Basics of Problem Solving

Pseudocode Assignment

Pseudocodes

- Write pseudocode to print the following pattern
  1
  232
  34543
  4567654
  567898765

- Find sum of digits of a number. Say N = 3467, Output = 3 + 4 + 6 + 7 = 20

- Pseducode to print all prime numbers in the range 1 to N.

- Write a program to swap two numbers without using third variable.

Circular Jail Puzzle

There is a circular jail with 100 cells numbered 1-100. Each cell has an inmate and the door is locked. One night the jailor gets drunk and starts running around the jail in circles. In his first round he opens each door. In his second round he visits every 2nd door (2,4,6---) and shuts the door. In the 3rd round he visits every 3rd door (3,6,9---) and if the door is shut he opens it, if it is open he shuts it. This continues for 100 rounds (i.e. 4,8,12 ---; 5,10,15 ---; ---; 49,98 etc.) and exhausted the jailor falls down. How many prisoners found their doors open after 100 rounds?

Infinite Quarters Puzzle

You are wearing a blindfold and thick gloves. An infinite number of quarters are laid out before you on a table of infinite area. Someone tells you that 20 of these quarters are tails and the rest are heads. He says that if you can split the quarters into 2 piles where the number of tails quarters is the same in both piles, then you win all of the quarters. You are allowed to move the quarters and to flip them over, but you can never tell what state a quarter is currently in (the blindfold prevents you from seeing, and the gloves prevent you from feeling which side is heads or tails). How do you partition the quarters so that you can win them all?