The while Loop Programming Challenges

**********REQUIRED** - Sum of Numbers**********

Write a program that asks the user for a positive nonzero integer value. The program should use a loop to get the sum of all the integers from 1 up to the number entered. For example, if the user enters 50, the loop will find the sum of 1, 2, 3, 4, ……., 50.

CHOOSE 1 OF THE FOLLOWING 2 PROGRAMS

**********Distance Traveled**********

The distance a vehicle travels can be calculated as follows:

*Distance = Speed * Time*

For example, if a train travels 40 miles per hour (mph) for three hours, the distance traveled is 120 miles.

Design a class that stores the speed of a vehicle (in miles per hour) and the number of hours it has traveled. It should have a method named getDistance that returns the distance, in miles, that the vehicle has traveled.

Demonstrate the class in a program that uses a loop to display the distance a vehicle has traveled for each hour of a time period specified by the user. For example, if a vehicle is traveling 40 mph for a three-hour time period, it should display a report similar to the one shown here.

```
Hour            Distance Traveled
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1                          40
2                          80
3                         120
```

Input Validation: Do not accept a negative number for speed and do not accept any value less than one for time traveled.

**********Hotel Occupancy**********

A hotel's occupancy rate is calculated as follows:

Occupancy rate = number of rooms occupied / total number of rooms

Write a program that calculated the occupancy rate for each floor of a hotel. The program should start by asking for the number of floors that the hotel has. A loop should then iterate once for each floor. During each iteration, the loop should ask the user for the number of rooms on the floor and how many of them are occupied. After all the iterations, the program should display the number of rooms the hotel has, the number that are occupied, the number that are vacant, and the occupancy rate for the hotel.

Input Validation: Do not accept a value less than 1 for the number of floors. Do not accept a number less than 10 for the number of rooms on a floor.