/\*

Write C++ program to store first year percentage of students in array. Write function for sorting array of floating point numbers in ascending order using quick sort

\*/

#include<iostream>

using namespace std;

#define SIZE 20

class Quick

{

private:

float arr[SIZE];

public:

int get\_data();

void quicksort(int,int);

int partition(int,int);

void swap(int,int);

void display(int);

};

/\* This function is to input the elements \*/

int Quick::get\_data()

{

int i,n;

cout<<"\n Enter Total numbers student ::";

cin>>n;

cout<<"\nEnter Percentage Marks of each students ::";

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

{

cin>>arr[i];

}

return n;

}

/\* This function is to sort elements in a submits \*/

void Quick::quicksort(int p, int q)

{

int j;

if(p<q)

{

j=partition(p,q+1); //setting pivot elements

quicksort(p,j-1); //splitting of list

quicksort(j+1,q); //splitting of list

}

}

/\* This function is to partition a list and decide the pivot elements \*/

int Quick::partition(int m,int p)

{

float pivot=arr[m];

int i=m,j=p;

do

{

do

{

i++;

}

while(arr[i]<pivot);

do

{

j--;

}

while(arr[j]>pivot);

if(i<j)

swap(i,j);

}

while(i<j);

arr[m]=arr[j];

arr[j]=pivot;

return j;

}

void Quick::swap(int i,int j)

{

float temp;

temp=arr[i];

arr[i]=arr[j];

arr[j]=temp;

}

/\* This function is to display the Top five scores \*/

void Quick::display(int n)

{

cout<<"\n\n\t Percentage Marks of Top Five Students ...!!!\n";

for(int i=n-1;i>=n-5;i--)

cout<<" "<<arr[i];

}

int main()

{

Quick obj; // for integer elements

int n;

cout<<"\n\t\t Quick Sort Methods \n";

n=obj.get\_data();

obj.quicksort(0,n-1);

obj.display(n);

return 0;

}

/\*

OUTPUT :

Quick Sort Methods

Enter Total numbers student ::5

Enter Percentage Marks of each students ::78

56

79

67

88

Percentage Marks of Top Five Students ...!!!

88 79 78 67 56

\*/