1.

Consider the following list:  
a = [[1, 2, 3], [4, 5, 6], [7, 8, 9], [10, 11, 12], [13, 14, 15]]   
Write code that prints out the inner list index before printing out the sum of each inner list.  
  
*Example output:*   
*Sum at index 0: 6  
Sum at index 1: 15  
Sum at index 2: 24  
...*

2.

Write a program that:

1. asks the user to input a positive number N,
2. generates a list of N positive integers selected at random between 1 and 100,
3. displays the contents of the list,
4. sorts the list from largest to smallest,
5. displays the newly sorted list,
6. removes all even values from the list,
7. and displays the updated contents of the list.

*Example output:  
How many values should I generate in the list?>* ***7***   
 *[4, 16, 13, 52, 40, 26, 23]*   
*[52, 40, 26, 23, 16, 13, 4]  
[23, 13]*

3.  
  
We can represent a matrix as a list of list. For instance:

M = [[1, 2, 3, 4, 5],

[6, 7, 8, 9, 10],

[11, 12, 13, 14, 15]]

Write a function make\_matrix that ask the user to enter the number of columns and the number of rows, and then fills the matrix with consecutive numbers as shown in the example.

4.

Write a function col(mat, j) that takes as parameter a matrix (mat) and an integer (j) and that will return a list representing a column from the matrix. For example if we call the function col(M, 1) with the matrix from the previous question it would return [2, 7, 12]

5.  
  
Write a function *transpose* that takes a matrix as parameter and return the transposed matrix. A transposed matrix is a matrix where the rows of the original matrix became the columns.

***Example : (M is the matrix given in Question 3)***

>>> *transpose(M)*

[[1, 6, 11], [2, 7, 12], [3, 8, 13], [4, 9, 14], [5, 10, 15]]