

CS250 Assignment 3

Pig: The Die Rolling Game

Date assigned: Wednesday, February 19, 2014

Date due: Friday, February 28, 2014

Points: 30

Pig is a die rolling game of greed and strategy. The goal of Pig is to accumulate as many points as possible during a turn until the player voluntarily quits or a skunk roll (a roll of 1) comes up, which resets the players points back to zero.

Pig is normally played between two players, but for this assignment you will implement a one-player version of the game. At any point in the game, the player can choose to save their high score to a file if their score is higher than the high score in the file.

A sample run of the game is shown below. The game is paused and the screen is cleared between each screen using `system("pause")` and `system("cls")`.

```
C:\Windows\system32\cmd.exe
*****
*          PIG          *
*****

Player Name:
High Score:  0

Your Points:  0

S>ave
R>oll
Q>uit

Select: _

C:\Windows\system32\cmd.exe
*****
*          PIG          *
*****

Player Name:
High Score:  0

Your Points:  0

S>ave
R>oll
Q>uit

Select: r

You rolled: 6
Press any key to continue . . .

C:\Windows\system32\cmd.exe
*****
*          PIG          *
*****

Player Name:
High Score:  0

Your Points:  6

S>ave
R>oll
Q>uit

Select:

C:\Windows\system32\cmd.exe
*****
*          PIG          *
*****

Player Name:
High Score:  0

Your Points:  6

S>ave
R>oll
Q>uit

Select: s
Please enter your name: Stella
SUCCESSFUL SAVE
Press any key to continue . . .
```

```
C:\Windows\system32\cmd.exe
*****
*          PIG          *
*****
Player Name:  Stella
High Score:   6
Your Points:  0

S>ave
R>oll
Q>uit

Select: s
You do not have the high score
UNSUCCESSFUL SAVE
Press any key to continue . . .

C:\Windows\system32\cmd.exe
*****
*          PIG          *
*****
Player Name:  Stella
High Score:   6
Your Points:  0

S>ave
R>oll
Q>uit

Select: r
You rolled: 1
Resetting Score to 0
Press any key to continue . . .
```

```
C:\Windows\system32\cmd.exe
*****
*          PIG          *
*****
Player Name:  Stella
High Score:   6
Your Points:  0

S>ave
R>oll
Q>uit

Select: q
Thanks For Playing
Press any key to continue . . .
```

Your program is to implement a Die class and a Game class.

The interfaces for each class are stored on Turing in the CS250-02Public folder. You are to copy these interfaces into your new project. Do not modify these interfaces.

```
1 //*****
2 // File name: Die.h
3 // Author: CS, Pacific University
4 // Date: 2/19/14
5 // Class: CS250
6 // Assignment: Pig: The Die Rolling Game
7 // Purpose: Defines the interface for the Die class
8 //*****
9
10 #ifndef DIE_H
11 #define DIE_H
12
13 class Die
14 {
15 public:
16     Die (int = 6);
17     int rollDie ();
18     int getFace () const;
19     void setSeed (int seed);
20     void print () const;
21
22 private:
23     int mFace;
24     int mSeed;
25     int mNumSides;
26 };
27
28 #endif
```

Goals for Assignment 3

1. Write your first Object-Oriented Program using two classes, random numbers, and files
2. Break up a program into well-defined functions
3. Test your program one function at a time

To complete this assignment you must submit the following:

1. An electronic copy of your program on Turing
 - a) Add a project **03_Pig** to your solution **PUNetIDAssignments**. It is vital that you name your solution and your project correctly!
 - b) Type your program (fully documented) into the project. You need to follow the coding standards from the CS250 Web page. These coding standards have been modified to include additional C++ language features introduced in CS250, so please be sure to read the new coding standards.
 - c) Pay attention to the example output! Your program's output must look exactly like the example output! The spacing and newlines in your output must match exactly.
 - d) Make sure that your program compiles without errors & warnings and runs correctly. If you get any errors or warnings, double check that you typed everything correctly. Be aware that C++ is case-sensitive. You will lose 10% if there are any warnings and 70% if your program does not successfully compile.
 - e) Once you are sure that the program works, it is time to submit your program. You do this by logging on to Turing and placing your complete solution folder in the proper Drop folder.
 - f) The solution must be in the drop folder by time class starts on the day the assignment is due. Anything submitted after that will be considered late.
2. A hard copy of your program
 - a) The hard copy must be placed on the instructor's desk by the time class starts on the day that it is due. Print out your solution in the following order: main.cpp, Die.h, Die.cpp, Game.h, Game.cpp.
 - b) The hard copy must be printed in color, double-sided, and stapled in the upper left corner if your solution contains multiple pages. I do not bring a stapler to class.

More than likely, you will see new compiler errors that you are not familiar with. Please start this assignment early and come and see me early. If you want me to look at code:

- 1) Place a copy of your solution on Turing (or on a flash drive),
- 2) Bring in your class notes,
- 3) Bring in your textbook.

Good Luck!!!! ☺

```
1 //*****
2 // File name: Game.h
3 // Author: CS, Pacific University
4 // Date: 2/19/14
5 // Class: CS250
6 // Assignment: Pig: The Die Rolling Game
7 // Purpose: Defines the interface for the Game class
8 //*****
9
10 #ifndef GAME_H
11 #define GAME_H
12
13 #include "Die.h"
14
15 const char FILE_NAME[] = "highScore.txt";
16 const char ERROR_FILE_OPEN[] = "Error: Can't open file";
17 const int MAX_NAME = 64;
18 const char QUIT = 'q';
19 const char ROLL = 'r';
20 const char SAVE = 's';
21 const int BAD_ROLL = 1;
22
23 class Game
24 {
25 public:
26 // Does any game initialization
27 Game ();
28
29 // Print the title for the game
30 void printTitle () const;
31
32 // Prints the player with the high score and their points as well as the
33 // current player's points
34 void printGamePlay () const;
35
36 // Display the menu and return the user's selection
37 char getSelection () const;
38
39 // Returns the current high score for the game
40 int getHighScore () const;
41
42 // Reads the name & high score from a file into appropriate member variables
43 int readHighScore ();
44
45 // If the player has the current high score, then prompt for the player's
46 // name and write the name and high score to the file
47 void writeHighScore ();
48
49 // Rolls a die outputting the roll value, then depending on the roll value
50 // either adds the roll value to the point total or resets the points to 0
51 void takeTurn (Die &cDie);
52
```

```
53 private:
54     char mHighScoreName[MAX_NAME];
55     int mHighScore;
56     int mPlayerPoints;
57 };
58
59 #endif
```