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Software Development 1

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Final Project Proposal

For my final project in Software Development I, I plan to create a program that generates probabilities of specific poker hands. I am an applied mathematics major with an actuarial track and this semester I am taking probability and statistics as well as taking the actuarial exam in probability and statistics. In order to apply my major to this class I wanted to make my final project related to this area of study that is prevalent in my education this semester.

In the subject of probability and statistics, we deal a lot with dice, coins and cards. I found that one of the most interesting group of calculations throughout the subject so far is figuring out probabilities of certain poker hands (In this project I plan to use five card poker hands). There are the probabilities as found in the Monte Carlo experiment (Royal Flush, two pairs, full house, straight, etc.), and then there can also be probabilities such as the probability that the hand contains only three suits, or only one certain card, such as the seven of hearts.

The mathematics behind calculating these probabilities is through use of combinations with each different case. First we have to discover the amount of poker hands in the given scenario and we can finally divide by the total number of poker hands (52 C 5, read as 52 choose 5) to give the probabilities of the hands occurring. The numerator in this quotient would be different depending on each case but generally it would be choosing a certain number of cards out of the 13 for each suit, or any number of the four suits (In cases where we are only looking at three or even two suits we take the number of cards per suit out of the total 52). The way I plan to code all of this is through if statements and for loops. I am looking forward to program this and figure out a way to generate these probabilities for each given scenario.