**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 | Java |
| GUI library (strongly encouraged) | Swing |
| IDE (Integrated Development Environment) | Eclipse IDE |
| xUnit framework (e.g., JUnit for Java) | JUnit |
| Programming style guide (must read it carefully) | Google Java Style |
| Project hosting site | https://github.com/DKarr393/CS-449 |
| Other decisions if applicable |  |

(Note: My code for Sprint 0 is also on GitHub)

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 screenshot of a computer

Description automatically generated (Test 1)

A screenshot of a computer

Description automatically generated(Test 2)

**Math**

/\* Sprint 0 by Dylan Karr

\* In the following code, I followed a YouTube tutorial to create two different and simple Unit Tests.

\* One is a simple average function.

\* The other is a Letter Grade function.

\* Credit: https://www.youtube.com/watch?v=vZm0lHciFsQ (by CodingWithJohn)

\*/

public class Math {

public int average (int a, int b) {

return (a + b)/2;

}

public char grades (int percentage) {

if (percentage < 0) {

throw new IllegalArgumentException("Error.");

}

else if (percentage < 60) {

return 'F';

}

else if (percentage < 70) {

return 'D';

}

else if (percentage < 80) {

return 'C';

}

else if (percentage < 90) {

return 'B';

}

else {

return 'A';

}

}

}

**MathTest (1st Unit Test)**

import static org.junit.jupiter.api.Assertions.\*;

import org.junit.jupiter.api.Test;

class MathTest {

@Test

void avgTest() {

Math test1 = new Math();

assertEquals(2, test1.average(2,2));

}

}

**MathTest2 (2ns Unit Test)**

import static org.junit.jupiter.api.Assertions.\*;

import org.junit.jupiter.api.Test;

class MathTest2 {

@Test

void gradeTest() {

var student = new Math();

assertEquals('F', student.grades(0));

}

@Test

void gradeTest2() {

var student = new Math();

assertEquals('D', student.grades(60));

}

@Test

void gradeTest3() {

var student = new Math();

assertEquals('C', student.grades(70));

}

@Test

void gradeTest4() {

var student = new Math();

assertEquals('B', student.grades(80));

}

@Test

void gradeTest5() {

var student = new Math();

assertEquals('A', student.grades(90));

}

@Test

void gradeTest6() {

var student = new Math();

assertThrows(IllegalArgumentException.class, () -> {

student.grades(-1);

});

}

}

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

Description automatically generated (The GUI)

A screenshot of a computer

Description automatically generated

(The outputs)

**GUI**

import java.awt.BorderLayout;

import java.awt.GridLayout;

import java.awt.event.ActionEvent;

import java.awt.event.ActionListener;

import java.awt.Graphics;

//import java.awt.Color;

import javax.swing.BorderFactory;

import javax.swing.JButton;

import javax.swing.JFrame;

import javax.swing.JLabel;

import javax.swing.JOptionPane;

import javax.swing.JPanel;

import javax.swing.JRadioButton;

import javax.swing.JCheckBox;

public class GUI {

JFrame frame;

JLabel label;

JPanel panel;

//Constructor

public GUI() {

frame = new JFrame();

//Label and Buttons

label = new JLabel("Choose your team");

JRadioButton b1 = new JRadioButton("Red");

JRadioButton b2 = new JRadioButton("Blue");

JButton button = new JButton ("Click here");

button.addActionListener(new ActionListener(){

public void actionPerformed(ActionEvent e) {

String team = " ";

if (b1.isSelected() && b2.isSelected()) {

team = "Purple";

}

else if (b2.isSelected()) {

team = "Blue";

}

else if (b1.isSelected()) {

team = "Red";

}

else {

team = "Hello! This is a secret message from Dylan Karr. "

+ "If you found this, I genuinely hope you have "

+ "a good day!";

}

JOptionPane.showMessageDialog(button, team);

}

});

JCheckBox c1 = new JCheckBox("Are you Legendary?");

//Panel settings

panel = new JPanel();

panel.setBorder(BorderFactory.createEmptyBorder(30, 30, 30, 30));

panel.setLayout(new GridLayout(0, 1));

panel.setOpaque(false);

panel.add(label);

panel.add(b1);

panel.add(b2);

panel.add(button);

panel.add(c1);

//Frame settings

frame.add(panel, BorderLayout.CENTER);

frame.setDefaultCloseOperation(JFrame.EXIT\_ON\_CLOSE);

frame.setTitle("GUI by Dylan Karr");

frame.setSize(300, 300);

frame.setVisible(true);

frame.getContentPane().add(new LineDrawing ());

}

public static void main(String args[]) {

new GUI(); //Calls GUI and causes my GUI to appear.

}

}

**LineDrawing**

import javax.swing.\*;

import java.awt.\*;

class LineDrawing extends JComponent{

//Line

public void paint(Graphics g) {

g.drawLine(0, 70, 300, 70);

g.drawLine(0, 240, 300, 240);

}

}