Client Description

Yahtzee

|  |  |  |
| --- | --- | --- |
| **Category** | **Requirements** | **Points** |
| 3 of a kind | At least 3 of the same value | Total of all 5 dice |
| 4 of a kind | At least 4 of the same value | Total of all 5 dice |
| Small straight | 4 consecutive numbers | 30 points |
| Large straight | 5 consecutive numbers | 40 points |
| Full House | 3 of one number, 2 of another (or same) number | 25 points |
| Yahtzee | All five die faces the same | 50 points |
| Chance | Anything works here | Total of all the dice |

Create an application of the game Yahtzee. Yahtzee is a family-friendly dice game that can be played by any number of players (your application should handle 2-4 players). The game is played with five dice and consists of thirteen rounds. The player with the highest score at the end of the 13 rounds is the winner. In each round, each player gets a turn to *roll* the dice and then *score* the roll in one of 13 categories. Every category gets one and only one score -- which means that towards the end of the game players may have to settle for scoring zero in some categories. The score is determined by a different rule for each category (see below). A player’s turn consists of rolling the five dice together. After rolling the dice, the player can either score the current roll or re-roll any or all of the five dice. A player can roll the dice a maximum of three times -- the initial roll (in which all five dice must be rolled), plus up to two re-rolls of any or all dice. After rolling three times, the player must score the roll and then it is the next player’s turn. The play continues until all players have completed 13 rounds. The application must display the player’s current score in each category at the beginning of the player’s turn. At the end of the game, all the players total scores should be displayed along with a message declaring the winner.

Upper Scores: There is a category for each number (1-6). The total for each of these categories is the sum of the die that show that number. For example, if you have 4 die showing the number 3, you get a score of 12 in the 3’s category. When the game is over, if a player scores 63 or more total points on these upper categories, they will get an *upper bonus* of 35 points.

Lower Scores: In the lower scores, you score either a set amount (defined by the category), or zero if you don't satisfy the category requirements.

Program Requirements

Create an application of the game Yahtzee, a family-friendly dice game.

Users: ages ? – adult

Number of Players

* Application should handle 2-4 players
* Yahtzee can be played by any number of players

Game Description

* Played with 5 dice
* The play continues until all players have completed 13 rounds.
* In each round, each player gets a turn described as follows:
  + Application displays the player’s current score in each category
  + *roll* the dice and then
    - A player can roll the dice a maximum of three times -- the initial roll (in which all five dice must be rolled), plus up to two re-rolls of any or all dice. After rolling three times, the player must score the roll and then it is the next player’s turn.
      * 1 – 3 rolls per turn
      * Roll1: roll the five dice together
        + Score or select dice to re-roll
      * Roll2: re-roll any or all of the five dice
        + Score or select dice to re-roll
      * Roll3: re-roll any or all of the five dice
        + Score
  + *score* the roll in one of 13 categories
    - Every category gets one and only one score
      * Upper Scores – Categories 1-6 are scored as the sum of the dice that show that number
        + 1
        + 2
        + 3
        + 4
        + 5
        + 6
        + Upper bonus – If a player scores 63 or more total points on Categories 1-6, they get 35 points when the game is over
      * Lower Scores – score either a set amount (defined by the category), or zero if you don't satisfy the category requirements.
        + 3 of a kind

If >= 3 dice have same value, score sum all dice

Else score 0

* + - * + 4 of a kind

If >=4 dice have same value, score sum all dice

Else score 0

* + - * + Small straight

If >= 4 consecutive numbers, score 30

Else score 0

* + - * + Large straight

If 5 consecutive numbers, score 40

Else score 0

* + - * + Full House

If all dice same, score 25

If 3 dice same and 2 same, score 25

Else score 0

* + - * + Yahtzee

If all dice same, score 50

* + - * + Chance

Score sum all dice

* At the end of the game, all the players total scores should be displayed along with a message declaring the winner.
* Winner: player with the highest score at the end of the game

Questions:

1. Should we prompt the players for there names?
2. Should the categories display descriptions?
3. Should we track display the user’s upper and lower score totals and display them separately at the beginning of each of their turns? Should scores be displayed throughout the turn?
4. How should the category scores be displayed?
   1. Simple print to console

Total Score: 0

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
Category Score

1 0

2 0

3 0

4 0

5 0

6 0

Bonus 0

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Total Upper Score: 0

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Category Score

3 of a kind 0

4 of a kind 0

Small Straight 0

Large Straight 0

Full House 0

Yahtzee 0

Chance 0  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
Total Lower Score: 0

* 1. GUI grid scorecard

|  |  |  |  |
| --- | --- | --- | --- |
| Upper Category | Score | Lower Category | Score |
| 1 (button) | (1s score textfield) | 3 of a Kind | … |
| 2 | (2s score) | 4 of a Kind | … |
| 3 | (3s score) | Small Straight | … |
| 4 | (4s score) | Large Straight | … |
| 5 | (5s score) | Full House | … |
| 6 | (6s score) | Yahtzee | … |
| Bonus | (bonus score) | Chance |  |
| Upper Total | … | Lower Total | …. |
| Total Score (label) | | (total score textfield) | |

1. How should rolls and Roll/Score prompts be displayed?  
   1. Simple console output:

Player 2’s turn  
  
(Display scores)  
  
Type “R” to roll: **roll**

Type “R” to roll: **r**

Roll 1: 1 3 5 5 4

Which dice would you like to re-roll (0 to score)? 1 5

Roll 2: 2 3 6 5 4

Which dice would you like to re-roll (0 to score)? 0

Categories: 1, 2, 3, 4, 5, 6, 3K, 4K, SS, LS, FH, Y, C  
Score as: LS

* 1. GUI grid with buttons

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Upper | Score |  | Lower | Score |
| 1 (button) | (1s score) |  | 3 of a Kind | … |
| 2 | (2s score) |  | 4 of a Kind | … |
| 3 | (3s score) |  | Small Straight | … |
| 4 | (4s score) |  | Large Straight | … |
| 5 | (5s score) |  | Full House | … |
| 6 | (6s score) |  | Yahtzee | … |
| Bonus | (bonus score) |  | Chance |  |
| Upper Total | … |  | Lower Total | …. |
| Total Score: |  | Roll (1 2 3) |  | End Turn |

* + 1. Roll dice

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 0 | 0 | 0 | 0 | 0 |
| Would you | like to roll | or score? | ROLL (1 2 3) | END TURN |

* + 1. Select dice to re-roll by clicking each die button

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1 | 3 | 5 | 5 | 4 |
| Would you | like to roll | or score? | ROLL (1 2) | END TURN |

* + 1. Click Roll

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1 | 3 | 5 | 5 | 4 |
| Would you | like to roll | or score? | ROLL (1) | END TURN |

* + 1. Select a Category from the top of the menu and hit SCORE

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2 | 3 | 5 | 6 | 4 |
| Would you | like to roll | or score? | ROLL (1) | END TURN |