Assignment 5

M.Sc 4th semester

Group A & B

void main () { int x[20], sum, i, n; printf("Number of digits to be entered"); scanf("%d",&n);for(i=1; i≤ n; i++){printf("Give %d numbers",n); scanf("%d",&x[i]); } sum=0; for(i=1; i≤ n; i++){sum=sum+x[i];} printf("%d",sum); } The above programm reads n and find the sum of n numbers. If $n = 7$ and input numbers are $4, 5, 2, 5, 6, 4, 7$ then output is $4+5+2+5+6+4+7 = 33$.

Modify the above programm and print the value of the following expressions:

1. $(x_1 + x_3) * (x_2 + x_4) * (x_3 + x_5)$..... Answer= 56160 for the above input.
2. $(x_1 - x_2) * (x_2 + x_3) + (x_2 - x_3) * (x_3 + x_4) + ... + (x_{n-2} - x_{n-1}) * (x_{n-1} + x_n)$. Answer= -7 for the above input.
3. $(x_1 + x_2)^1 + (x_2 + x_3)^2 + ... + (x_{n-1} + x_n)^{(n-1)}$. Answer= 1886603 for the above input.
4. $(((...((x_1 - x_2) - x_3)..... - x_{n-2}) - x_{n-1}) - x_n)$. Answer is -25 for the above input.
5. $(x_1 - (x_2 - (x_3 - ....(x_{n-2} - (x_{n-1} - x_n))....)))$. Answer is 5 for the above input.
6. $(....(((((x_1 - x_2) + x_3) - x_4) + x_5) - x_6).... \pm x_n)$. Answer is 5 for the above input.
7. $(x_1 * x_n) + (x_3 * x_{n-1}) + (x_5 * x_{n-2})$..... assume n is odd. Answer is 107 for the above input.
8. $(x_1)^k + (x_1 + x_2)^k + (x_1 + x_2 + x_3)^k + ... + (x_1 + x_2 + x_3 + ... + x_n)^k$. When $k = 5$ answer is 57440101.
9. Write programm which outputs local maxims. A number x_i is local maximum if it is more than both x_{i-1} and x_{i+1}. If the array elements are 25,19,22,23,21,10,17,11,13,10 then 23,17 and 13 are local maxims.

10. Write programm that outputs smallest i such that x_i is even. In the above case output is 3 (because the first even number is 22).

11. Write programm that outputs smallest i such that both x_i and x_{i+1} are odd. In the above case output is 4 (because the first two consecutive odd numbers are 23 and 21).

12. Write a programm to find weighted sum. The weights of an element is w., if it is more than w elements immediately after it. In the above case 25*10+19*6+22*7+23*7+21*6+12*3+10*0+17*3+11*1+13*1+10*0=916.

13. Read n and n numbers. Now arrange them into increasing and decreasing orders. Do these programm by two following ways. First case take the help of an intermediate variable v for sorting. In the next case do not take the help of any other intermediate/temporary variable(s). For the above input increasing and decreasing orders are 10,10,11,12,13,17,19,21,22,23,25 and 25,23,11,21,19,17,13,12,11,10,10 respectively.

14. Write a programm which reads two arrays $x_1, x_2, ..., x_n$ and $y_1, y_2....., y_n$. Find the sum
    a) $x_1 * y_n + x_2 * y_{n-1} + ... + x_{n-1} * y_2 + x_n * y_1$.
    b) $x_1 * (y_1 + y_2 + ... + y_n) + x_2 * (y_2 + y_3 + ... + y_n) + x_3 * (y_3 + y_4 + ... + y_n) + ... + (x_1 + x_2 + ... + x_n) * y_n$.