

# Indian Institute of Information Technology Vadodara CS266:

## Operating Systems Lab

### Lab 1

Roll No. 201951105

Name: Nishant Andoriya

Based on Pointers:

1. Write a program to display address of an integer variable using pointer.

Ans:-

```
#include <bits/stdc++.h>
using namespace std;
int main()
{
    int n;
    cin >> n;
    int *p;
    p = &n;
    cout << p << endl;
}
```

```
23
0x7ffd32e9c634

...Program finished with exit code 0
Press ENTER to exit console.
```

2. Write a program to access the entries of an integer array using pointer and also display address for each entry.

Ans:-

```
#include <bits/stdc++.h>
using namespace std;
int main()
{
    int arr[10];
    for(int i=0;i<10;i++)
        cin >> arr[i];
    for(int i=0;i<10;i++)
    {
        cout << (arr+i) << " " << *(arr+i) << endl;
    }
}
```

```
}  
}
```

```
10 9 8 7 6 5 4 3 2 1 0  
0x7ffc9aa03f60 10  
0x7ffc9aa03f64 9  
0x7ffc9aa03f68 8  
0x7ffc9aa03f6c 7  
0x7ffc9aa03f70 6  
0x7ffc9aa03f74 5  
0x7ffc9aa03f78 4  
0x7ffc9aa03f7c 3  
0x7ffc9aa03f80 2  
0x7ffc9aa03f84 1  
  
...Program finished with exit code 0  
Press ENTER to exit console.□
```

3. Write a program to perform bubble sort for an array having 10 entries.

Ans:-

```
#include <bits/stdc++.h>  
using namespace std;  
int main()  
{  
int arr[10];  
for(int i=0;i<10;i++)  
cin >> arr[i];  
for(int i=0;i<10;i++)  
{  
for(int j=0;j<10-i-1;j++)  
{  
if(*(arr+j)>*(arr+j+1))  
{  
swap(*(arr+j),*(arr+j+1));  
}  
}  
}  
for(int i=0;i<10;i++)  
cout << arr[i] << " ";  
}
```

```
10 9 8 7 6 5 4 3 2 1 0
1 2 3 4 5 6 7 8 9 10

...Program finished with exit code 0
Press ENTER to exit console.□
```

4. Write a program to perform matrix multiplication between two matrices and display the answer.

Ans:-

```
#include <bits/stdc++.h>
using namespace std;
int main()
{
    int r1,c1,r2,c2;
    cout << "Enter dimensions of 1st matrix" << endl;
    cin >> r1 >> c1;
    cout << "Enter dimensions of 2nd matrix" << endl;
    cin >> r2 >> c2;
    if(c1!=r2)
    cout << "matrix cannot be multiplied" << endl;
    int mat1[r1][c1],mat2[r2][c2];
    cout << "Enter 1st matrix elements" << endl;
    for(int i=0;i<r1;i++)
    {
        for(int j=0;j<c1;j++)
        {
            cin >> mat1[i][j];
        }
    }
    cout << "Enter 2nd matrix elements" << endl;
    for(int i=0;i<r2;i++)
    {
        for(int j=0;j<c2;j++)
        {
            cin >> mat2[i][j];
        }
    }
    int result[100][100];
    for (int i = 0; i < r1; ++i)
    {
        for (int j = 0; j < c2; ++j)
        {
            for (int k = 0; k < c1; ++k)
            {
                (*(result+i)+j) += (*(mat1+i)+k) * (*(mat2+k)+j);
            }
        }
    }
```

```

}
}
cout << endl;
cout << "Output matrix" << endl;
for(int i=0;i<r1;i++)
{
for(int j=0;j<c2;j++)
cout << (*(result+i)+j) << " ";
cout << endl;
}
}

```

```

Enter dimensions of 1st matrix
4 3
Enter dimensions of 2nd matrix
3 2
Enter 1st matrix elements
10 5 33 11 1 -22 30 75 34 61 34 26
Enter 2nd matrix elements
22 -12 0 33 45 6

Output matrix
1705 243
-748 -231
2190 2319
2512 546

...Program finished with exit code 0
Press ENTER to exit console.

```

5. Write a program to count the number of digits, alphabets and white spaces from the entered string.

```

#include <bits/stdc++.h>
using namespace std;
int main()
{
string str;
getline(cin, str);
int Charactercount=0,numbercount=0,spacecount=0;
for(int i=0;i<str.length();i++)
{
if(str[i]>='0' && str[i]<='9')
numbercount++;
}
}

```

```

else if((str[i]>='A' && str[i]<='Z') || (str[i]>='a' && str[i]<='z')) Charactercount++;
else if(str[i]==' ')
spacecount++;
}
cout << "Number of characters: " << Charactercount << endl;
cout << "Number of number: " << numbercount << endl;
cout << "Number of white spaces: " << spacecount << endl;
}

```

```

asdfg ;lkjhg qwert poiuy1234 mnzvb
Number of characters: 25
Number of number: 4
Number of white spaces: 4

...Program finished with exit code 0
Press ENTER to exit console.

```

6. Write a program to reverse the word sequence.

Ans:-

```

#include <bits/stdc++.h>
using namespace std;
int main()
{
vector<string> temp;
string str;
string tmp="";
getline(cin,str);
for(int i=0;i<str.length();i++)
{
if(str[i]==' ')
{
temp.push_back(tmp);
tmp="";
}
else
tmp+=str[i];
}
temp.push_back(tmp);
for(int i=temp.size()-1;i>=0;i--)
{
cout << temp[i] << " ";
}
}

```

```
naveen sir taught us cs266 course.  
course. cs266 us taught sir naveen  
  
...Program finished with exit code 0  
Press ENTER to exit console.
```

### Based on File handling:

1. Write a program using file handling functions to copy a file.

Ans:-

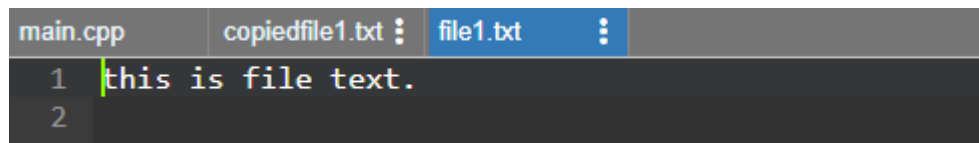
```
#include <iostream>  
#include <fstream>  
using namespace std;  
int main()  
{  
    ofstream fout;  
    string str;  
    fout.open("file1.txt");  
    while (fout) {  
        getline(cin, str);  
        if (str == "-1")  
            break;  
        fout << str << endl;  
    }  
    fout.close();  
    ofstream x;  
    ifstream fin;  
    fin.open("file1.txt");  
    x.open("copiedfile1.txt");  
    while(1){  
        string str;  
        fin >> str;  
        if(fin.eof())  
            break;  
        x << str << endl;  
    }  
    return 0;  
}
```

INPUT:-

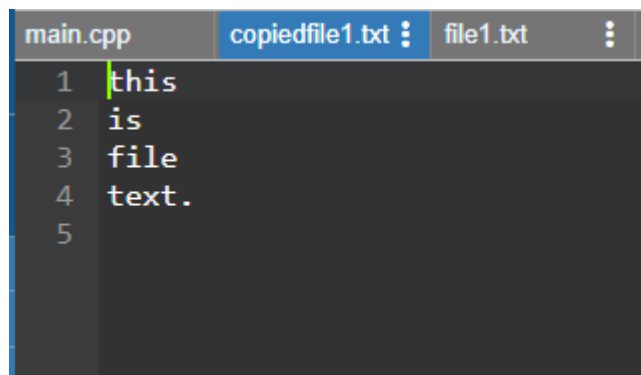
```
this is file text.
-1

...Program finished with exit code 0
Press ENTER to exit console.□
```

#### OUTPUT:-



The screenshot shows a code editor with three tabs: 'main.cpp', 'copiedfile1.txt', and 'file1.txt'. The 'file1.txt' tab is active and shows a single line of text: 'this is file text.'.



The screenshot shows a code editor with three tabs: 'main.cpp', 'copiedfile1.txt', and 'file1.txt'. The 'file1.txt' tab is active and shows the text 'this is file text.' being copied line by line from 'main.cpp'.

2. Write a program which converts entire file from lower case to upper case and vice versa.

Ans:-

```
#include <iostream>
#include <fstream>
using namespace std;
int main()
{
    ofstream fout;
    string str;
    fout.open("file1.txt");
    while (fout) {
        getline(cin, str);
        if (str == "-1")
            break;
        fout << str << endl;
    }
    fout.close();
    ofstream x;
    ifstream fin;
    fin.open("file1.txt");
    x.open("chandedfile.txt");
```

```

while(1){
string str;
fin >> str;
int i=0;
while(i<str.length())
{
char ch = str[i];
if(islower(str[i]))
ch = ch - 32;
if(isupper(str[i]))
ch = ch + 32;
x << ch;
i++;
}
x << endl;
if(fin.eof())
break;
}
return 0;
}

```

**INPUT:-**

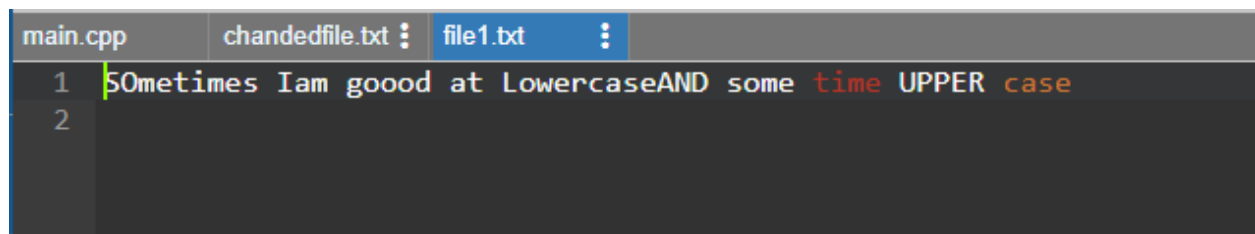
```

S0metimes Iam goood at LowercaseAND some time UPPER case
-1

...Program finished with exit code 0
Press ENTER to exit console.

```

**OUTPUT:-**



The screenshot shows a code editor with three tabs: 'main.cpp', 'chandedfile.txt', and 'file1.txt'. The 'file1.txt' tab is active and displays the following text:

```

1 S0metimes Iam goood at LowercaseAND some time UPPER case
2

```



```
main.cpp  chandedfile.txt  file1.txt  ⋮
1  soMETIMES
2  iAM
3  GOOOD
4  AT
5  lowercaseand
6  SOME
7  TIME
8  upper
9  CASE
10
11
```

3. Write a program to read the contents of file and remove the vowels from that file and display.

Ans:-

```
#include <iostream>
#include <fstream>
using namespace std;
int main()
{
    ofstream fout;
    string str;
    fout.open("file1.txt");
    while (fout) {
        getline(cin, str);
        if (str == "-1")
            break;
        fout << str << endl;
    }
    fout.close();
    ofstream x;
    ifstream fin;
    fin.open("file1.txt");
    x.open("removevowels.txt");
    while(1){
        string str;
        fin >> str;
        int i=0;
        while(i<str.length())
        {
            char ch = str[i];
            if(ch!='a' && ch!='e' && ch!='i' && ch!='o' && ch!='u')
```

```

{
x << ch;
}
i++;
}
x << endl;
if(fin.eof())
break;
}
return 0;
}

```

#### INPUT:-

```

this is the content of a file.
-1

...Program finished with exit code 0
Press ENTER to exit console.

```

#### OUTPUT:-

main.cpp	file1.txt	:	removevowels.txt	:
1	this is the content of a file.			
2				

main.cpp	file1.txt	:	removevowels.txt	:
1	ths			
2	s			
3	th			
4	cntnt			
5	f			
6				
7	fl.			
8				
9				