1) Write a C program for this problem using array.
    i)   Ask the user to input values for float a[10] by using while-loop.
    ii)   In the same program, by using a do-while loop, compute and solve

$$\sum_{n=0}^{4} a[2n]$$

from a[10].

iii)   Then by using a pre-test loop, compute and solve $\sum_{n=0}^{4} a[2n+1]$ from

a[10].

Example
a[0] = 1.1
a[1] = 1.2
a[2] = 1.4
  :
a[9] = 1.5

a[0] + a[2] + a[4]+ .....+ a[2n] = 1.1 + 1.4 + ... = ??

a[1] + a[3] + a[5]+....+ a[2n+1] = 1.2 + ..+1.5 = ??

2)   The *Spectral Energy* of a bound-state Hydrogen atom restricted to 2-dimensional
plane is given by the equation

$$E_n = -\frac{K}{2a_B\left(n+\frac{1}{2}\right)^2} \quad , \qquad K = \frac{e^2}{4\pi\varepsilon_o}$$

where *n* are *positive integers*, *e* is the *elementary charge*, e_o is the *permittivity
constant* in free space, and a_B is the Bohr Radius. E_n unit is in eV (electron Volt).

Write a C program to compute the *Spectral Energy, E_n* of the atom for each value of
n, with the maximum *n* = 50.

For each value of *n*, your program must report the corresponding energy in the
scientific notation format by using the format specifier %le. Use **1D-array to store the
answers for the *Spectral Energy, E_n.***

where *e* = 1.602177 x 10 $^{-19}$ C, e_o = 8.854187 x 10^{-12} Fm^{-1}, a_B= 5.291772 x10 $^{-11}$ m

3. Construct a full C code to solve the problem given below in one program. The number of elements (n) and elements of the array is given by the user.

Operation	Definition	Example
Matrix Addition	A + B	$n=5$, [2 8 9 7 8] + [7 3 0 7 7] = [9 11 9 14 15] $$\begin{pmatrix} 2 \\ 8 \\ 9 \\ 7 \\ 8 \end{pmatrix} + \begin{pmatrix} 7 \\ 3 \\ 0 \\ 7 \\ 7 \end{pmatrix} = \begin{pmatrix} 9 \\ 11 \\ 9 \\ 14 \\ 15 \end{pmatrix}$$
Matrix Subtraction	C - D	$$\begin{pmatrix} 5 \\ 6 \end{pmatrix} - \begin{pmatrix} 2 \\ 1 \end{pmatrix} = \begin{pmatrix} 3 \\ 5 \end{pmatrix}$$ $n=2$
Matrix Multiplication	k*C	$$5 \times \begin{pmatrix} 5 \\ 6 \end{pmatrix} = \begin{pmatrix} 25 \\ 30 \end{pmatrix}$$ n=2, scalar, k=5
Matrix Division	D/k	$$\begin{pmatrix} 2 \\ 1 \end{pmatrix} \div 2 = \begin{pmatrix} 1 \\ 0.5 \end{pmatrix}$$ n=2, scalar, k=2

4. Write a program in C to merge two arrays of the same size sorted in descending order.

Expected Output:
```
Input the number of elements to be stored in the arrays :3
Input 3 elements in the first array :
element - 0 : 1
element - 1 : 2
element - 2 : 3

Input 3 elements in the second array :
element - 0 : 1
element - 1 : 2
element - 2 : 3

The merged array in descending order is :
3 3 2 2 1 1
```