

**Assignment On: Algorithms**

**Course Code :** CSE 214/215

**Course Title :** Algorithms & Lab

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1)Write an algorithm to search for a student ID in an array (Hint: use linear search)

Solution:

1. Start the program.

2. Input total no. of student’s size (tc) & initialize a student id’s array.

3. for 0 to tc

4. Input students id and store them in an array

5. Input the target student id that I want to search.

6. Set, Boolean Flag = false.

7. for i = 0 to tc

8. if(std\_array[i] == target\_id ) then Flag = true, and break;

9. End the loop

10. if(Flag == False) then Output “**Not Found**”

11. else Output “**Found**” with the position.

12. End the program.

2)Write an algorithm to search for a character in an array(Hint: use linear search)

Solution:

1. Start the program.
2. Input string
3. measure that string length and store it in variable N.
4. Input the Key character that I want to search
5. for 1 to N
6. Match array’s i index value with the key value
7. If matched then break and go to step 9.

If not increment the value of i and repeat from step 6.

1. if (i == N+1) then Output **“Not Found”**
2. else Output **“Found**” with the position.
3. End the program

3)Take a string input and sort the characters using insertion sort.

Solution: language C++ 14.

/\*\* headers \*\*/

#include<iostream>

#include<stdio.h>

#include<string.h>

#include<stdlib.h>

using namespace std;

/\*\*sorting Algorithm \*\*/

void insertionSort(char arr[], int n)

{

int i, j;

char key;

for (i = 1; i < n; i++)

{

key = arr[i];

j = i - 1;

while (j >= 0 && arr[j] > key)

{

arr[j + 1] = arr[j];

j = j - 1;

}

arr[j + 1] = key;

}

}

/\*\* main functiuon \*\*/

int main()

{

char arr[100005];

/\*\*Input value \*\*/

scanf("%[^\n]s",&arr);

int n = 0;

/\*\* measure that string length \*\*/

while(arr[n]!='\0')n++;

/\*\* insertion sort \*\*/

insertionSort(arr, n);

printf("%s\n",arr);

return 0;

}