19BCS0012
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Computational thinking.

Write an algorithm, Pseudocode and program for bubble sort with an example.

Program:-

```
#include<stdio.h>
void main()
{
  int arr[20], i, n, temp, j;
  Printf(" Enter the number:");
  Scanf("%d", &n);
  Printf("Enter the element: \n");
  for(i=0; i<n; i++)
  {
    Printf("Array[%d]=", i);
  Scanf("%d", &arr[i]);
  for(i=0; i<n; i++)
  {
    for(j=0; j<n-i-1; j++)
    {
      if(arr[j]>arr(j+1))
      {
        temp= arr[j];
      arr[j] = arr[j+1];
      arr[j+1] = temp;
    }}}
```

```
Printf("\n Sorted array is: \n\n");
  for(i=0; i<n; i++)
    Printf("%d ", arr[i]);
  getch(); }
```

Algorithm:-

Step1: Start
Step2: Declare i, j, n, temp, arr[20] as int
Step3: Read n
Step4: Rapt the steps 5 & 6 for i=0 to n-1
Step5: Set j=0
step6: Repeat while j<n
  a) if a[i] < a[j]
    then interchange a[i] & a[j] end if loop
  b) Set j=j+1
    end of inner loop.
Step7: Exit a Stop.

Pseudo code:-

* Read n i

Scanf("%d", &n);

*) for each iteration i=0, with condition i<n if true iterate j=0, with condition j<n-i-1 if true check if condition arr[j] > arr[j+1]

*) If i become false iteration i is incremented

```
for(i=0; i<n; i++)
  { for (j=0; j<n-i-1; j++);
```

- Assign temp = arr[j];
  arr[j] = arr[j+1]

Print the arr[j+1] = temp

Result:

- Printf("%d", arr[i]);

Write an algorithm, pseudocode and program for linear search with an example.

Program:-

```
# include <stdio.h>
Void main()
{
  int arr[25], search, i, n;
 Printf("Enter number");
 Scanf("%d", &n);
 Printf("Enter %d integers \n", n);
  for(i=0; i<n; i++)
    Scanf("%d", &search);
 for(i=0; i<n; i++)
    { if (arr[i] == search)
   { Printf("%d is present at location %d", search
                                          , i+1)
     break;
    }
```

```
if(i==n)
printf("%d is not present in the array\n",search);
getch();
}
```

output;

Enter number of
Enter 5 integers to
20
30
10
50
Enter a number to search 30
30 is present at location 3.

Algorithm:

*> Start.

*> Declare search, i, n, arr[25] as int

*> Read n:

*> for each iteration i=0 with condition
i<n if true check if condition
(arr[i]==search) & (i==n) and i++ is incremented

*> Print the result:

*> Stop

Pseudo code:-

*) Read n:
scanf("%d", &n);

*) for each iteration (i=0; i<n; i++) 'i' is incremented
And check if condition (arr[i] == search) & (i == n)

~~for~~ if(arr[i] == search)

~~if arr[i] == se~~

Printf("%d is present at location %d\n",
search, (i+1);

break;

if (i == n)

Printf("%d isn't present in the array
\n", search);

*) Display the result: