1. Count Odd and Even numbers in an array of 5 positive integers

```
#include<stdio.h>
#include<conio.h>
void  main()
{
    int a[5], i;
    int e=0, d=0; // counters for even and odd nos
    clrscr();
    printf("Enter 5 numbers\n");
    for( i=0; i<5; i++ )
        scanf("%d", &a[i] );

    for(i=0; i<5; i++ )
    {
        if( a[i] % 2 == 0 )
            e++;
        else
            d++;
    }
    printf("Even no. count=%d\n", e );
    printf("Odd no. count=%d", d );
    getch();
}
```

Example Output :

```
Enter 5 numbers
3  4  10  7  8
Even no. count=3
Odd no. count =2
```

2. Find Largest and Second largest numbers from n numbers in the array.


```
#include<stdio.h>
#include<conio.h>
void main()
{
    int a[40], n, i;
    int l1, l2; // to store largest and 2nd largest nos.
    clrscr();
    printf("Enter n :");
    scanf("%d", &n );
    printf("Enter %d numbers\n", n );
    for( i=0; i<n; i++ )
        scanf("%d", &a[i] );

    // getting largest number
    l1 = a[0];
    for(i=1; i<n; i++ )
    {
        if( a[i] > l1 )
            l1 = a[i];
    }
    printf("Largest no= %d\n", l1 );

    // to get 2nd largest no.
    if( a[0] == l1 )
        l2 = a[1];
    else
        l2 = a[0];
```


Example Output :

```
Enter n : 6
Enter 6 numbers
3  10  8  12  5  7
Largest no= 12
2nd Largest no= 10
```

```
    for( i=1; i<n; i++ )
    {
        if( a[i] > l2  && a[i] != l1 )
            l2 = a[i];
    }

    printf("2nd Largest no= %d", l2 );
    getch();
}
```


3. Reverse the array of n numbers

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int a[40], n, i, j, t;
    clrscr();
    printf("Enter n :");
    scanf("%d", &n );
    printf("Enter %d numbers\n", n );
    for( i=0; i<n; i++ )
        scanf("%d", &a[i] );

    for( i=0,  j=n-1;  i<n/2;  i++, j-- )
    {
        t = a[i];
        a[i] = a[j];
        a[j] = t;
    }
    printf("Reversed array\n");
    // print numbers in array
    for( i=0; i<n; i++ )
        printf("%d\t", a[i] );

    getch();
}
```

Example Output :

```
Enter n : 6
Enter 6 numbers
3  10  8  12  5  7
Reversed array
7  5  12  8  10  3
```


4. Find the index of the given number in a given array of n integers. Assume non-duplicate numbers. i.e. Search a given number in array .

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int a[40], n, i, no;
    int  p= -1;   // to hold index of given no i.e. no to search
    clrscr();
    printf("Enter n :");
    scanf("%d", &n );
    printf("Enter %d numbers\n", n );
    for( i=0; i<n; i++ )
        scanf("%d", &a[i] );

    printf("Enter a no to search :");
    scanf("%d", &no );
```

```
    for( i=0 ;  i<n;  i++ )
    {
        if( a[i] == no )  // if no found
        {
            p = i;
            break;  // stop searching
        }
    }
    if( p == -1 )
        printf("Number not found in array\n");
    else
        printf("Index of no = %d", p );

    getch();
}
```

Example Outputs :

1.
Enter n : 6
Enter 6 numbers
3 10 8 12 5 7
Enter a no to search :12
Index of a no = 3

2.
Enter n : 5
Enter 5 numbers
10 5 6 15 4
Enter a no to search : 20
Number not found in array

5. Find the index of last occurrence of the given number in a given array of n integers.

```
#include<stdio.h>
#include<conio.h>

void main()
{
    int a[40], n, i, no;
    int  p= -1;   // to hold index of given no
    clrscr();
    printf("Enter n :");
    scanf("%d", &n );
    printf("Enter %d numbers\n", n );
    for( i=0; i<n; i++ )
        scanf("%d", &a[i] );

    printf("Enter a no to search :");
    scanf("%d", &no );

    for( i=0 ;  i<n;  i++ )
    {
        if( a[i] == no )
        {
            p = i;
        }
    }
    if( p == -1 )
        printf("Number not found in array\n");
    else
        printf("Last Index of no = %d", p );

    getch();
}
```


Example Outputs :

1.
Enter n : 6
Enter 6 numbers
3 10 8 12 10 7
Enter a no to search :10
Last Index of a no = 4

2.
Enter n : 5
Enter 5 numbers
10 5 6 15 4
Enter a no to search : 20
Number not found in array

6. Sort n numbers in array in ascending order.

```
#include<conio.h>

void main()
{
    int a[40], n, i, last, t;
    clrscr();
```

```
    printf("Enter n :");
    scanf("%d", &n );
    printf("Enter %d numbers\n", n );
    for( i=0; i<n; i++ )
        scanf("%d", &a[i] );

    for( last =n-1 ;  l>0;  l-- )
    {
        for( i=0; i<last; i++ )
        {
            if( a[i+1] < a[i] )
            {
                t = a[i];
                a[i] = a[i+1];
                a[i+1] = t;
            }
        }
    }
    printf("\nSorted Array...\n");
    for( i=0; i<n;  i++ )
        printf("%d\t" , a[i] );

    getch();
}
```

Example Output :

```
Enter n : 5
Enter 5 numbers
10   7   12   5   8

Sorted Array…
5   7    8    10   12
```

7. Find binary equivalent of a given integer


```
#include<stdio.h>
#include<conio.h>
void main()
{
    int a[20], no, i, j;
    clrscr();
    printf("Enter a no :");
    scanf("%d", &no );

    // Store bits of number in array
    i = 0;  // index to store bit(1/0) in array
    while( no != 0 )
    {
        a[i] = no % 2;    // store bit in ith index
        i++;
        no = no / 2;
    }

    printf("\nBinary bits for the number...\n");
    for( j= i-1; j>=0;  j-- )    // op bits in rev order
        printf("%d  " , a[j] );

    getch();
}
```

Example Output :

```
Enter a no : 13

Binary bits for the given number…
1  1  0  1
```

8. Input n numbers in array. Store odd and even numbers from this array into two separate arrays and display them. [M-2016]

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int a[50], odd[50] , even[50], n, i, j=0, k=0;

    clrscr();
    printf("Enter  n :");
    scanf("%d", &n );
    printf("Enter  %d numbers..\n", n );
    for( i=0; i<n; i++ )
        scanf("%d", &a[i] );

    // separate odd / even numbers
    for( i=0; i<n; i++ )
    {
        if( a[i] % 2 == 0 )
        {
            even[j] = a[i];
            j++;
        }
        else
        {
            odd[k] = a[i];
            k++;
        }
    }

    printf("\nEven numbers...\n");
    for( i=0; i<j;  i++ )
        printf("%d\t" , even[i] );

    printf("\nOdd numbers...\n");
    for( i=0; i<k;  i++ )
        printf("%d\t" , odd[i] );

    getch();
}
```

Example Output :

```
Enter n : 8
Enter  8 numbers..
5   4   6   3   12   7   6   20

Even numbers…
4   6   12   6   20
Odd numbers…
5   3   7
```


9. Find Mean and variance of n numbers in a list.

Mean = $1/n \sum a_i$, Variance = $1/n \sum (a_i - mean)^2$

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int a[50], n, i;
    float  mean, var, sum;
    clrscr();
    printf("Enter  n :");
    scanf("%d", &n );
    printf("Enter  %d numbers..\n", n );
```

```
    for( i=0; i<n; i++ )
        scanf("%d", &a[i] );

    // .. finding mean
    sum = 0;
    for( i=0; i<n; i++ )
    {
        sum = sum + a[i];
    }
    mean = sum / n;
    printf("\nMean = %f\n", mean );

    // .. finding variance
    sum = 0;
    for( i=0; i<n;  i++ )
    {
        sum = sum + ( a[i]-mean ) * ( a[i]-mean ) ;
    }
    var = sum / n;
    printf("Variance = %f", var );
    getch();
}
```

Example Output :

```
Enter n : 5
Enter  5 numbers..
 2  3  4  5  6

Mean = 4.0
Variance = 2.0
```

10. Find Standard Deviation (s.d) of n numbers in array.

$$SD = \sqrt{\Sigma (a_i - mean)^2 / n}$$ [M-2015]

```
#include<stdio.h>
#include<conio.h>
#include<math.h>
void main()
{
    int a[50], n, i;
    double sum, avg, sd;

    clrscr();
    printf("Enter  n :");
    scanf("%d", &n );
    printf("Enter  %d numbers..\n", n );

    // input and sum n numbers
    sum = 0;
    for( i=0; i<n; i++ )
    {
        scanf("%d", &a[i] );
        sum += a[i];
    }
    avg = sum / n;

    // finding s.d.
```

```
    sum = 0;
    for( i=0; i<n; i++ )
    {
        sum = sum +  ( a[i]-avg ) * ( a[i]-avg )  ;
    }
    sd = sqrt( sum/n );
    printf("\nS.D = %f" , sd);
    getch();
}
```

Example Output :

```
Enter n : 5
Enter  5 numbers..
 2  3  4  5  6

S.D = 1.414214
```

11. Delete all occurrences of a given number in a list.
e.g. input .. 4 5 6 5 5 7 8 2
Delete .. 5
Resultant list .. 4 6 7 8 2

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int a[50], n, no, i, j;

    clrscr();
    printf("Enter  n :");
    scanf("%d", &n );
    printf("Enter  %d numbers..\n", n );
    for( i=0; i<n; i++ )
        scanf("%d", &a[i] );

    printf("Enter a no. to delete :");
    scanf("%d", &no );

    for( i =0;  i<n; i++ )
    {
        if( a[i] == no )
        {
            for( j=i+1; j<n; j++ )
                a[j-1] = a[j];

            n = n-1; // decr list size
            i--;  // move 1 step backward
        }
    }
    printf("\nResultant Array...\n" );
    for( i=0 ; i<n; i++ )
        printf("%d\t", a[i] );
    getch();
}
```

Example Output :

```
Enter n : 8
Enter  8 numbers..
 2  5  4  8  5  5  6  3
Enter a no. to delete: 5

Resultant Array …
2  4  8  6  3
```