



**VIT<sup>®</sup>**

**Vellore Institute of Technology**  
(Deemed to be University under section 3 of UGC Act, 1956)

**SCHOOL OF COMPUTER SCIENCE AND ENGINEERING**

**Winter Semester 2023-24 - Lab Midterm**

**Programme : B.Tech**

**Course : Design and Analysis of Algorithms**

**Course Code : BCSE204P**

**Slot : L9+ L10**

**Time : 60 Minutes**

**Date : 23.04.2024**

1. a) Write the string matching program which shifts the given pattern exactly one position to the right after each attempt. Also calculate the number of shifts it takes.

String : India is my Motherland

Pattern: Mother

- b) Write a program that takes the details of a person (name, age, and city) and sort them in decreasing order of age using selection sort.

**a) String matching program**

**CODE:**

```
#include <iostream>
```

```
#include <string>
```

```
using namespace std;
```

```
void naiveStringMatch(const string& text, const string& pattern){
```

```
int n = text.length();
```

```
int m = pattern.length();
```

```
bool found = false;

for(int i = 0; i <= n - m; ++i){

    int j;

    for (j =0; j<m; ++i){

        if(text(i+j) != pattern[j])}

        break;

    if (j ==m ){

        cout<< " pattern found at index" << i<< endl;

        found = true;

    }

}

if (!found){

    cout << "pattern not found" << endl;

}

}

int main(){

    string text, pattern;

    cout << "enter the text:";

    getline(cin,text);

    cout << "enter the pattern";

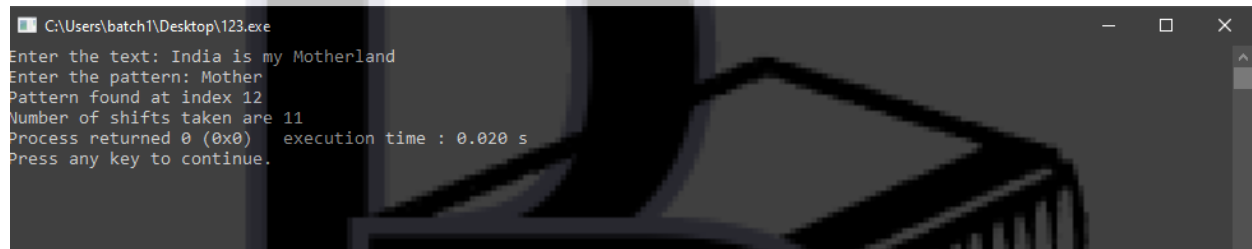
    getline(cin, pattern);
```

```
naiveStringMatch(text, pattern);
```

```
return();
```

```
}
```

OUTPUT:



```
C:\Users\batch1\Desktop\123.exe
Enter the text: India is my Motherland
Enter the pattern: Mother
Pattern found at index 12
Number of shifts taken are 11
Process returned 0 (0x0)    execution time : 0.020 s
Press any key to continue.
```

b) Selection sort

CODE:

```
#include <iostream>
```

```
using namespace std;
```

```
void selectionSort (int arr[], int n){
```

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

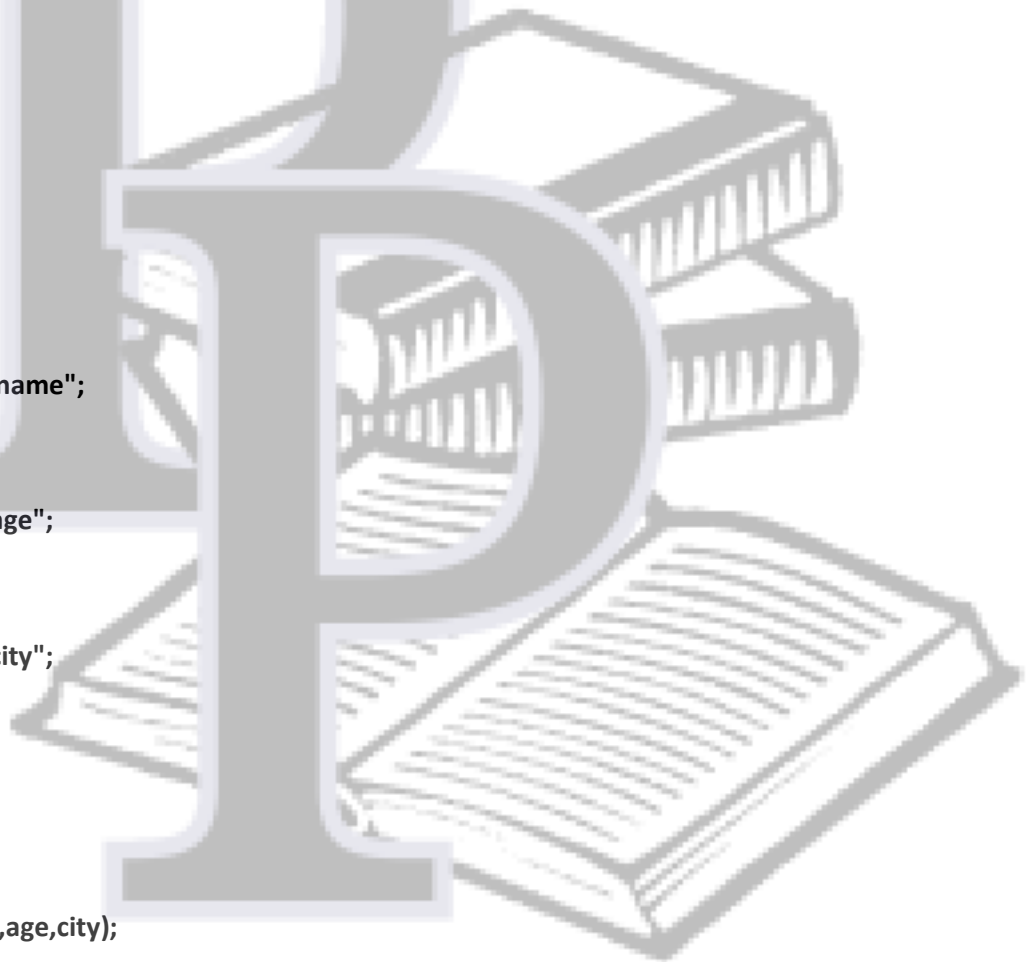
```
for(int i = 0; i <= n - m; ++i){
```

```
    int j;
```

```
    for (j = 0; j < m; ++j){
```

```
        break;
```

```
if (j == m){  
    cout<< " Sorted Details in descending order:" << i<< endl;  
    cout<< " name, age, city << i<< endl;  
    found = true;  
}  
}  
  
}  
  
int main(){  
    string name, city;  
    integer age;  
    cout << " Enter the name";  
    getline(cin,name);  
    cout << "enter the age";  
    getline(cin, age);  
    cout << "enter the city";  
    getline(cin, city);  
  
    selectionSort(name,age,city);  
    return();  
  
}
```



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## OUTPUT:

```
C:\Users\batch1\Desktop\1234.exe
Enter the name1: Purva
Enter the age: 21
Enter the city: chennai
Enter the name2: Kajal
Enter the age: 18
Enter the city: kanchipuram
Enter the name3: Payal
Enter the age: 35
Enter the city: adyar
Sorted Details in descending order:
Payal, 35, adyar
Purva, 21, chennai
Kajal, 18, kanchipuram

Process returned 0 (0x0)   execution time : 0.030 s
Press any key to continue.
```

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