Sprint #0 Report

CS 449 - Peg Solitaire Project

Key Decisions of the Solitaire Project

Object-oriented programming language: Python (Object-Oriented Programming)
Python was selected because it supports OOP concepts such as classes, inheritance, and polymorphism while allowing rapid development and readability. This will help implement the game logic efficiently and maintainably.

GUI library: Tkinter
Tkinter was chosen because it is included with Python, lightweight, and sufficient for building the required graphical interface elements such as text labels, lines, checkboxes, and radio buttons.

IDE: Visual Studio Code
VS Code provides strong Python support, debugging tools, integrated terminal, and extensions for testing and version control.

xUnit framework: pytest
pytest was selected as the unit testing framework because of its simplicity, readable syntax, and powerful test discovery capabilities.

Programming style guide: Google Python Style Guide
The project will follow the Google Python Style Guide to ensure consistent naming conventions, formatting, and code readability.

Project hosting site: GitHub
GitHub will be used for version control, collaboration, and maintaining a history of changes throughout development.

Other decisions:
Python version 3.11 will be used. The project will be structured into separate folders for source code (src) and tests (tests) to maintain organization and scalability.

Unit Testing

The pytest framework was used to implement unit testing for the project. A tutorial from the official pytest documentation was followed to learn how to structure and execute tests.

Two test cases were created to verify functionality:

A basic smoke test to confirm the testing environment runs correctly
A mathematical test to validate assertion behavior

The tests were executed successfully using pytest, demonstrating the ability to detect and run test cases automatically. A screenshot of the test execution and the source code of the tests are attached.

Unit testing ensures correctness of program components and will be used throughout development to validate game logic.

GUI Programming

A graphical user interface was implemented using Python's Tkinter library. The GUI demonstrates key interface elements required for the Peg Solitaire project.

The interface includes:

- Text labels describing the application
  A canvas with drawn lines representing the game area
- A checkbox for enabling recording of game moves
- Radio buttons allowing selection between Manual and Autoplay modes

The GUI is interactive and confirms the feasibility of building a complete graphical Peg Solitaire game. A screenshot of the running program and the full source code are attached.