Practice Exercise #44: Christmas Presents

(http://www.comp.nus.edu.sg/~cs1010/practice/ex49/)

Reference: Week 10

Date of release: 20 October 2014

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 $0 < n \leq 9000$.

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.
```