1. Consider the following sequences.

   a = 0, 1, 2, … , 10, b = 7, 9, 11, … , 17, c = 0, 0.5, 1, 1:5, … , 2,

   d = 0, -1.5, -3, …, -18

   Use np.arange, np.linspace and np.r functions to create each sequence.

   Give names as:

a_arrange	b_arrange	c_arrange	d_arrange
a_linspace	b_linspace	c_linspace	d_linspace
a_r	b_r	c_r	d_r

2. Generate some random numbers by x=np.random.randn(20) with np.random.seed(1)!
   Compute y=np.cumsum(x) and z=np.sum(x). Which element of y is equal to z?
   Write your answers as **answer = "nth element of y equals to z". n is the index!**
   Compute w=np.diff(np.cumsum(x)). Check if w is the same as x by using the np.array_equal function and give the variable name as **checking**.
   checking= np.array_equal……

3. Consider the following arrays
   x = [12, 13, 5, 7, 8, 4.5, 6.12, 3, 4, 8, 9, 12.5, 13, 14],
   y = [np.nan, 2.356, 4, 6, 7.321, np.nan, 3, 8, 9, np.nan, 5, 3.3, 4.5, 7]
   Compute the maximum, minimum, mean, median, variance, first quartile, third quartile and interquartile range of each array. Note: The numpy functions for these statistics are given at https://docs.scipy.org/doc/numpy/reference/routines.statistics.html
   Variable names:
   maximum_value, minimum_value, mean_value, median_value, variance, first_quartile, third_quartile, interquartile

4. Consider the following **array (!)** x=[-10,-4,3,2,1.5,6,8,9,0,11,12,2.5,3.3,7,-4]. Use *the logical operators* to extract the elements that are greater than 3 and less than or equal to 9 from x. Store the result under the name **question4**.

5. Use the following code to generate a 15 x 30 array

   ```
   np.random.seed(0)
   x = np.random.randn(15, 30)
   ```

   Use logical operators to do following tasks.
   (a) How many elements of x are greater than 1 and less than or equal to 2. Store the result under the name **question5_a** .
   (b) Extract the elements of x that are greater than 0.9 and less than 1. Store the result under the name **question5_b** .