Yahtzee Major Coding Assignment
End of Semester Major Coding Assignment

"Oh boy…we get to actually code a game!!"

Name : _____

This major programming assignment is to be completed individually. Students may **NOT** discuss their programs with each other or at any point show their code to another student. Any student who copies any portion of another student's program and turns this work in for credit is guilty of academic dishonesty and the case will be treated as academic dishonesty. Think of this as an open book test on the computer.

A Yahtzee Scorecard

Yahtzee NAME _____

UPPER SECTION		HOW TO SCORE	GAME #1	GAME #2	GAME #3	GAME #4	GAME #5	GAME #6
Aces	• = 1	Count and Add Only Aces						
Twos	•• = 2	Count and Add Only Twos						
Threes	••• = 3	Count and Add Only Threes						
Fours	•••• = 4	Count and Add Only Fours						
Fives	••••• = 5	Count and Add Only Fives						
Sixes	•••••• = 6	Count and Add Only Sixes						
TOTAL SCORE		➔						
BONUS	If total score is 63 or over	SCORE 35						
TOTAL	Of Upper Section	➔						
LOWER SECTION								
3 of a kind		Add Total Of All Dice						
4 of a kind		Add Total Of All Dice						
Full House		SCORE 25						
Sm. Straight	Sequence of 4	SCORE 30						
Lg. Straight	Sequence of 5	SCORE 40						
YAHTZEE	5 of a kind	SCORE 50						
Chance		Score Total Of All 5 Dice						
YAHTZEE BONUS	✔ FOR EACH BONUS ∙ SCORE 100 PER ✔							
TOTAL	Of Lower Section	➔						
TOTAL	Of Upper Section	➔						
GRAND TOTAL		➔						

The Rules of Yahtzee

(As printed at: http://grail.sourceforge.net/demo/yahtzee/rules.html, November 1, 2004)

Standard Play

Objective of the Game

Yahtzee can be played in solitary or by a group. The group version simply consists of a number of players playing the solitary version simultaneously, with the highest score winning. I'll explain the solitary version, since that's what the applet lets you play (although you could use the "Clone Window" option to let multiple players play).

The game consists of 13 rounds. In each round, you *roll* the dice and then *score* the roll in one of 13 categories. You must score once in each category -- which means that towards

the end of the game you may have to settle for scoring zero in some categories. The score is determined by a different rule for each category; see the section on Scoring below.

The object of the game is to maximize your total score. The game ends once all 13 categories have been scored.

Rolling the Dice

You have five dice which you can roll, represented by the die faces at the top of the applet window. To start with, you roll all dice by clicking on the *Roll All* button. After you roll all dice, you can either score the current roll, or re-roll any or all of the five dice.

To re-roll some of the dice, click on the toggle button underneath the die face you want to re-roll, then click on the *Re-roll* button. This will re-roll the selected dice, leaving the unselected ones unchanged.

You can roll the dice a total of three times -- the initial roll (in which you must roll all the dice), plus two re-rolls of any or all dice. After rolling three times, you must score the roll.

Once you've scored the roll, you roll all the dice again and repeat the process. You continue until all 13 categories have been filled, at which time the game is over.

Scoring

Once you have the dice face combination you want to score, you score the roll in one of the 13 categories. You do this by clicking on one of the radio buttons in either the *Upper Scores* or *Lower Scores* box. Once a category has been scored, it is closed out for the rest of the game; you cannot change a category's score once it's been set. Each category defines its own scoring rules, as described below.

Upper Scores

In the upper scores, you total only the specified die face. So if you roll:
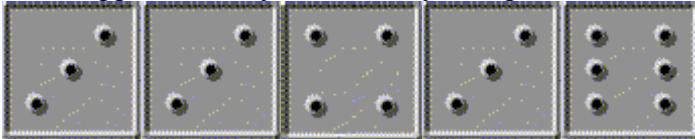
and score in the *Threes* category, your total for that entry would be 9. This same roll would yield zero points if you scored it in the *Aces* (Ones), *Twos*, or *Fives* category, four points if you scored it in the *Fours* category, or six points if you scored it in the *Sixes* category.

When the game is over, if you score 63 or more upper points (an average of 3 die faces per category), you will get an *upper bonus* of 35 points. Of course do don't need to score exactly three die faces in each upper category to get the bonus, as long as the upper total is at least 63.

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.

3 and 4 of a Kind

For *3 of a Kind*, you must have at least three of the same die faces. If so, you total all the die faces and score that total. Similarly for *4 of a Kind*, except that you must have 4 of the 5 die faces the same. So for example, if you rolled:
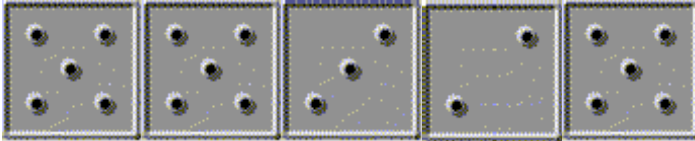
you would receive 20 points for 3 of a Kind, but zero points for 4 of a Kind.

Straights

Like in poker, a *straight* is a sequence of consecutive die faces; a small straight is 4 consecutive faces, and a large straight is 5 consecutive faces. Small straights score 30 points and large straights score 40 points. Thus, if you rolled:
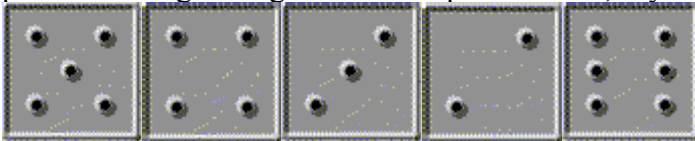
you could score either a small straight or a large straight, since this roll satisfies both.

Full House

Again as in poker, a *Full House* is a roll where you have both a 3 of a kind, and a pair. Full houses score 25 points.

Yahtzee

A *Yahtzee* is a 5 of a Kind (i.e. all the die faces are the same), and it scores 50 points.

Chance

Chance is the catch-all roll. You can roll anything and you simply total all the die faces values.