PPL LAB – 9

NAME : SS ARWINDHA SIVAM

ROLL NO. : 106120126

DATE : 28.10.2021

1. Swapping two numbers using class

```
#include<iostream>

#include<conio.h>

using namespace std;


class swapping

{

public:

   int a,b,temp;


   void swapno()

   {

     cout<<"Enter the numbers \n";

     cin>>a>>b;

     temp=a;

     a=b;

     b=temp;

     cout<<"The numbers are  "<<a<<" "<<b;

   }

};


int main()

{
```
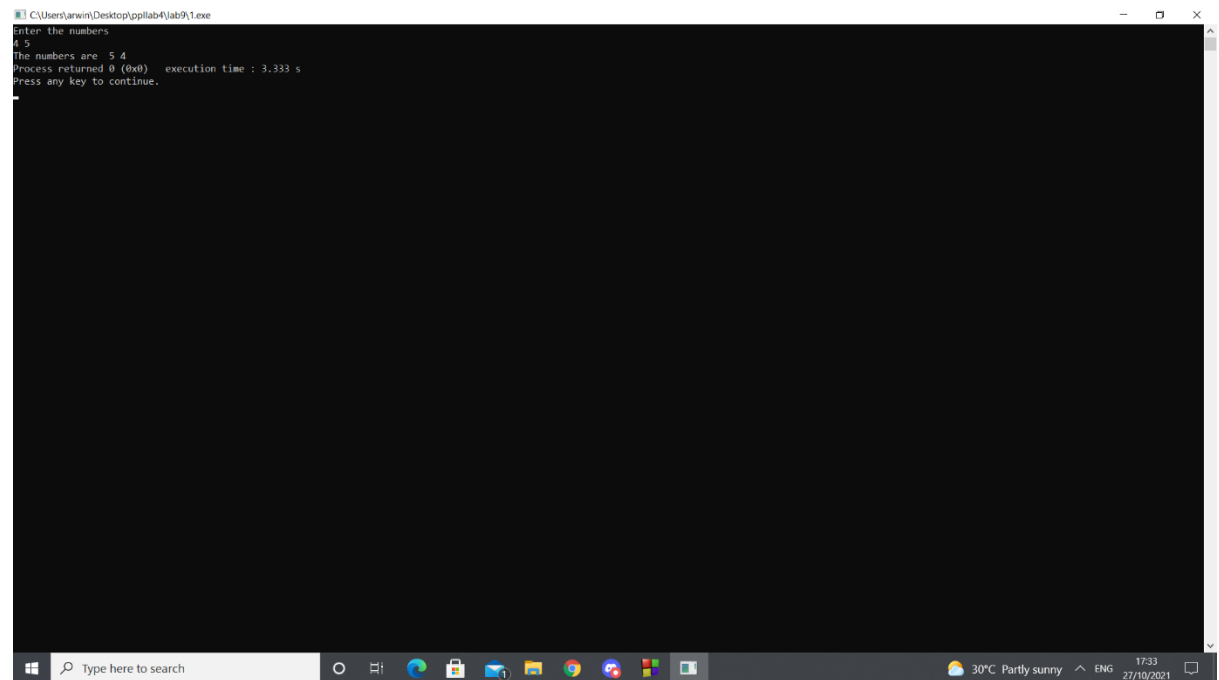
swapping n;

n.swapno();

return 0;

}

2. Linear search in array

```cpp
#include<iostream>

#include<conio.h>

using namespace std;


void linear_search(int a[],int x,int n)

{

   int z=0;

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

   {

      if(x==a[i]&&i<n)

      {
```
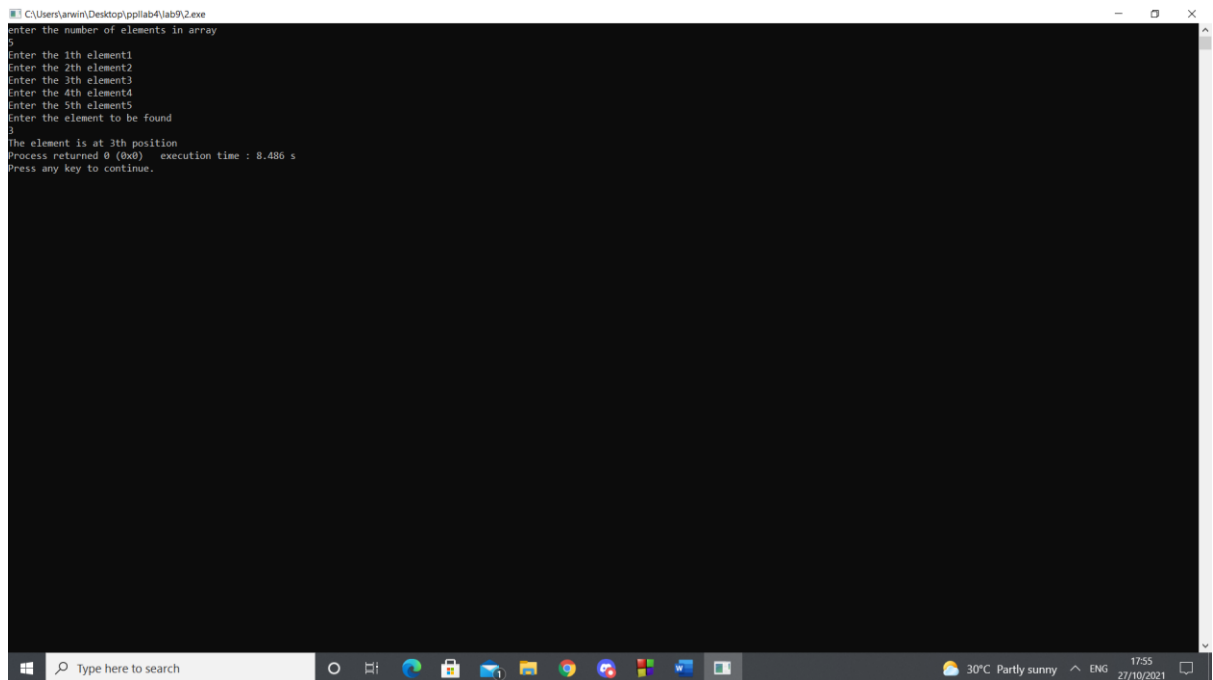
```cpp
        cout<<"The element is at "<<i+1<<"th position";

        z++;

        break;

    }}


if(z==0)

{

    cout<<"The element entered cannot be found in the array";

}




}



int main()

{

  int arr[100],n,x;

  cout<<"enter the number of elements in array\n";

  cin>>n;

  for(int i=0;i<n;i++)

  {

    cout<<"Enter the "<<i+1<<"th element";

    cin>>arr[i];

  }

  cout<<"Enter the element to be found\n";

  cin>>x;

  linear_search(arr,x,n);

  return 0;
```

}

3. Polar Co-ordinate system

```cpp
#include <iostream>

#include <math.h>

#define PI 3.14259

using namespace std;


class polar{

    friend void add(polar,polar);

    friend void sub(polar,polar);

    friend void angle(polar,polar);


    public:

    float radius,angle,rad,x,y;

};
```

```cpp
void add(polar p1, polar p2){

    cout<<":Addition:"<<endl;

    cout<<"X-coordinate="<<p1.x+p2.x<<endl<<"Y-coordinate="<<p1.y+p2.y<<endl;

}


void sub(polar p1, polar p2){

    cout<<":Subtraction:"<<endl;

    cout<<"X-coordinate="<<p1.x-p2.x<<endl<<"Y-coordinate="<<p1.y-p2.y<<endl;

}

void angle(polar p1, polar p2){

    cout<<"Angle difference="<<p1.angle-p2.angle<<endl;

}



int main()

{

    polar p1,p2,sum,diff;

    cout<<"Enter the point1's radius and angle:";

    cin>>p1.radius>>p1.angle;

    cout<<"Enter the point2's radius and angle:";

    cin>>p2.radius>>p2.angle;


    p1.rad= p1.angle * PI/ 180;

    p2.rad= p2.angle * PI/ 180;


    p1.x=p1.radius*(cos(p1.rad));
```

```cpp
    p2.x=p2.radius*(cos(p2.rad));

    p1.y=p1.radius*(sin(p1.rad));

    p2.y=p2.radius*(sin(p2.rad));


    add(p1,p2);

    sub(p1,p2);

    angle(p1,p2);


    cout<<"Converting to Polar form--->";


    sum.radius=abs((p1.x+p2.x)/(cos(p1.angle+p2.angle)));


    diff.radius=abs((p1.y-p2.y)/(sin(p1.angle-p2.angle)));


    cout<<"The Sum radius="<<sum.radius<<endl;

    cout<<"The difference radius="<<diff.radius<<endl;


    return 0;
}
```

4. Hospital Database

```cpp
#include<iostream>

#include<conio.h>

#include<string.h>

using namespace std;


class hospital

{

private:

    struct date

{

    int day;

    int month;

    int year;

}adate,ddate;

public:

    char name[100];
```

```cpp
    char disease[100];

    void details()

    {

        cout<<"Enter the patient's name"<<endl;

        cin.getline(name,100);

        cout<<"Enter the disease"<<endl;

        cin.getline(disease,100);

        cout<<"Enter the date of admission"<<endl;

        cin>>adate.day>>adate.month>>adate.year;

        cout<<"Enter the date of discharge"<<endl;

        cin>>ddate.day>>ddate.month>>ddate.year;

    }

    void display()

    {

        cout<<"The patient's name is: "<<name<<endl;

        cout<<"The disease is: "<<disease<<endl;

        cout<<"The date of admission is: "<<adate.day<<" "<<adate.month<<" "<<adate.year<<endl;

        cout<<"The date of discharge is: "<<ddate.day<<" "<<ddate.month<<" "<<ddate.year<<endl;

    }

};


int main()

{

hospital a,b;

a.details();

a.display();
```
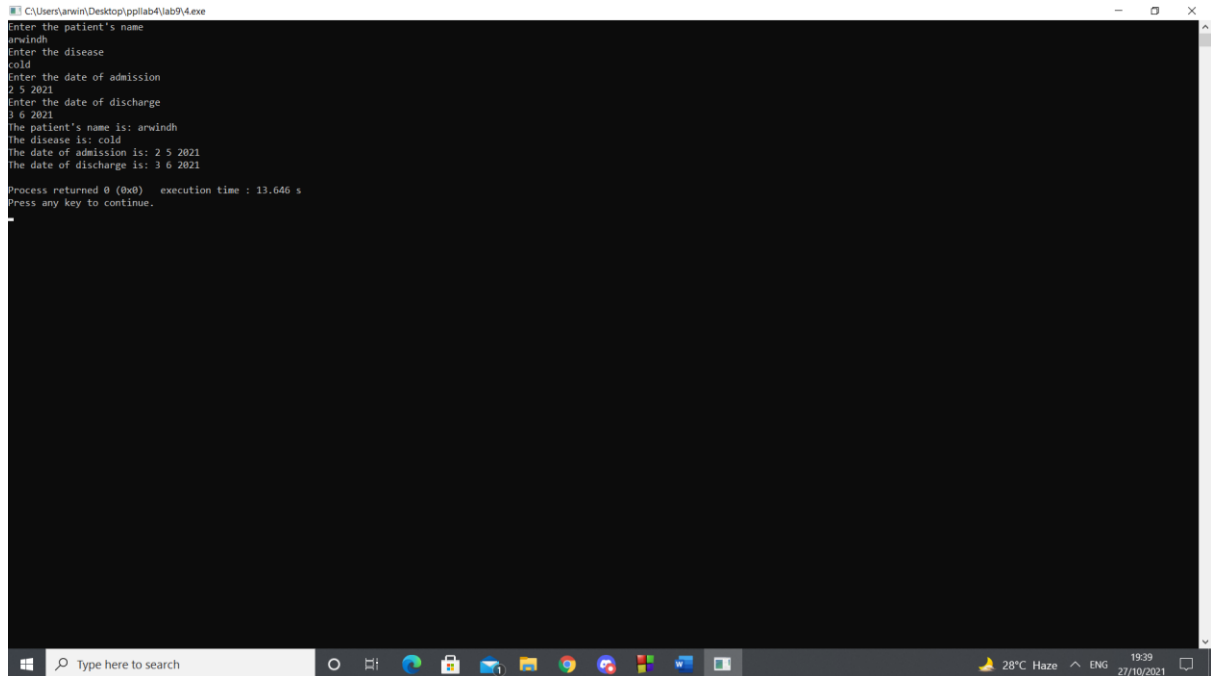
```
  return 0;

  }
```

5. Rectangular Co-ordinate system

```cpp
#include<iostream>

#include<conio.h>

#include<string.h>

#include<math.h>

using namespace std;

 class rect

{ public:

    double x1,y1,x2,y2,xs,ys,xa,ya,angle1;

    void add()

{

    cout<<"Enter the coordinate 1: "<<endl;

    cin>>x1>>y1;
```

```cpp
    cout<<"Enter the coordinate 2: "<<endl;

    cin>>x2>>y2;

    xa=x1+x2;

    ya=y1+y2;

    cout<<"The sum of the coordinates are: "<<xa<<" "<<ya<<endl;


}
void sub()

{

    cout<<"Enter the coordinate 1: "<<endl;

    cin>>x1>>y1;

    cout<<"Enter the coordinate 2: "<<endl;

    cin>>x2>>y2;

    xs=x2-x1;

    ys=y2-y1;

    cout<<"The difference between the two points are: "<<xs<<" "<<ys<<endl;

}
void angle()

{

    angle1=atan(ys/xs);

    cout<<"The angle is: "<<angle1;

}


};
```

```cpp
 int main()

 {

    rect a;

    a.add();

    a.sub();

    a.angle();

    return 0;

 }
```



```
C:\Users\arwin\Desktop\ppllab4\lab9\5.exe
Enter the coordinate 1:
2 3
Enter the coordinate 2:
4 5
The sum of the coordinates are: 6 8
Enter the coordinate 1:
2 3
Enter the coordinate 2:
4 5
The difference between the two points are: 2 2
The angle is: 0.785398
Process returned 0 (0x0)   execution time : 11.294 s
Press any key to continue.
```

6. Constructor and Destructor

```cpp
#include <iostream>


using namespace std;


class Rectangle {
   public:
      float length, breadth;
```

```cpp
   public:

      Rectangle() {

         cout << "\n\n*** Inside the Constructor **** \n\n";

         length = 2;

         breadth = 4;

      }

   public:

      ~Rectangle() {

         cout << "\n\n*** Inside the Destructor **** \n\n";

      }

};


int main() {


   cout << "\nCalling the default Constructor of the Rectangle class to initialize the object.\n\n";


   Rectangle rect;


   cout << "\nThe Length of the Rectangle set by the Constructor is = " << rect.length << "\n\n";


   cout << "\nThe Breadth of the Rectangle set by the Constructor is = " << rect.breadth << "\n\n";


   return 0;

}
```

7. Inventory

```cpp
#include<iostream>

using namespace std;

class inventory
{
private:
    int prodID,qtyInStock;
    string description;
public:
    inventory(int prodID=100,int qtyInStock=0,string description="none")
    {
        this->prodID=prodID;
        this->description=description;
        this->qtyInStock=qtyInStock;
    }
    int remove_items(int a)
```

```cpp
        {
            if(qtyInStock-a<0)
                return -1;
            qtyInStock-=a;
            return qtyInStock;
        }
};
int main()
{
    inventory pencils(234,45);
    inventory erasers(235,50,"used to erase");
    int temp1=pencils.remove_items(40);
    int temp2=erasers.remove_items(60);
    cout<<"Items remaining: ";
    if(temp1>0)
        cout<<temp1;
    else
        cout<<"Error";
    cout<<endl<<"Items remaining: ";
    if(temp2>0)
        cout<<temp2;
    else
        cout<<"Error";
        return 0;
}
```

```
Items remaining: 5
Items remaining: Error
Process returned 0 (0x0)   execution time : 0.013 s
Press any key to continue.
```