**GitHub Repository: github.com/username/repo**

**Sprint #0 Report**

Instructions

**Objectives**

* Make decisions on the SOS software development project.
* Learn unit testing and GUI programming in the language of your choice.

**Deliverables and Grading Policy**

Read the “CS 449 Homework Overview” document **carefully** and make the key decisions for the software development. Use the following template to complete your report.

1. **Key Decisions of the SOS Project (2 points)**

|  |  |
| --- | --- |
| Object-oriented programming language | C# |
| GUI library (strongly encouraged) | WinForm |
| IDE (Integrated Development Environment) | Visual Studio 2022 |
| xUnit framework (e.g., JUnit for Java) | NUnit |
| Programming style guide (must read it carefully) | <https://learn.microsoft.com/en-us/dotnet/csharp/fundamentals/coding-style/coding-conventions> & https://github.com/dotnet/runtime/blob/main/docs/coding-guidelines/coding-style.md |
| Project hosting site | Github.com |
| Other decisions if applicable |  |

Sample programming style guides:

* Google Java Style Guide: <https://google.github.io/styleguide/javaguide.html>
* Google C++ Style Guide: <https://google.github.io/styleguide/cppguide.html>
* Google Python Style Guide: <https://google.github.io/styleguide/pyguide.html>

1. **Unit testing (4 points)**

Find a tutorial on the unit test framework you have chosen and write at least two xUnit tests of a program you have written or found elsewhere. Attach here (1) the screenshot of your program execution and (2) the source code of your program.

A computer screen shot of a black screen

AI-generated content may be incorrect.

Source Code for Screenshot 1:

* Calculator.cs
  + using System;
  + using System.Collections.Generic;
  + using System.Linq;
  + using System.Text;
  + using System.Threading.Tasks;
  + namespace CalculatorApp
  + {
  + public class Calculator
  + {
  + public int Add(int a, int b)
  + {
  + return a + b;
  + }
  + public int Subtract(int a, int b)
  + {
  + return a - b;
  + }
  + }
  + }
* Unit Test 1.cs
  + using NUnit.Framework;
  + using CalculatorApp;
  + namespace CalculatorTests
  + {
  + [TestFixture]
  + public class CalculatorTests
  + {
  + [Test]
  + public void Add\_TwoPositiveNumbers\_ReturnsCorrectSum()
  + {
  + // Arrange
  + Calculator calc = new Calculator();
  + int a = 5;
  + int b = 3;
  + int expected = 8;
  + // Act
  + int actual = calc.Add(a, b);
  + // Assert
  + Assert.AreEqual(expected, actual);
  + }
  + [Test]
  + public void Subtract\_TwoNumbers\_ReturnsCorrectDifference()
  + {
  + // Arrange
  + Calculator calc = new Calculator();
  + int a = 10;
  + int b = 4;
  + int expected = 6;
  + // Act
  + int actual = calc.Subtract(a, b);
  + // Assert
  + Assert.AreEqual(expected, actual);
  + }
  + }
  + }

A computer screen shot of a program

AI-generated content may be incorrect.

* Additional Test Code:
  + [Test]
  + public void Add\_NegativeAndPositiveNumbers\_ReturnsCorrectSum()
  + {
  + // Arrange
  + Calculator calc = new Calculator();
  + int a = -5;
  + int b = 3;
  + int expected = -2;
  + // Act
  + int actual = calc.Add(a, b);
  + // Assert
  + Assert.AreEqual(expected, actual);
  + }

1. **GUI programming (4 points)**

Write a GUI program in the language you have chosen for your SOS project. The GUI of your program must include text, lines, a check box, and radio buttons. While you are recommended to consider the GUI for the SOS game board, it is not required. In this assignment, any GUI program of your own work is acceptable.

Attach here (1) the screenshot of your program execution and (2) the source code of your program.

**A screenshot of a computer

AI-generated content may be incorrect.**

Form1.cs

* using System;
* using System.Collections.Generic;
* using System.ComponentModel;
* using System.Data;
* using System.Drawing;
* using System.Linq;
* using System.Text;
* using System.Threading.Tasks;
* using System.Windows.Forms;
* namespace GUI\_Test
* {
* public partial class Form1 : Form
* {
* public Form1()
* {
* InitializeComponent();
* }
* private void label1\_Click(object sender, EventArgs e)
* {
* }
* private void Form1\_Load(object sender, EventArgs e)
* {
* checkBox1.Checked = true;
* }
* private void label2\_Click(object sender, EventArgs e)
* {
* }
* }
* }

Program.cs

* using System;
* using System.Collections.Generic;
* using System.Linq;
* using System.Threading.Tasks;
* using System.Windows.Forms;
* namespace GUI\_Test
* {
* internal static class Program
* {
* /// <summary>
* /// The main entry point for the application.
* /// </summary>
* [STAThread]
* static void Main()
* {
* Application.EnableVisualStyles();
* Application.SetCompatibleTextRenderingDefault(false);
* Application.Run(new Form1());
* }
* }
* }

Form1.Designer.cs

* namespace GUI\_Test
* {
* partial class Form1
* {
* /// <summary>
* /// Required designer variable.
* /// </summary>
* private System.ComponentModel.IContainer components = null;
* /// <summary>
* /// Clean up any resources being used.
* /// </summary>
* /// <param name="disposing">true if managed resources should be disposed; otherwise, false.</param>
* protected override void Dispose(bool disposing)
* {
* if (disposing && (components != null))
* {
* components.Dispose();
* }
* base.Dispose(disposing);
* }
* #region Windows Form Designer generated code
* /// <summary>
* /// Required method for Designer support - do not modify
* /// the contents of this method with the code editor.
* /// </summary>
* private void InitializeComponent()
* {
* this.components = new System.ComponentModel.Container();
* this.label1 = new System.Windows.Forms.Label();
* this.checkBox1 = new System.Windows.Forms.CheckBox();
* this.radioButton1 = new System.Windows.Forms.RadioButton();
* this.radioButton2 = new System.Windows.Forms.RadioButton();
* this.textBox1 = new System.Windows.Forms.TextBox();
* this.bindingSource1 = new System.Windows.Forms.BindingSource(this.components);
* this.label2 = new System.Windows.Forms.Label();
* this.label3 = new System.Windows.Forms.Label();
* ((System.ComponentModel.ISupportInitialize)(this.bindingSource1)).BeginInit();
* this.SuspendLayout();
* //
* // label1
* //
* this.label1.AutoSize = true;
* this.label1.Location = new System.Drawing.Point(21, 9);
* this.label1.Name = "label1";
* this.label1.Size = new System.Drawing.Size(114, 13);
* this.label1.TabIndex = 0;
* this.label1.Text = "This is a test text label!\r\n";
* this.label1.Click += new System.EventHandler(this.label1\_Click);
* //
* // checkBox1
* //
* this.checkBox1.AutoSize = true;
* this.checkBox1.Location = new System.Drawing.Point(24, 35);
* this.checkBox1.Name = "checkBox1";
* this.checkBox1.Size = new System.Drawing.Size(271, 17);
* this.checkBox1.TabIndex = 1;
* this.checkBox1.Text = "Please check this box if you read the previous label!";
* this.checkBox1.UseVisualStyleBackColor = true;
* //
* // radioButton1
* //
* this.radioButton1.AutoSize = true;
* this.radioButton1.Location = new System.Drawing.Point(24, 58);
* this.radioButton1.Name = "radioButton1";
* this.radioButton1.Size = new System.Drawing.Size(302, 17);
* this.radioButton1.TabIndex = 2;
* this.radioButton1.TabStop = true;
* this.radioButton1.Text = "Please click this if you\'ve checked the previous checkbox!";
* this.radioButton1.UseVisualStyleBackColor = true;
* //
* // radioButton2
* //
* this.radioButton2.AutoSize = true;
* this.radioButton2.Location = new System.Drawing.Point(24, 81);
* this.radioButton2.Name = "radioButton2";
* this.radioButton2.Size = new System.Drawing.Size(297, 17);
* this.radioButton2.TabIndex = 3;
* this.radioButton2.TabStop = true;
* this.radioButton2.Text = "Please click this if you checked the previous radio button!";
* this.radioButton2.UseVisualStyleBackColor = true;
* //
* // textBox1
* //
* this.textBox1.Location = new System.Drawing.Point(35, 179);
* this.textBox1.Name = "textBox1";
* this.textBox1.Size = new System.Drawing.Size(463, 20);
* this.textBox1.TabIndex = 4;
* //
* // label2
* //
* this.label2.BorderStyle = System.Windows.Forms.BorderStyle.FixedSingle;
* this.label2.Location = new System.Drawing.Point(64, 254);
* this.label2.Name = "label2";
* this.label2.Size = new System.Drawing.Size(230, 0);
* this.label2.TabIndex = 5;
* this.label2.Click += new System.EventHandler(this.label2\_Click);
* //
* // label3
* //
* this.label3.BorderStyle = System.Windows.Forms.BorderStyle.FixedSingle;
* this.label3.Location = new System.Drawing.Point(12, 309);
* this.label3.Name = "label3";
* this.label3.Size = new System.Drawing.Size(264, 2);
* this.label3.TabIndex = 6;
* //
* // Form1
* //
* this.AutoScaleDimensions = new System.Drawing.SizeF(6F, 13F);
* this.AutoScaleMode = System.Windows.Forms.AutoScaleMode.Font;
* this.BackColor = System.Drawing.Color.FromArgb(((int)(((byte)(255)))), ((int)(((byte)(192)))), ((int)(((byte)(192)))));
* this.ClientSize = new System.Drawing.Size(800, 450);
* this.Controls.Add(this.label3);
* this.Controls.Add(this.label2);
* this.Controls.Add(this.textBox1);
* this.Controls.Add(this.radioButton2);
* this.Controls.Add(this.radioButton1);
* this.Controls.Add(this.checkBox1);
* this.Controls.Add(this.label1);
* this.Name = "Form1";
* this.Text = "Test GUI";
* this.Load += new System.EventHandler(this.Form1\_Load);
* ((System.ComponentModel.ISupportInitialize)(this.bindingSource1)).EndInit();
* this.ResumeLayout(false);
* this.PerformLayout();
* }
* #endregion
* private System.Windows.Forms.Label label1;
* private System.Windows.Forms.CheckBox checkBox1;
* private System.Windows.Forms.RadioButton radioButton1;
* private System.Windows.Forms.RadioButton radioButton2;
* private System.Windows.Forms.TextBox textBox1;
* private System.Windows.Forms.BindingSource bindingSource1;
* private System.Windows.Forms.Label label2;
* private System.Windows.Forms.Label label3;
* }
* }