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.
8. if (i == N+1) then Output **"Not Found"**
9. else Output **"Found**" with the position.
10. 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;
}
```