



PIMPRI CHINCHWAD EDUCATION TRUST's.  
**PIMPRI CHINCHWAD COLLEGE OF ENGINEERING**  
(An Autonomous Institute)

**Class : SY BTech****Acad. Yr. 2025-26****Semester : I****Name of the student:** Samruddhi Ramswami Bansode.**PRN :** 124B1B019**Department:** Computer Engineering**Division :** A**Course Name :** Data Structure Lab**Course Code:** BCE23PC02**Completion Date :**

## **Assignment No. 2**

**Problem Statement:**

You work for an online retail company that manages thousands of product listings every day. The system needs to display product prices in ascending order quickly when customers filter by price, to help them find affordable options easily. Write a program for the above scenario.

**Source Code :**

```
#include<iostream>
using namespace std;

class product{
    string name;
    int price;
public:
    void getdata(){
        cout<<"Enter name of the product:"<<endl;
        cin>>name;
        cout<<"Enter price of the product:"<<endl;
        cin>>price;
    }
    void display(){
        cout<<"Product: "<<name<<" "<<"Price: "<<price<<endl;
    }
}
```

```

void quick(product p[],int f,int l){
    int i,j;
    product pvt,temp;
    if(f<l){
        pvt=p[f];
        i=f+1;
        j=l;
        while(i<=j){
            while(i<j && p[i].price<=pvt.price){
                i++;
            }
            while(p[j].price>pvt.price){
                j--;
            }
            if(i<j){
                swap(p[i],p[j]);
            }
            swap(p[f],p[j]);
            quick(p,f,j-1);
            quick(p,j+1,l);
        }
    }
    void swap(product &a,product &b){
        product temp=a;
        a=b;
        b=temp;
    }
};

int main(){
    int n,f=0;
    cout<<"Enter number of products:"<<endl;
    cin>>n;
    product p[n];
    for(int i=0;i<n;i++){
        p[i].getdata();
    }
    p[0].quick(p,f,n-1);
    cout<<"Products sorted according to their prices:"<<endl;
    for(int i=0;i<n;i++){
        p[i].display();
    }

    return 0; }

```

**Screen Shot of Output :**

```
pccoe@pc13:~/124B1B019$ g++ assignment_2.cpp
pccoe@pc13:~/124B1B019$ ./a.out
Enter number of products:
5
Enter name of the product:
a1
Enter price of the product:
50
Enter name of the product:
a2
Enter price of the product:
40
Enter name of the product:
a3
Enter price of the product:
10
Enter name of the product:
a4
Enter price of the product:
80
Enter name of the product:
a5
Enter price of the product:
100
Products sorted according to their prices:
Product: a3 Price: 10
Product: a2 Price: 40
Product: a1 Price: 50
Product: a4 Price: 80
Product: a5 Price: 100
pccoe@pc13:~/124B1B019$
```

**Conclusion:**

This C++ program sorts a list of products based on their prices using the quick sort algorithm. Each product has a name and a price, which are input by the user. The sorting logic is implemented within the `product` class itself. After sorting, the program displays the products in ascending order of price. It showcases object-oriented programming and custom sorting using user-defined data types.