

CS 154 : Lab 1 : Additional Problems

1. **Coin change problem:** Write a function to compute the minimum number of coins needed to get a change of N . You can assume that the available denominations are Rs. 3, Rs. 5 and Rs. 7 and there is infinite supply of each denomination.
2. **Gambling in Vegas:** You are allowed to roll a fair 1-6 die up to K times. Whenever you decide to quit, you get x dollars, where x is the number you got in your last roll. Write a function (gamble K) that calculates the expected dollar amount.
3. **Catalan number:** How many distinct arrangements of n pairs of left-right parentheses are there all of which are well parenthesized?
4. **Max:** Write a function to calculate maximum of 2 numbers recursively
5. **Palindromic bit strings:** Write a function to calculate the number of bit strings of length N that are palindromes
6. **Tiling problem:** Write a recursive function that calculates the number of ways to tile a $2 \times N$ wall with 2×1 tiles.
7. **Square root:** Write a recursive function to calculate the floor of square root of a number N