Lab 2

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State program requirements

This program will use dice in order to create a 2-player game of war. The user will indicate the number of rounds to be executed and if each player will use a regular die or a loaded die, the loaded die having a higher probability of rolling a high number.

To win, a player must have won the most rounds of those played between the two players. The winning player will be tracked throughout the game and output at the end.

Class Definitions & Required Behaviours

The three class definitions I will use in this program are Game, Die, LoadedDie.

Game variables will track the rounds as an int and the score as an int. Die will contain the variable sides as an int which will get user input for the number of sides on the die. LoadedDie will be void, but have and is-a relationship with Die.

The behaviours of Game must include the following:

- Game() –sets default to Die, 6 sides, 3 rounds
- Game(dieType:int, sides:int, rounds:int)
- keepScore() –int
- numRounds() –int

The behaviours of Die must include the following:

- Die() –defalut constructor side = 6
- Die(sides:int) –default of user specified sides
- setSides(sides:int) –void
- getSides() –int
- rollDie() –int, return roll score

The behaviours of LoadedDie must include the following:

- rollLoadedDie() –int, Overrides Die class rollDie() in order to roll higher numbers

Class Hierarchy

The interaction of the classes designed above is shown graphically below in the flow chart. This chart shows the has-a relationship between Game and Die/LoadedDie as well as the is-a relation between Die and LoadedDie. Below this flow chart is a table of the behaviours of each of these classes, reiterated from above.

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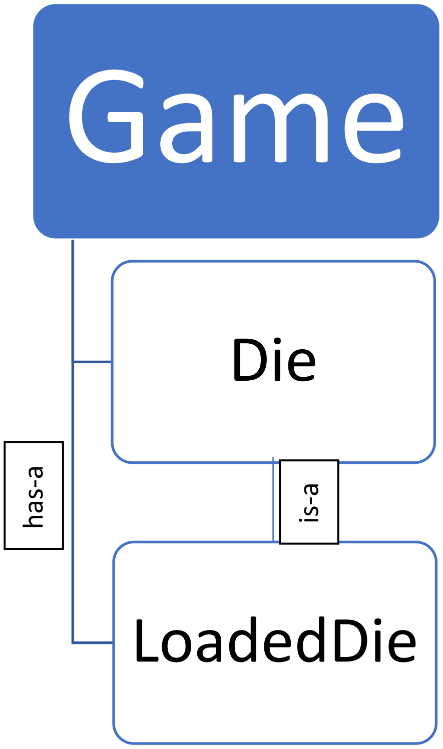

Game	Die	LoadedDie
- Game() –sets default to Die, 6 sides, 3 rounds - Game(dieType:int, sides:int, rounds:int) - keepScore() –int - numRounds() –int	- Die() –defalut constructor side = 6 - Die(sides:int) –default of user specified sides - setSides(sides:int) –void - getSides() –int - rollDie() –int, return roll score	- rollLoadedDie() –int, Overrides Die class rollDie() in order to roll higher numbers

Test Plan

Action	**Expected Response**
Increase sides in Game()	Have die with more than 6 sides
Decrease rounds in Game()	Have shorter game than default
Ensure keepScore() and numRounds() counts are correct for several game play types (fair, loaded, fair-loaded)	Expect keepScore to match hand kept values
Compare Die to LoadedDie	Expect LoadedDie to roll higher values than Die