

Practice S10P05: Christmas Presents

http://www.comp.nus.edu.sg/~cs1010/4_misc/practice.html

Week of release: Week 10

Objective: Recursion

Task statement:

The following lyric is extracted from the Christmas song “The Twelve Days of Christmas”:

**On the first day of Christmas,
my true love sent to me
A partridge in a pear tree.**

**On the second day of Christmas,
my true love sent to me
Two turtle doves,
And a partridge in a pear tree.**

**On the third day of Christmas,
my true love sent to me
Three French hens,
Two turtle doves,
And a partridge in a pear tree.**

Going by this logic, write a recursive function **present_on_day(n)** to determine the number of presents to receive from your true love in day n , for $0 < n \leq 2000$.

Moreover, to prepare for the coming year’s income tax computation, you need to find out how many presents you have received from your true love in a total of n days (for $n > 0$). Write a recursive function **present_thru_days(n)** to compute this answer.

Your program will read a positive integer, which is the day/the number of days of interest. Following are some sample runs, in which the underlined blue numbers are the input.

Sample run #1:

Please enter the number of days: **1**
You have entered the number of days as: 1
The number of present received on day 1 is 1.

Sample run #2:

Please enter the number of days: **12**
You have entered the number of days as: 12
The number of presents received on day 12 is 78.
The number of presents received in 12 days is 364.

Sample run #3:

Please enter the number of days: **400**
You have entered the number of days as: 400
The number of presents received on day 400 is 80200.
The number of presents received in 400 days is 10746800.