

Lab 2

Goals-

Identify requirements for a program

Document the requirements using a simplified class hierarchy

Develop a simple initial test plan

You will do the analysis for a program. The purpose of this lab is to develop the habit of understanding the situation before you write code. You will then develop a class hierarchy to document the requirements you identify. You will not write any code. That will come in Lab 3.

You will design 2 classes, Die and LoadedDie. You will use inheritance. You will create a class hierarchy to show LoadedDie is derived from Die.

For this assignment you will also need a Game class. The Game class will not be part of an is-a relation, but a has-a relation. The Game class will need to keep track of the type of dice for each of the 2 players, the number of rounds to play, and some way to maintain the score.

You will design a program to play a simplified version of war, using dice instead of cards. There will be only one user, but 2 “players” for the game. The user will indicate the number of rounds to play. The user will also specify for each “player” the number of sides on the dice used and if that player is using regular or loaded dice. For example one player could have a loaded 10-sided die while the other has a regular 4-sided die. No one said it had to be fair! ☺

Your program will use the game class to run the game. To play a game, for each round you roll a die of the appropriate type for each player. The higher result wins. If they are equal it is a draw. The winner of the game is the player who won the most rounds. Your program will print out which player won to the user.

Do NOT write any code. This is only design.

You will also create a draft test plan. Thinking about testing while doing your design can help spot problems. For the test plan: what options are available to the user? What results would you expect for each option or combination of options?

What do I expect? You should list your requirements. You should describe any actions required. You should clearly indicate which nouns are classes, which nouns are data members for which classes, and which activities are members of which classes. You should include an outline of the design for your main program indicating how it will use the Game and Die classes.

Include a class hierarchy diagram displaying the organization and/or relationship of the different classes. You should have at least 3 classes for this lab. Do you NEED a player class? Clearly indicate any is-a and has-a relations. The box for each class should separate name, data, and function members. An example is included at the end of this file. If you do not want to struggle with a drawing program please draw it neatly by hand and scan it. Notice that it is not detailed. The goal is to better understand the problem.

Grading

Remember the labs are worth 10 points total.

English writing (is it clear?)- 1 point

Clearly state the requirements for the program- 3 points

The class definitions provide all required behavior- 2 points

The class hierarchy clearly reflects the requirements- 2 points

The initial test plan covers the current design- 2 points

HINT: This lab is mostly writing (an important skill for the workplace) so treat it as a paper. Draft it, then ask someone to read it. They do not need to be a computer person! You want to know if it makes sense.

