Sheet#2

1. #include<iostream>

using namespace std;

int main(){

float max=0 , min=99999 , sum=0 ;

float arr[10];

for(int i=0 ; i<10 ; i++){

cout<<"Enter a number: ";

cin>>arr[i];

if(arr[i]>max){max=arr[i];}

if(arr[i]<min){min=arr[i];}

sum+=arr[i];

}

cout<<"Maximum = "<<max<<"\n";

cout<<"Minimum = "<<min<<"\n";

cout<<"Average = "<<sum/10<<"\n";

}

1. #include<iostream>

using namespace std;

void fn(float arr[],int size){

int a=0;

for(int i=0 ; i<size-1 ; i++){

if(arr[i+1]>arr[i]){a++;}

else{

cout<<"\nThis set is not sorted in an ascending order.\n";

return;

}

}

if(a==size-1){ cout<<"\nThis set is sorted in an ascending order.\n";}

}

int main(){

int size;

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

cin>>size;

float arr[size];

for(int i=0 ; i<size ; i++){

cout<<"Enter the element number "<<i+1<<": ";

cin>>arr[i];

}

fn(arr,size);

}

1. #include<iostream>

using namespace std;

int main(){

int x , esum=0 , osum=0 ;

cout<<"\t\t Enter 10 integers to calculate the sum of even numbers and the sum of odd numbers\n\n";

for(int i=1 ; i<=10 ; i++){

cout<<"Enter the integer number #"<<i<<": ";

cin>>x;

if(x%2==0){esum+=x;}

else{osum+=x;}

}

cout<<"\nSum of even numbers = "<<esum<<"\n";

cout<<"\nSum of odd numbers = "<<osum<<"\n";

}

1. #include<iostream>

using namespace std;

int main(){

int arr[10] , a=0 , b=0 , c=0 , d=0;

cout<<"\t\t\t\tEnter a set of 10 integers to determine it's pattern\n\n";

for(int i=0 ; i<10 ; i++){

cout<<"Enter the integer number #"<<i+1<<": ";

cin>>arr[i];

}

for(int i=0 ; i<9 ; i++){

if(arr[i]==arr[i+1]){c++;}

else if(arr[i]<=arr[i+1]){a++;}

else if(arr[i]>=arr[i+1]){b++;}

else{d++;}

}

if(a==9){cout<<"\nThe numbers in the array are increasing.\n";}

else if(b==9){cout<<"\nThe numbers in the array are decreasing.\n";}

else if(c==9){cout<<"\nThe numbers in the array are not changing.\n";}

else{cout<<"\nThe numbers in the array are increasing and then decreasing.\n";}

}

1. #include<iostream>

using namespace std;

int main(){

int arr[3][4] , x , a=0 ;

cout<<"\t\t\t\t\t Enter a 3\*4 matrix\n";

for(int i=0 ; i<3 ; i++){

cout<<"\nEnter the row number #"<<i+1<<" with spaces between numbers: ";

for(int j=0 ; j<4 ; j++){

cin>>arr[i][j];

}

}

cout<<"\nSelect a number to display it's position: ";

cin>>x;

for(int i=0 ; i<3 ; i++){

for(int j=0 ; j<4 ; j++){

if(x==arr[i][j]){cout<<"\nThe number "<<x<<" is located in the row number "<<i+1<<" the column number "<<j+1<<"\n";}

else{a++;}

}

if(a==12){cout<<"\nThis number is not found!\n";}

}

}

1. #include<iostream>

using namespace std;

int main(){

int a , b , m=0 , max1=0 ;

cout<<"Enter the number of rows of the matrix: ";

cin>>a;

cout<<"Enter the number of columns of the matrix: ";

cin>>b;

int arr[a][b];

for(int i=0 ; i<a ; i++){

cout<<"\nEnter the row number #"<<i+1<<" with spaces between numbers: ";

for(int j=0 ; j<b ; j++){

cin>>arr[i][j];

}

}

for(int i=0 ; i<a ; i++){

int sum=0;

for(int j=0 ; j<b ; j++){

sum+=arr[i][j];

}

if(sum>max1){max1=sum; m++;}

}

cout<<"\nThe row which has the maximum sum of elements is the row number #"<<m<<" : ";

for(int k=0 ; k<b ; k++){

cout<<arr[m-1][k]<<" ";

}

cout<<"\n";

}

1. #include<iostream>

#include <iomanip>

using namespace std;

int main(){

int arr[5][5];

for(int i=0 ; i<5 ; i++){

for(int j=0 ; j<5 ; j++){

if(i>j){arr[i][j]=-1;}

if(i<j){arr[i][j]=1;}

if(i==j){arr[i][j]=0;}

}

}

for(int i=0 ; i<5 ; i++){

for(int j=0 ; j<5 ; j++){

cout<<setw(2)<<arr[i][j]<<" ";

}

cout<<"\n";

}

}

1. #include<iostream>

#include <iomanip>

using namespace std;

int main(){

int arr[20][20] , size1;

cout<<"Enter the size of the pascal triangle (maximum size = 20): ";

cin>>size1;

for(int i=0 ; i<size1 ; i++){

for(int j=0 ; j<size1 ; j++){

if(j==0 || i==j){arr[i][j]=1;}

else{arr[i][j] = arr[i-1][j]+arr[i-1][j-1];}

if(j>i){arr[i][j]=' ';}

}

}

for(int i=0 ; i<size1 ; i++){

for(int j=0 ; j<size1 ; j++){

if(j>i){cout<<(char)arr[i][j];}

else{cout<<setw(5)<<(int)arr[i][j];}

}

cout<<"\n";

}

}

1. #include<iostream>

using namespace std;

void fn(int arr[] , int a){

cout<<"\nReverse: ";

for(int i=a-1 ; i>=0 ; i--){

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

}

cout<<"\n";

return;

}

int main(){

int a;

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

cin>>a;

int arr[a];

for(int i=0 ; i<a ; i++){

cout<<"Enter the element number #"<<i+1<<": ";

cin>>arr[i];

}

fn(arr , a);

}

1. #include<iostream>

using namespace std;

int main(){

int x;

float sum=0;

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

cin>>x;

int arr[x][5];

for(int i=0 ; i<x ; i++){

for(int j=0 ; j<5 ; j++){

cout<<"\nEnter the grade number #"<<j+1<<" for the student number #"<<i+1<<": ";

cin>>arr[x][i];

sum+=arr[x][i];

}

cout<<"\nThe average grade for the student number #"<<i+1<<" = "<<sum/5<<"\n";

}

}

1. #include<iostream>

using namespace std;

int main(){

int x , y , c=0;

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

cin>>x;

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

cin>>y;

int arr[x][y];

for(int i=0 ; i<x ; i++){

cout<<"\nEnter the row number #"<<i+1<<" with spaces between numbers: ";

for(int j=0 ; j<y ; j++){

cin>>arr[i][j];

if(arr[i][j]==0){c++;}

}

}

if(c>(x\*y)/2){cout<<"\nThis is a sparse matrix.\n";}

else{cout<<"\nThis is not a sparse matrix.\n";}

}

1. #include<iostream>

using namespace std;

int main(){

int x , y , c=0 , d=0 , z=0 ;

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

cin>>x;

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

cin>>y;

while(z<1){

if(x!=y){cout<<"\nThis is not a symmetric matrix\n"; break;}

int arr[x][y];

for(int i=0 ; i<x ; i++){

cout<<"\nEnter the row number #"<<i+1<<" with spaces between numbers: ";

for(int j=0 ; j<y ; j++){

cin>>arr[i][j];}

}

for(int i=0 ; i<x ; i++){

for(int j=0 ; j<y ; j++){

if(arr[i][j]==arr[j][i]){c++;}

else{d++;}

}

if(d!=0){cout<<"\nThis is not a symmetric matrix\n"; break;}

if(c==x\*y){cout<<"\nThis is a symmetric matrix\n"; break;}

}

z++;

}

}

1. #include<iostream>

using namespace std;

float fn(float r , float \*circum , float \*area){

const float pi = 3.14;

\*circum=2\*pi\*r ;

\*area=pi\*r\*r ;

}

int main(){

float r , circum , area ;

cout<<"Enter the radius of the circle to calculate it's circumference and it's area: ";

cin>>r;

fn(r , &circum , &area);

cout<<"\nCircumference = "<<circum<<" cm.\n";

cout<<"\nArea = "<<area<<" cm^2.\n";

}

1. #include<iostream>

using namespace std;

float fn(float arr[] , int size , float \*max1 , float \*min1 , float \*av){

\*max1 = 0 ;

\*min1 = 99999 ;

float sum = 0 ;

\*av = sum/size ;

for(int i=0 ; i<size ; i++){

if(arr[i]>\*max1){\*max1 = arr[i];}

if(arr[i]<\*min1){\*min1 = arr[i];}

sum+=arr[i];

}

\*av = sum/size;

}

int main(){

int size;

float max1 , min1 , av ;

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

cin>>size;

float arr[size];

for(int i=0 ; i<size ; i++){

cout<<"Enter the element number "<<i+1<<": ";

cin>>arr[i];

}

fn(arr , size , &max1 , &min1 , &av);

cout<<"\nMaximum Value = "<<max1<<"\n";

cout<<"\nMinimum Value = "<<min1<<"\n";

cout<<"\nAverage Value = "<<av<<"\n"; }