**DAA LAB 11 EXERCISE**

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**20BCE1482**

* **CLOSEST PAIR PROBLEM**

**CODE**

#include<iostream>

#include<cmath>

using namespace std;

class Points

{

    public:

    int x;

    int y;

};

float distance(int x1,int y1,int x2,int y2)

{

    int xdis=x1-x2;

    int ydis=y1-y2;

    float res=pow(xdis\*xdis + ydis\*ydis,0.5);

    return res;

}

void closestPairPoints(struct Points point1[],int n)

{

    int min=INT16\_MAX;

    int xindex1=-1,yindex1=-1;

    int xindex2=-1,yindex2=-1;

    for(int i=0;i<n;i++)

    {

        int xpoint=point1[i].x;

        int ypoint=point1[i].y;

        for(int j=i+1;j<n;j++)

        {

            int xpoint1=point1[j].x;

            int ypoint1=point1[j].y;

            float t=distance(xpoint,ypoint,xpoint1,ypoint1);

            if(t<min)

            {

                min=t;

                xindex1=point1[i].x;

                yindex1=point1[i].y;

                xindex2=point1[j].x;

                yindex2=point1[j].y;

            }

        }

    }

    cout<<"Closest pair of points are: "<<"("<<xindex1<<","<<yindex1<<")";

    cout<<" "<<"("<<xindex2<<","<<yindex2<<")"<<endl;

    cout<<"The distance between the points are: "<<distance(xindex1,yindex1,xindex2,yindex2);

}

int main()

{

    cout<<"Enter the number of points: ";

    int n;

    cin>>n;

    struct Points arr[n];

    for(int i=0;i<n;i++)

    {

        int x,y;

        cin>>x>>y;

        arr[i].x=x;

        arr[i].y=y;

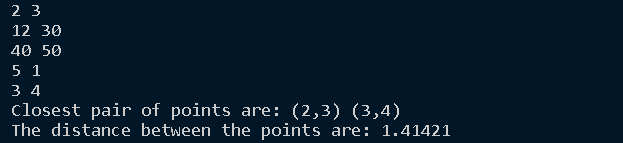
    }

      closestPairPoints(arr,n);

    return 0;

}

**OUTPUT**

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