

### Sentinel Average (P26L)

In this exercise you will create a program that computes the average of a collection of values entered by the user. The user will enter 0 as a sentinel value to indicate that no further values will be provided. Your program should display an appropriate error message if the first value entered by the user is 0. For example:

10 20 30 40 50 60 0

returns 35 as result.

*Hint: Because the 0 marks the end of the input it should **not** be included in the average.*

### Pitagoric Table (P13L)

Write a program that reads an integer **n** between 1 and 10 and then displays in the screen a pitagoric table for the numbers from 1 to n. The program must check for errors. For example, if user puts 3, the program must show:

	1	2	3
1	1	2	3
2	2	4	6
3	3	6	9

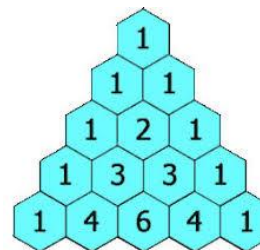
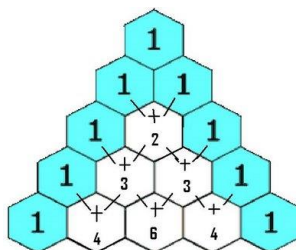
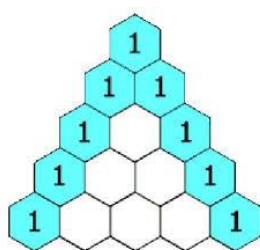
### 1/n\*11 series

Write a program that reads a value **n** from the user and then calculates the result of the following series, display the series and the result:

$$1 - 1/22 + 1/33 - 1/44 + 1/55 - \dots \pm 1/n*11$$

### Pascal's Triangle

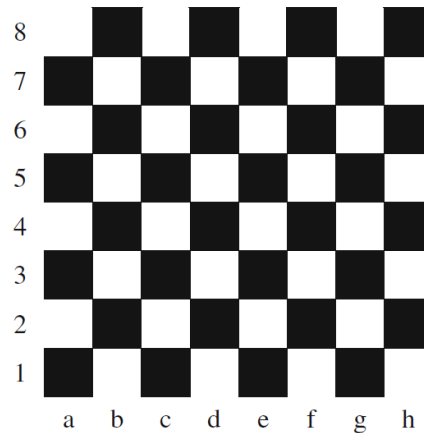
The rows of Pascal's triangle are conventionally enumerated starting with row  $n = 0$  at the top (the 0th row). The entries in each row are numbered from the left beginning with  $k = 0$  and are usually staggered relative to the numbers in the adjacent rows. The triangle may be constructed in the following manner: In row 0 (the topmost row), there is a unique nonzero entry 1. Each entry of each subsequent row is constructed by adding the number above and to the left with the number above and to the right, treating blank entries as 0. For example, the initial number in the first (or any other) row is 1 (the sum of 0 and 1), whereas the numbers 1 and 3 in the third row are added to produce the number 4 in the fourth row.



Your mission, should you choose to accept it is to write a program that displays the Pascal's triangle for a number of rows provided by the user.

### What Color is that Square? (P22L)

Positions on a chess board are identified by a letter and a number. The letter identifies the column, while the number identifies the row, as shown below:



Write a program that reads a position from the user. Use an if statement to determine if the column begins with a black square or a white square. Then use modular arithmetic to report the color of the square in that row. For example, if the user enters a1 then your program should report that the square is black. If the user enters d5 then your program should report that the square is white. Your program may assume that a valid position will always be entered. It does not need to perform any error checking.

### Maximum Integer (PS34L)

Write a program that reads a collection of integers between 0 and 100. The collection of integers may contain duplicate values, and some of the integers between 1 and 100 may not be present. Begin your program by entering an integer between 1 and 100. After the initial integer has been selected, read n additional integers between 1 and 100 until user enters a 0. Check each integer as it is generated to see if it is larger than the maximum number encountered so far. If it is then your program should update the maximum number encountered and count the fact that you performed an update. Display each integer after you generate it. Include a notation with those integers which represent a new maximum.

```
30
74 <== Update
58
17
40
37
13
34
46
52
80 <== Update
37
97 <== Update
45
55
73
...
```

```
The maximum value found was 100
The maximum value was updated 5 times
```