TON DUC THANG UNIVERSITY

Faculty of Information Technology

Exercises for Lab 6

1. Define recursive functions to calculate the following expressions:

   a. $\sum_{i=1}^{n}(2i+1)$

   b. $\sum_{i=1}^{n}\frac{i}{2}$

   c. $\sum_{i=1}^{n} i!$

   d. $\sum_{i=1}^{n}\sqrt{i}$

   e. $\prod_{i=1}^{n} i!$

2. A child is running up a staircase with n steps, and can hop either 1 step, 2 steps, or 3 steps at a time. Write a program to enter the number of steps n and find out how many possible ways the child can run up the stairs.
3. Write a program to enter a string and print all permutations of the input string.
4. Write a program to enter the amount of money, n cents, and calculate the number of ways of representing n cents in quarters (25 cents), dimes (10 cents), nickels (5 cents) and pennies (1 cent).
5. Write a program to ask users enter a set of positive numbers and print out all subsets of the set.