

UNDERSTANDING DATA STRUCTURES

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CLASS : AIML-4-C

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- Write a program for array rotation

PROGRAM CODE :-

```
#include<iostream>
```

```
using namespace std;
```

```
int main()
```

```
{
```

```
    int i,j,temp,a[5],n,k; // variable declarations
```

```
    cout<<"Enter elements to rotate";
```

```
    cin>>n; //taking number of rotation
```

```
    cout<<"\nEnter elements:";
```

```
    for(i=0;i<5;i++)
```

```
    {
```

```
        cin>>a[i]; //inputing elements inside the array
```

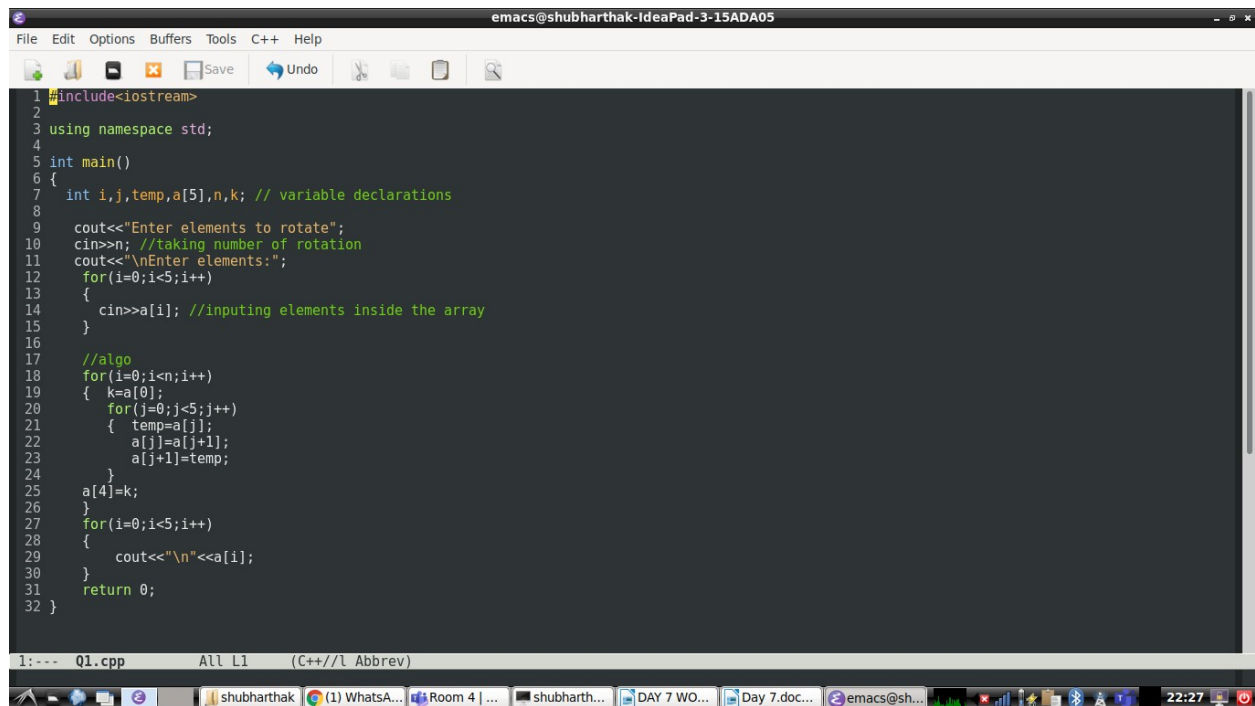
```
    }
```

```
    //algo
```

```

for(i=0;i<n;i++)
{
    k=a[0];
    for(j=0;j<5;j++)
    {
        temp=a[j];
        a[j]=a[j+1];
        a[j+1]=temp;
    }
    a[4]=k;
}
for(i=0;i<5;i++)
{
    cout<<"\n"<<a[i];
}
return 0;
}

```



The screenshot shows an Emacs editor window titled "emacs@shubharthak-IdeaPad-3-15ADA05". The editor is displaying a C++ program for rotating an array. The code is as follows:

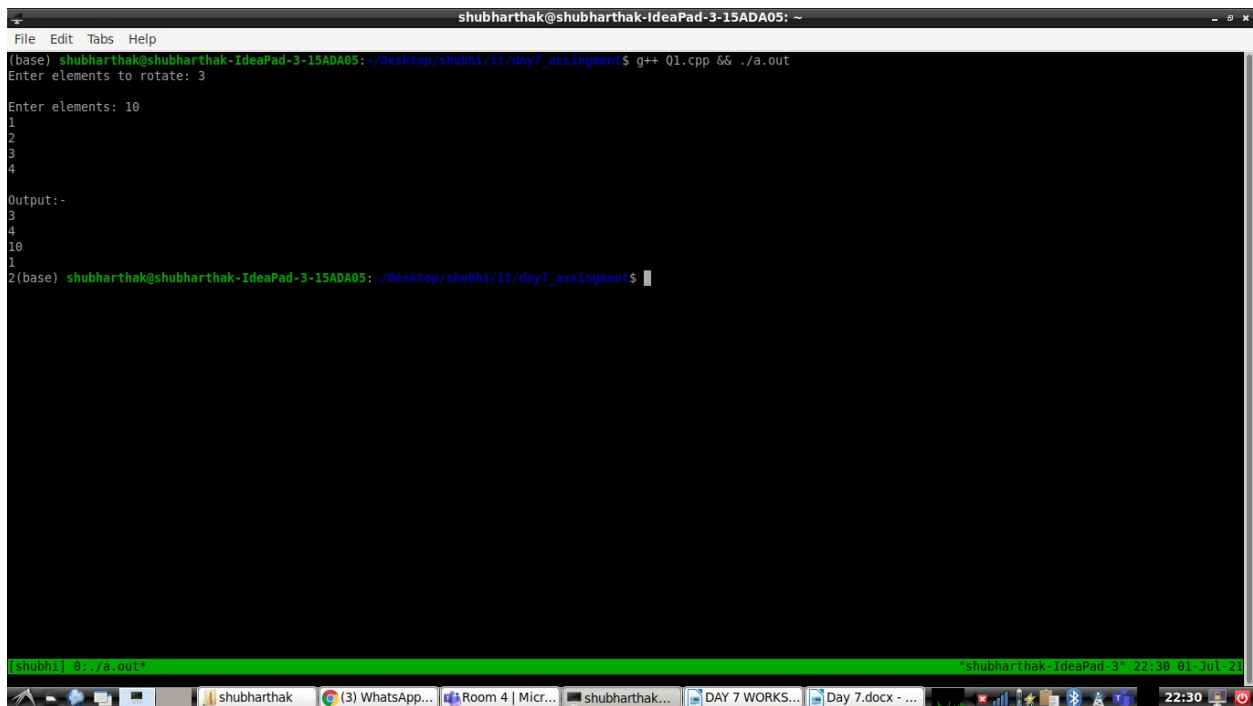
```

1 #include<iostream>
2
3 using namespace std;
4
5 int main()
6 {
7     int i,j,temp,a[5],n,k; // variable declarations
8
9     cout<<"Enter elements to rotate";
10    cin>>n; //taking number of rotation
11    cout<<"\nEnter elements:";
12    for(i=0;i<5;i++)
13    {
14        cin>>a[i]; //inputing elements inside the array
15    }
16
17    //algo
18    for(i=0;i<n;i++)
19    {
20        k=a[0];
21        for(j=0;j<5;j++)
22        {
23            temp=a[j];
24            a[j]=a[j+1];
25            a[j+1]=temp;
26        }
27        a[4]=k;
28    }
29    for(i=0;i<5;i++)
30    {
31        cout<<"\n"<<a[i];
32    }
33    return 0;
34 }

```

The Emacs window includes a menu bar (File, Edit, Options, Buffers, Tools, C++, Help) and a toolbar with icons for Save, Undo, and other editing functions. The status bar at the bottom shows the file path "1:--- Q1.cpp", the current line "All L1", and the encoding "(C++//L Abbrev)". The system tray at the very bottom displays various icons and the time "22:27".

Output:-



```
shubharthak@shubharthak-IdeaPad-3-15ADA05: ~
File Edit Tabs Help
(base) shubharthak@shubharthak-IdeaPad-3-15ADA05: ~/Desktop/shubhi/it/day7_assignment$ g++ Q1.cpp && ./a.out
Enter elements to rotate: 3

Enter elements: 10
1
2
3
4

Output:-
3
4
10
1
2(base) shubharthak@shubharthak-IdeaPad-3-15ADA05: ~/Desktop/shubhi/it/day7_assignment$
```

- Write a program to Rearrange an array such that $arr[i] = i$

PROGRAM CODE:-

```
#include<iostream>

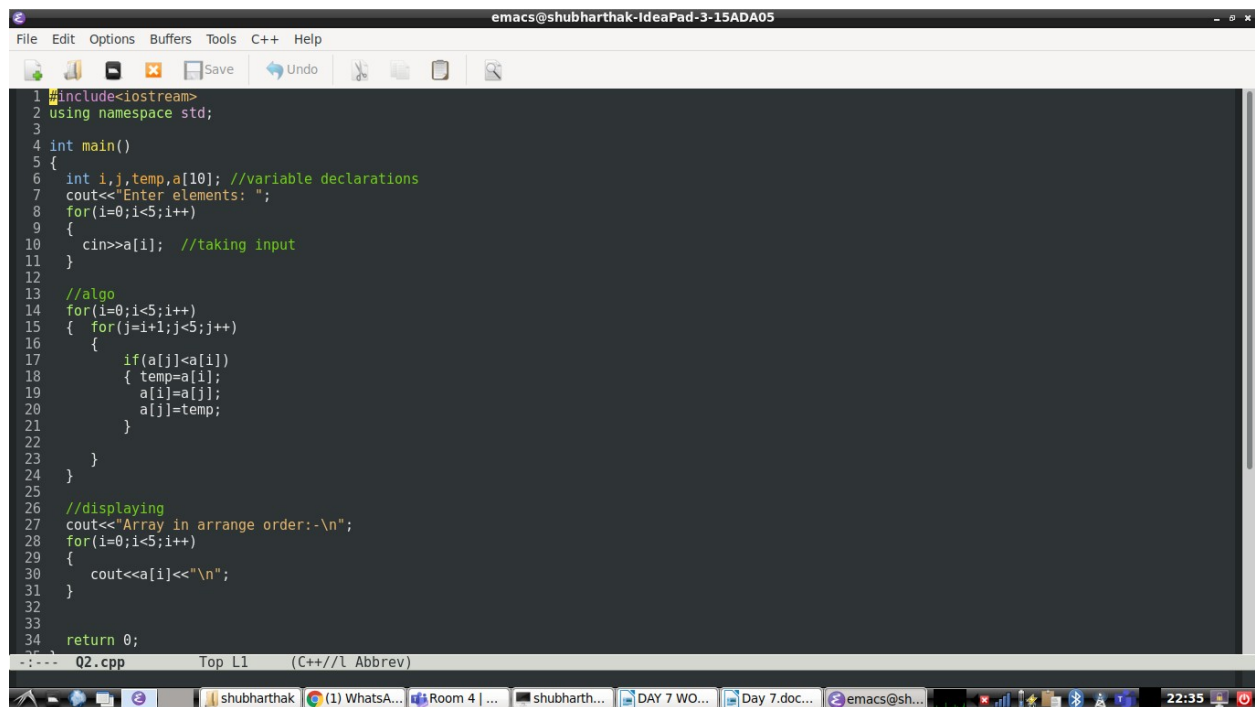
using namespace std;

int main()
```

```
{ int i,j,temp,a[10];
  cout<<"Enter elements";
  for(i=0;i<5;i++)
  {
    cin>>a[i];
  }
  for(i=0;i<5;i++)
  { for(j=i+1;j<5;j++)
    {
      if(a[j]<a[i])
      { temp=a[i];
        a[i]=a[j];
        a[j]=temp;
      }

    }
  }
  cout<<"Array in arrange order\n";
  for(i=0;i<5;i++)
  {
    cout<<a[i]<<"\n";
  }

  return 0;
}
```

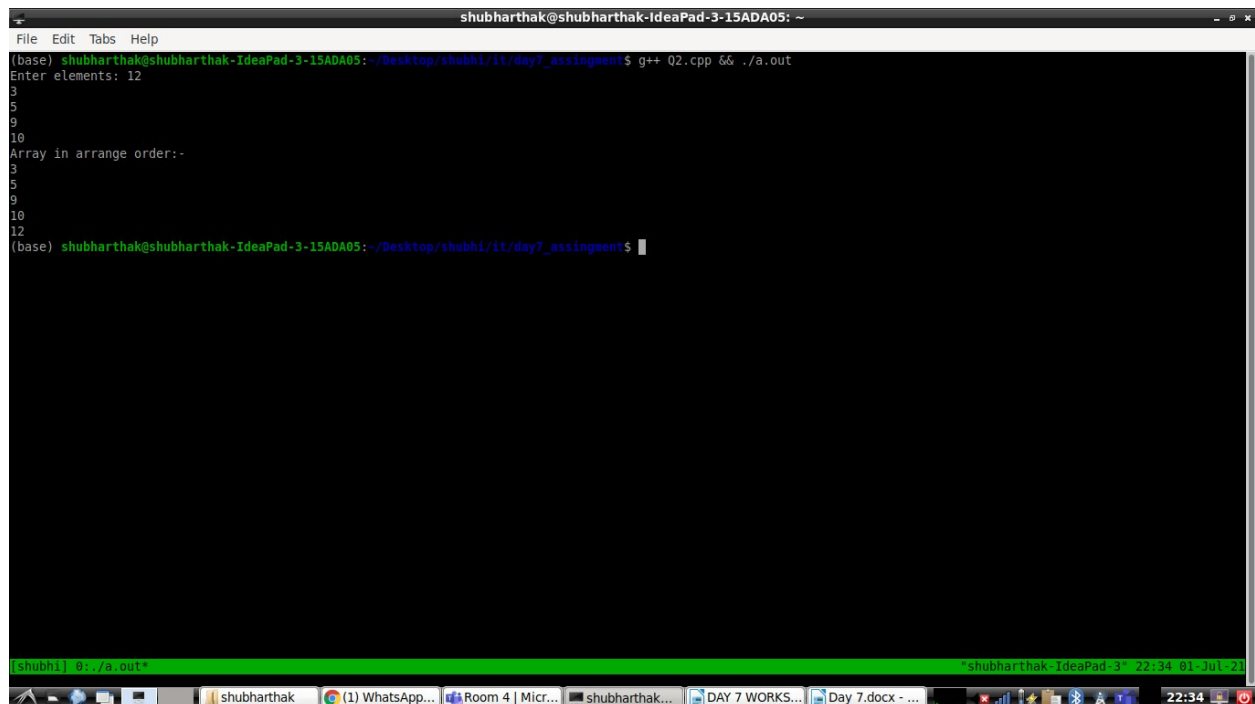


The screenshot shows an Emacs editor window titled "emacs@shubharthak-IdeaPad-3-15ADA05". The menu bar includes "File", "Edit", "Options", "Buffers", "Tools", "C++", and "Help". The toolbar has icons for "Save", "Undo", and other standard editing functions. The code in the editor is as follows:

```
1 #include<iostream>
2 using namespace std;
3
4 int main()
5 {
6     int i,j,temp,a[10]; //variable declarations
7     cout<<"Enter elements: ";
8     for(i=0;i<5;i++)
9     {
10         cin>>a[i]; //taking input
11     }
12
13     //algo
14     for(i=0;i<5;i++)
15     {
16         for(j=i+1;j<5;j++)
17         {
18             if(a[j]<a[i])
19             {
20                 temp=a[i];
21                 a[i]=a[j];
22                 a[j]=temp;
23             }
24         }
25     }
26
27     //displaying
28     cout<<"Array in arrange order:-\n";
29     for(i=0;i<5;i++)
30     {
31         cout<<a[i]<<"\n";
32     }
33
34     return 0;
35 }
```

The status bar at the bottom of the editor shows "Q2.cpp", "Top L1", and "(C++//l Abbrev)". The system tray at the bottom of the screen shows various icons and the time "22:35".

OUTPUT:-



The screenshot shows a terminal window titled "shubharthak@shubharthak-IdeaPad-3-15ADA05: ~". The prompt is "(base) shubharthak@shubharthak-IdeaPad-3-15ADA05: ~/Desktop/shubhi/it/day7_assignment". The user has entered the command "g++ Q2.cpp && ./a.out". The output of the program is as follows:

```
(base) shubharthak@shubharthak-IdeaPad-3-15ADA05: ~/Desktop/shubhi/it/day7_assignment$ g++ Q2.cpp && ./a.out
Enter elements: 12
3
5
9
10
Array in arrange order:-
3
5
9
10
12
(base) shubharthak@shubharthak-IdeaPad-3-15ADA05: ~/Desktop/shubhi/it/day7_assignment$
```

The terminal window also shows a status bar at the bottom with the text "[shubhi] 0: ./a.out*" and the time "22:34 01-Jul-21". The system tray at the bottom of the screen shows various icons and the time "22:34".

