THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

ENGR 1181 | Software Design Project

- Project Description
- Notebook Guidelines
- Extra Credit Opportunities
- References

Project Description

Learning Objectives:

This software design project challenges students to combine problem-solving strategies, the design process, and programming skills in a team setting to solve a real-world programming scenario. Students will review this document before arriving to lab.

1. Problem Statement

Each team is tasked with developing a game using MATLAB and then documenting the project. Each team has the option to choose their game/games from Table 1 or to propose their own game. Each team must have at least 2 points of working games for full credit on the project (more for extra credit).

To aid in the development of the games, there is documentation and sample files from the University of Cincinnati [2]. These documents will be posted on Carmen for you to download. These documents are meant to aid in the development of the games and we encourage you to use them when appropriate. These files include many game pieces and game boards that will be helpful in your game development. As with any other reference you use, you MUST reference the material in your final documentation.

Table 1: Game Point Values [1]

Points	Game
1	Simple Dice Games (Craps, Over/Under Seven)
2	Simple Card Games (War, Go Fish, Memory)
2	Hangman
2-3	Solitaire – depending on complexity of gameplay
3	Black Jack
3	Master Mind
3-4	Connect Four – higher points for smart computer player
4	Othello
4	Yahtzee
4	Euchre
2-4	Adventure – depending on monster placement, number of levels and complexity of scoring
3-4	Battleship – higher points for smart computer player

2. Project Tasks – See Carmen for Exact Due Dates

- SDP 1: Brainstorming/Planning Day
    - Create a u.osu.edu Account – Due SDP 1 End of Class (EOC)
    - Initial Decision on Game/Games – Due SDP 1 EOC
    - User Interview #1 (u.osu.edu) – Complete SDP 1 EOC, Upload SDP Day 2

- Before SDP 2
    - Follow Instructions to Create u.osu.edu site and import template – Due SDP 2
    - Create or Update Team Working Agreement (u.osu.edu) – Due SDP 2
    - Individual Responsibility Agreement (u.osu.edu) – Due SDP 2
    - Flowchart, Algorithm, or Pseudocode Draft (CarmenCanvas) - Due SDP 2

- SDP 2: Work Day

- SDP 3: Work Day and Beta Testing
    - User Interview #2 (u.osu.edu) – Due SDP 3 End of Class (EOC)
    - Final Software Design Project Plan – Due SDP 3 End of Class (EOC)

- SDP 4: Work Day and Final Testing (Must have final test by instructional team by end of class)

- Documentation and Video
    - Draft Presentation (CarmenCanvas) – Week of Nov 13
    - Pitch presentation Video (u.osu.edu) – Due 1 day before Class 27
    - Final Documentation (u.osu.edu) - Due Class 27

Project Notebook Guidelines

Project Notebook Description:

Each team will complete a project notebook on a u.osu.edu site. This notebook is due during Class 27. The notebook should follow the guidelines given below. Teams should keep in mind that this notebook should be well organized and professional in appearance.

Project Notebook Requirements:

The project notebook should be organized as follows:

1. Welcome Page
    A. Table of contents describing what can be found in each link
    B. Executive Summary

2. Project Management Documentation:
    A. Team working agreement
    B. Individual Responsibility agreement
    C. Project schedule
    D. Meeting notes

3. Business Plan:
    A. User Identification and Interviews – Identify the intended audience for your game, conduct 1 interview with a potential user PRIOR to development, conduct 1 interview with a user after beta testing.
    B. Electronic/Print advertisement for the game – (flyer, brochure etc.)
    C. 5-7 minute pitch video that includes a demonstration of your game. All team members must speak and/or appear on the video.

4. Software Documentation
    A. Introduction
    B. User Manual
        a. This description is for a general audience. This audience may not be familiar with programming. A reader with no MATLAB or engineering knowledge should be able to understand this description.
        b. This section should describe all aspects of the program.
    C. Program Description for Developers
        a. This is a technical description of your program. The intended audience includes those familiar with MATLAB, the provided MATLAB game commands, and programming in general.

   b. Include a list of variable names and uses. This should include **every** variable that is used within your code.
   c. Include a list of the provided MATLAB game commands used with short descriptions. Do not copy the descriptions from the provided documentation.
   d. Students are not permitted to copy any project descriptions from this document or any provided documentation.
   e. You must reference any outside sources used in the development of your game. Include in Reference section as well.

D. Final Algorithm, Flowchart or Pseudocode/Flowchart
   a. Write out an algorithm, flowchart or pseudocode to match the team's final program.
   b. This may be similar or drastically different from the team's initial draft based on how much the code changes over the course of the project.

E. Final Program with Comments
   a. Include the code from the final program used during testing.
   b. The code MUST have sufficient comments throughout. Another programmer should be able to read these comments and have a good understanding of how the code works.

F. Brief Discussion
   a. Provide brief explanations of what occurred during the game's testing.
   b. Describe the progression of the MATLAB code.
   c. Describe the obstacles faced and how they were overcome.

G. Conclusion and Recommendations
   a. Develop a conclusion from the results obtained throughout the game software design project, including the game itself, the programming, and problem solving method. This can also include recommendations for changes to the game if you had more time for development or if you were going full scale with the product.

Extra Credit Opportunities

Extra credit is available if you exceed the maximum number of game points. This can be done through more difficult games and/or additional games. You may earn the extra credit for creating the additional games or for creating the additional games and creating additional documentation. You must complete Extra Credit Opportunity #1 to be eligible to complete Extra Credit Opportunity #2.

Extra Credit Opportunity #1

Exceed the 2 point minimum – Extra Credit earned in Demonstration/Testing Assignment

3 points of game assignments demonstrated/tested		5 points of extra credit
4 points of game assignments demonstrated/tested	Must be: 2 two point games, 1 three + 1 one point, or 1 four point game.	10 points of extra credit
6 points of game assignments demonstrated/tested	Must include at least 1 game three points or higher	15 points of extra credit

Extra Credit Opportunity #2

Exceed the 2 point minimum in the Notebook Documentation – EC earned in Notebook Assignment

3 points of game assignments documented		5 points of extra credit
4 points of game assignments documented	Must be: 2 two point games, 1 three + 1 one point, or 1 four point game.	10 points of extra credit
6 points of game assignments documented	Must include at least 1 game three points or higher	15 points of extra credit

References

1. Ossman, K., and Bucks, G., "First Year Student Team Projects Using MATLAB," *First Year Engineering Experience Conference*, August 8-9, Pittsburgh, PA, 2013.
2. Ossman, K. and Bucks, G. , "MATLAB Courseware: Game Projects" , MathWorks, https://www.mathworks.com/academia/highschool/courseware/games/?s_tid=srchtitle