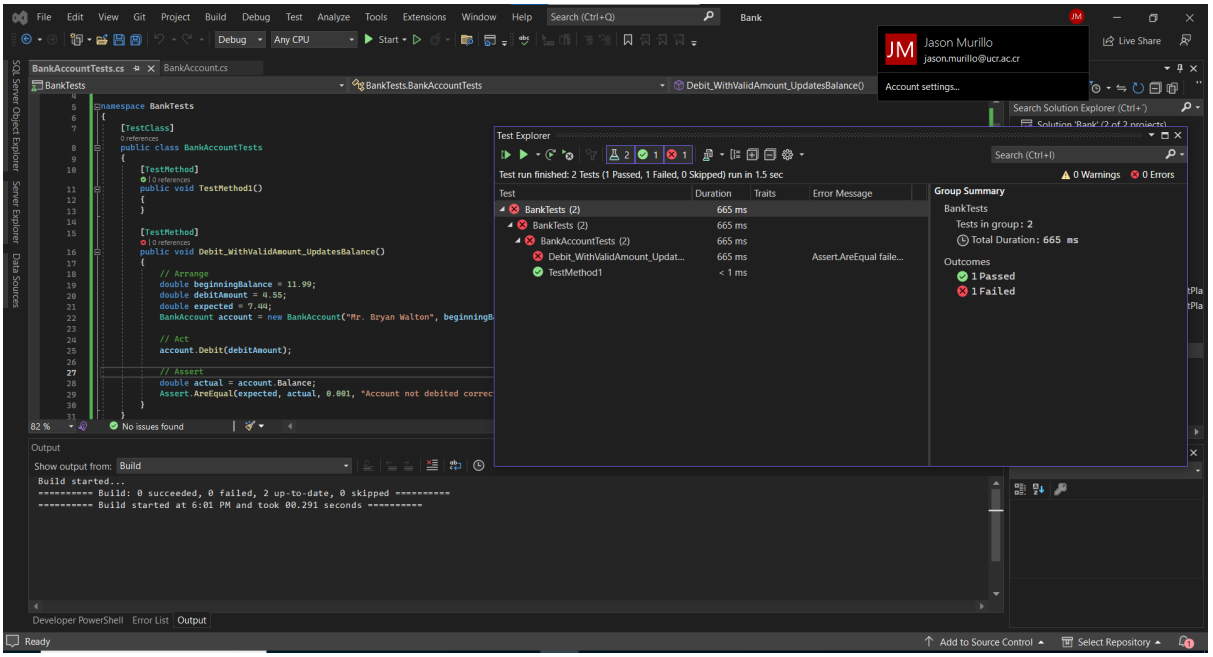
3. (8%) Respuesta a la pregunta B) ¿Por qué la prueba del paso #2 falló?

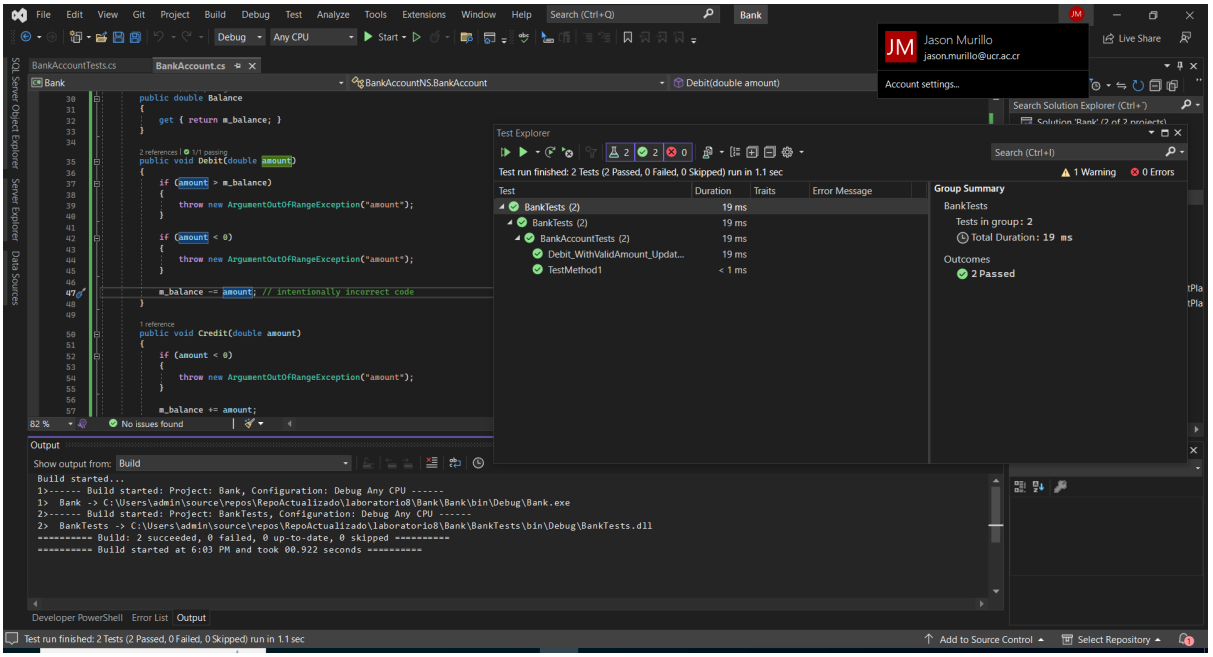
Porque no estaba implementada la lógica para tomar en cuenta los valores negativos y lanzar un error en caso de que ingrese número negativo.

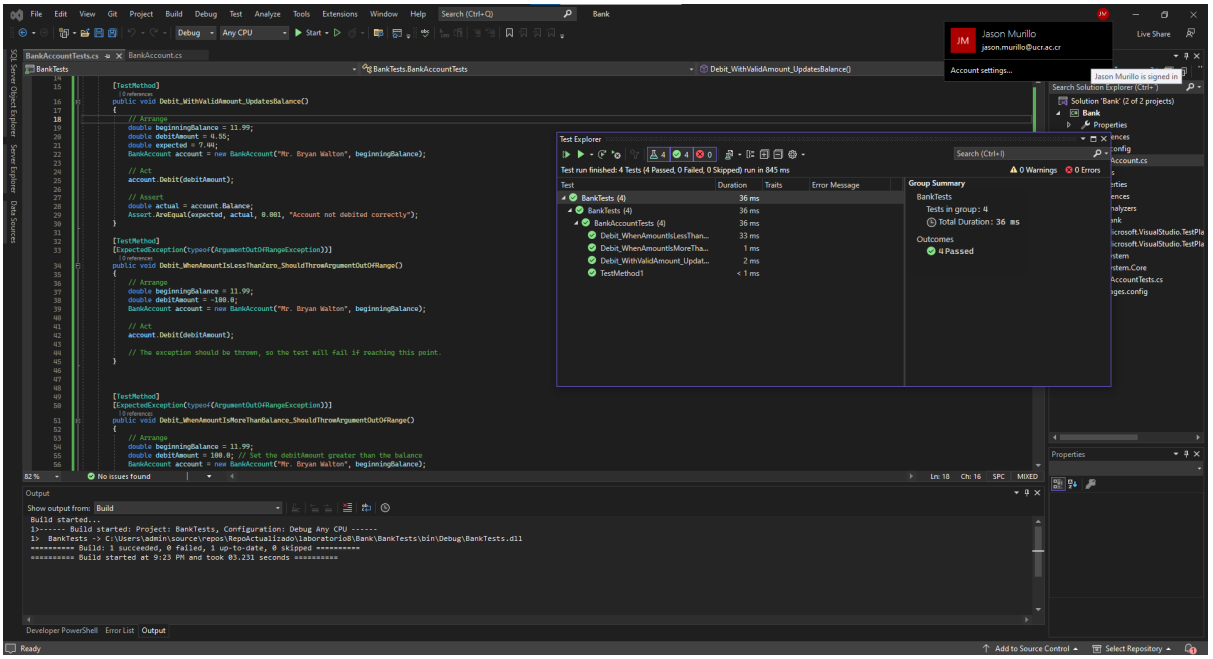
Walkthrough: Create and run unit tests for managed code

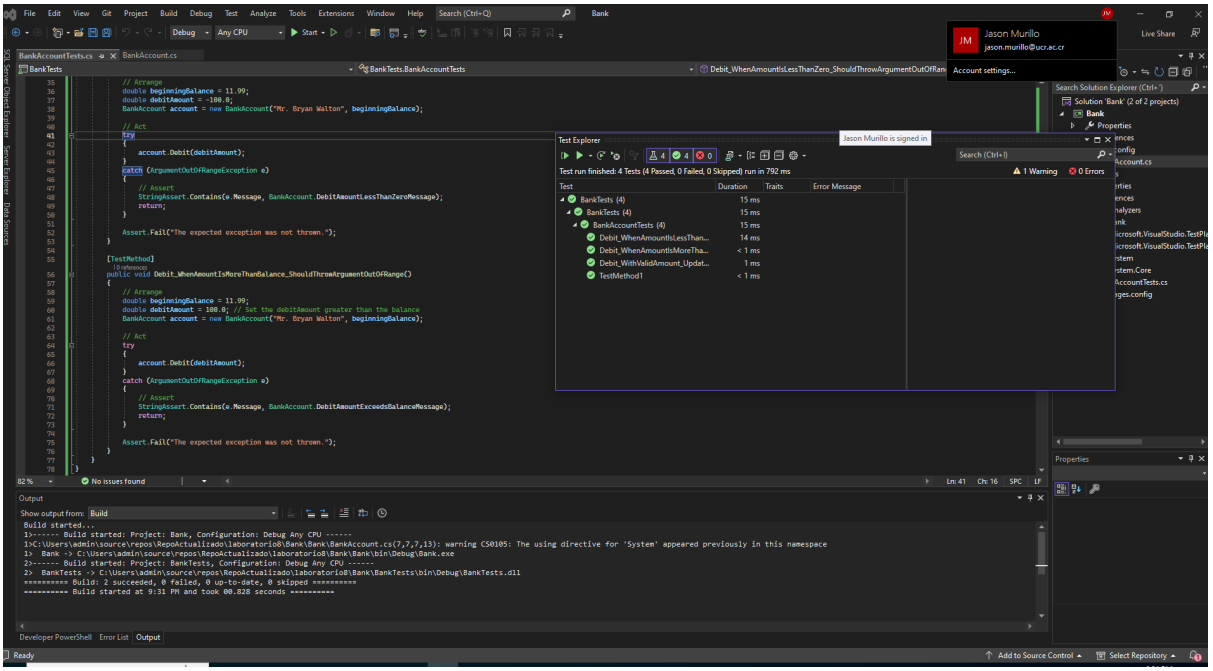





File Edit View Git Project Build Debug Test Analyze Tools Extensions Window Help
Search (Ctrl+Q)
Bank
Debug
Any CPU
Start
Live Share
Jason Murillo
jason.murillo@ucr.ac.cr
Account settings...
BankAccountTests.cs
BankAccount.cs
BankTests
BankTests.BankAccountTests
Debit_WithValidAmount_UpdatesBalance()
namespace BankTests
{
[TestClass]
0 references
public class BankAccountTests
{
[TestMethod]
0 references
public void TestMethod1()
{
}
[TestMethod]
0 references
public void Debit_WithValidAmount_UpdatesBalance()
{
// Arrange
double beginningBalance = 11.99;
double debitAmount = 4.55;
double expected = 7.44;
BankAccount account = new BankAccount("Mr. Bryan Walton", beginningB
// Act
account.Debit(debitAmount);
// Assert
double actual = account.Balance;
Assert.AreEqual(expected, actual, 0.001, "Account not debited correc
}
}
Test Explorer
Test run finished: 2 Tests (1 Passed, 1 Failed, 0 Skipped) run in 1.5 sec
0 Warnings
0 Errors
Test
Duration
Traits
Error Message
BankTests (2) 665 ms
BankTests (2) 665 ms
BankAccountTests (2) 665 ms
Debit_WithValidAmount_Updat... 665 ms Assert.AreEqual faile...
TestMethod1 < 1 ms
Group Summary
BankTests
Tests in group: 2
Total Duration: 665 ms
Outcomes
1 Passed
1 Failed
82 %
No issues found
Output
Show output from: Build
Build started...
========== Build: 0 succeeded, 0 failed, 2 up-to-date, 0 skipped ==========
========== Build started at 6:01 PM and took 00.291 seconds ==========
Developer PowerShell
Error List
Output
Ready
Add to Source Control
Select Repository


File Edit View Git Project Build Debug Test Analyze Tools Extensions Window Help
Search (Ctrl+Q)
Bank
Debug
Any CPU
Start
Live Share
Jason Murillo
jason.murillo@ucr.ac.cr
Account settings...
BankAccountTests.cs
BankAccount.cs
Bank
BankAccountNS.BankAccount
Debit(double amount)
public double Balance
{
get { return m_balance; }
}
2 references | 1/1 passing
public void Debit(double amount)
{
if (amount > m_balance)
{
throw new ArgumentOutOfRangeException("amount");
}
if (amount < 0)
{
throw new ArgumentOutOfRangeException("amount");
}
m_balance -= amount; // intentionally incorrect code
}
1 reference
public void Credit(double amount)
{
if (amount < 0)
{
throw new ArgumentOutOfRangeException("amount");
}
m_balance += amount;
Test Explorer
Test run finished: 2 Tests (2 Passed, 0 Failed, 0 Skipped) run in 1.1 sec
1 Warning
0 Errors
Test
Duration
Traits
Error Message
BankTests (2) 19 ms
BankTests (2) 19 ms
BankAccountTests (2) 19 ms
Debit_WithValidAmount_Updat... 19 ms
TestMethod1 < 1 ms
Group Summary
BankTests
Tests in group: 2
Total Duration: 19 ms
Outcomes
2 Passed
82 %
No issues found
Output
Show output from: Build
Build started...
1>------ Build started: Project: Bank, Configuration: Debug Any CPU ------
1> Bank -> C:\Users\admin\source\repos\RepoActualizado\laboratorio8\Bank\Bank\bin\Debug\Bank.exe
2>------ Build started: Project: BankTests, Configuration: Debug Any CPU ------
2> BankTests -> C:\Users\admin\source\repos\RepoActualizado\laboratorio8\Bank\BankTests\bin\Debug\BankTests.dll
========== Build: 2 succeeded, 0 failed, 0 up-to-date, 0 skipped ==========
========== Build started at 6:03 PM and took 00.922 seconds ==========
Developer PowerShell
Error List
Output
Test run finished: 2 Tests (2 Passed, 0 Failed, 0 Skipped) run in 1.1 sec
Add to Source Control
Select Repository


Jason Murillo
jason.murillo@ucr.ac.cr
Account settings...
Test Explorer
Test run finished: 4 Tests (4 Passed, 0 Failed, 0 Skipped) run in 845 ms
BankTests (4) 36 ms
BankAccountTests (4) 36 ms
Debit_WhenAmountIsLessThan... 33 ms
Debit_WhenAmountIsMoreTha... 1 ms
Debit_WithValidAmount_Updat... 2 ms
TestMethod1 < 1 ms
Group Summary
BankTests
Tests in group: 4
Total Duration: 36 ms
Outcomes
4 Passed
Build started...
1>------ Build started: Project: BankTests, Configuration: Debug Any CPU ------
1> BankTests -> C:\Users\admin\source\repos\RepoActualizado\laboratorio8\Bank\BankTests\bin\Debug\BankTests.dll
========== Build: 1 succeeded, 0 failed, 1 up-to-date, 0 skipped ==========
========== Build started at 9:23 PM and took 03.231 seconds ==========


Jason Murillo
jason.murillo@ucr.ac.cr
Account settings...
Test Explorer
Test run finished: 4 Tests (4 Passed, 0 Failed, 0 Skipped) run in 792 ms
BankTests (4) 15 ms
BankTests (4) 15 ms
BankAccountTests (4) 15 ms
Debit_WhenAmountIsLessThan... 14 ms
Debit_WhenAmountIsMoreTha... < 1 ms
Debit_WithValidAmount_Updat... 1 ms
TestMethod1 < 1 ms
Build started...
1>------ Build started: Project: Bank, Configuration: Debug Any CPU ------
1>C:\Users\admin\source\repos\RepoActualizado\laboratorio8\Bank\BankAccount.cs(7,7,7,13): warning CS0105: The using directive for 'System' appeared previously in this namespace
1> Bank -> C:\Users\admin\source\repos\RepoActualizado\laboratorio8\Bank\Bank\bin\Debug\Bank.exe
2>------ Build started: Project: BankTests, Configuration: Debug Any CPU ------
2> BankTests -> C:\Users\admin\source\repos\RepoActualizado\laboratorio8\Bank\BankTests\bin\Debug\BankTests.dll
========== Build: 2 succeeded, 0 failed, 0 up-to-date, 0 skipped ==========
========== Build started at 9:31 PM and took 00.828 seconds ==========

Contenido del reporte_bank.pdf

1. (10%) Al menos 2 screenshots solicitados

2. (6%) Respuesta a la pregunta A) ¿Por qué se necesita agregar la instrucción Assert.Fail a este caso de prueba?

Se necesita agregar la instrucción a este caso de prueba para asegurarse de que falle si la excepción esperada no se lanza.

3. (6%) Respuesta a la pregunta B) ¿Cuál es el valor de las pruebas unitarias en el flujo de desarrollo de software?

Las pruebas unitarias tienen un valor importante en el flujo de desarrollo de software porque proporcionan una forma de verificar individualmente las unidades de código, como métodos y funciones, para asegurarse de que funcionen correctamente de manera aislada. También, permiten detectar errores y problemas que pueda tener el código.

4. (6%) Respuesta a la pregunta C) ¿cuáles son las principales partes que componen una prueba unitaria?.

Preparación: Se establecen las condiciones iniciales y se configuran los objetos necesarios para ejecutar la unidad de código que se va a probar.

Ejecución: Se invoca el método o función que se está probando con los valores adecuados.

Verificación: Se comprueba si el resultado de la ejecución coincide con el resultado esperado.

5. (6%) Respuesta a la pregunta D) ¿Para qué sirve establecer un timeout a un caso de prueba?

Un timeout a un caso de prueba sirve para definir un límite de tiempo máximo en el que se espera que el caso de prueba se ejecute. Si el caso de prueba excede el límite de tiempo especificado, se considera que ha fallado debido a algún problema que presenta el código.

1. Tres cosas que no sabía y aprendió en el laboratorio

Hacer pruebas unitarias, como manejar excepciones y para qué sirve un timeout.

2. Una cosa que se le hizo difícil de realizar y explique por qué fue difícil.

Los últimos puntos del segundo tutorial, tenía que realizar varias modificaciones al código.

3. Una cosa que se le hizo fácil de realizar y explique por qué fue fácil.

Las primeras partes del tutorial, eran bien explicadas y bastante fáciles de hacer.

4. Indique cuánto tiempo tardó en realizar el laboratorio.

4 horas.