
Program name : Lab3_Design_Description_Schaefer_Kristin.pdf
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Date : 04-21-2019

Design for Lab3

Main Function

Description: The main function is used to call Game class functions, such as the menu and play game functions. It also creates two die objects to pass to the Game functions.

Process:

1. Create two die objects
2. Create game object
3. Call menu function
4. If user selects to play the game, collect input. If user selects to quit, quit program.
5. Play game. Roll dice specified number of rounds and output round information.
6. Output final results and winner.
7. Deallocate dynamically allocated memory

Game Class

Description: The Game class serves 3 main purposes. The first is to display a menu asking the user to enter "1" to start the war dice game or "2" to quit. If the player selects to play the game. The second purpose of the Game class is to collect user input such as number of sides of the die and number of rounds to play. The final purpose of the class is to play the game and to output the score.

Key data members:

1. int choice
 - variable to hold user's menu choice
2. bool play
 - bool value to signal play or quit game
3. pointers to two die objects (or loaded die objects)
 - pointers created in order to call member functions of die / loaded die class inside game class
4. int rounds
 - variable to hold the number of rounds to play
5. int dieType
 - int to represent die type of normal or loaded

Key functions:

1. Main menu
 - 1. Play war dice game
 - 2. Quit
2. Get user input
 - Get and set number of rounds
 - Get and set each die type
 - Get and set number of sides for each die
3. Play game
 - Roll dice
 - Output value of each round
4. Set number of rounds
 - set number of rounds to play based on user input
5. Set die type
 - set die type and assign pointers to die objects based on user choice of die
 - if the die is loaded, dynamically allocate memory
6. Destructor
 - if there is dynamically allocated memory used, delete it and set the pointer to null.

Die and LoadedDie Classes

Description: The Die class creates die objects which possess a number of sides. The class is also used to roll a random number. The LoadedDie class is a derived class of Die. It differs from the Die class with its roll die function, which biases the roll number to be higher than a normal die with the same number of sides.

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Key data members:

1. Int N
 - integer describing the number of sides of the die

Key functions:

1. Die constructor
 - creates a normal die
 - should take int N as a parameter
2. LoadedDie constructor
 - creates a loaded die
 - should take int N as a parameter
3. Roll die
 - for normal die, return a random number from 1-N
 - for loaded die, return a random number that is on average higher than the normal die.