In each exercise make your source code and output readable.

Exercise 1. Write a program, which contains the following functions:
(a) A function "input_array(a,n)" which allows the user to input values for the first n elements of the array a.
(c) A function "average(a,n)" which returns the arithmetic average of the first n elements of a.
Test the functions in a suitably defined main program.

Exercise 2. Write a program, which contains the following functions:
(a) A function "random_array(a,n,p,q)" which generates pseudorandom number from the range [p,q] for the first n elements of the array a.
(b) A function "display_array(a,n)" which displays the values of the first n elements of the array a on the screen.
(c) A function "swap_integers(a,b)" which interchanges of values a, b.
(d) A function "reverse_array(a,n)" which reverses the order of elements of the first n elements of the array a.
Test the functions in a suitably defined main program.

Exercise 3. Write a program, which contains the following functions:
(a) the functions "random_array(a,n,p,q)" from Exercise 2 and "display_array(a,n)" from Exercise 2.
(b) A function "add(a,b,c,n)" which adds two vectors a and b and assign the sum to c.
(c) A function "product(a,b,n)" which returns the scalar product of two vectors a and b.
Test the functions in a suitably defined main program.

Exercise 4. Write a program, which contains the following functions:
(a) the functions "random_array(a,n,p,q)" from Exercise 2, "display_array(a,n)" from Exercise 2 and "average(a,n)" from Exercise 1.
(b) a function that modifies the content of an array by replacing elements that are smaller than the arithmetic average with the arithmetic average rounded to whole number.
Test the functions in a suitably defined main program.

Exercise 5. In an array of integers let us store the number of votes cast for the candidate during some election. In a program create an array of percentage of votes casts for each candidate in the election. In a program define the appropriate functions. Test the functions in a suitably defined main program.

Exercise 6. Write a program that simulates the rolling of five dice and prints "Yahtzee" if all five dice are the same; otherwise it should print "Try again.". In a program define the appropriate functions. Test the functions in a suitably defined main program.

Exercise 7. In an array of integers let us store N numbers given by the user. In program define a function that prints the N elements from array in random order. In a program define the appropriate functions. Test the functions in a suitably defined main program.

Exercise 8. In a program create an array of integers for storing the N points of N candidates for studies. A candidate for studies receives points from the range (0,800], depending on the results of the baccalaureate (final exams at the end of high school). Indices of array elements are also candidate numbers. Let us assume that candidates are accepted for studies whose points are greater than the arithmetic average of all candidates.
Write a program to display:

- the number of candidates accepted for studies
- the number of candidates not accepted for studies
- list of candidates admitted to the university containing the candidate's number and its points
- list of candidates not admitted to the university containing the candidate's number and its points

In a program define the appropriate functions. Test the functions in a suitably defined main program.
Extension (Complex). Find and display the best m candidates, where m is given by the user.