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**FUNDAMENTAL OF PROGRAMMING**

***LAB MANUAL 9***

**HOME TASK**

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**CLASS :** ME-15

**SECTION :** B

**CMS ID :** 457165

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#include <bits/stdc++.h>

using namespace std;

int main(){

double arr[3][3], adj[3][3], det, inv[3][3], temp=0;

cout<<"Enter the values in matrix : "<<endl;

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

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

cin>>arr[i][j];

}

}

cout<<"The values in the matrix are : "<<endl;

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

cout<<"| ";

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

cout<<arr[x][y]<<" ";

}

cout<<"|"<<endl;

}

det=+arr[0][0]\*(arr[1][1]\*arr[2][2]-arr[2][1]\*arr[1][2])

-arr[0][1]\*(arr[1][0]\*arr[2][2]-arr[1][2]\*arr[2][0])

+arr[0][2]\*(arr[1][0]\*arr[2][1]-arr[1][1]\*arr[2][0]);

cout<<"The determinant of the matrix is: "<<det<<endl;

adj[0][0]=+(arr[1][1]\*arr[2][2]-arr[2][1]\*arr[1][2]);

adj[0][1]=-(arr[1][0]\*arr[2][2]-arr[1][2]\*arr[2][0]);

adj[0][2]=+(arr[1][0]\*arr[2][1]-arr[1][1]\*arr[2][0]);

adj[1][0]=-(arr[0][1]\*arr[2][2]-arr[0][2]\*arr[2][1]);

adj[1][1]=+(arr[0][0]\*arr[2][2]-arr[0][2]\*arr[2][0]);

adj[1][2]=-(arr[0][0]\*arr[2][1]-arr[0][1]\*arr[2][0]);

adj[2][0]=+(arr[0][1]\*arr[1][2]-arr[0][2]\*arr[1][1]);

adj[2][1]=-(arr[0][0]\*arr[1][2]-arr[0][2]\*arr[1][0]);

adj[2][2]=+(arr[0][0]\*arr[1][1]-arr[0][1]\*arr[1][0]);

cout<<"The cofactor of the matrix is: \n";

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

cout<<"| ";

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

cout<<adj[k][l]<<" ";

}

cout<<"|"<<endl;

}

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

for(int b=a+1; b<3; b++){

temp=adj[a][b];

adj[a][b]=adj[b][a];

adj[b][a]=temp;

}

}

cout<<"The adjoint of the matrix is: \n";

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

cout<<"| ";

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

cout<<adj[i][j]<<" ";

}

cout<<"|"<<endl;

}

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

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

inv[i][j]=adj[i][j]/det;

}

}

cout<<"The inverse of the matrix is: \n";

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

cout<<"| ";

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

cout<<setprecision (3)<<inv[i][j]<<" ";

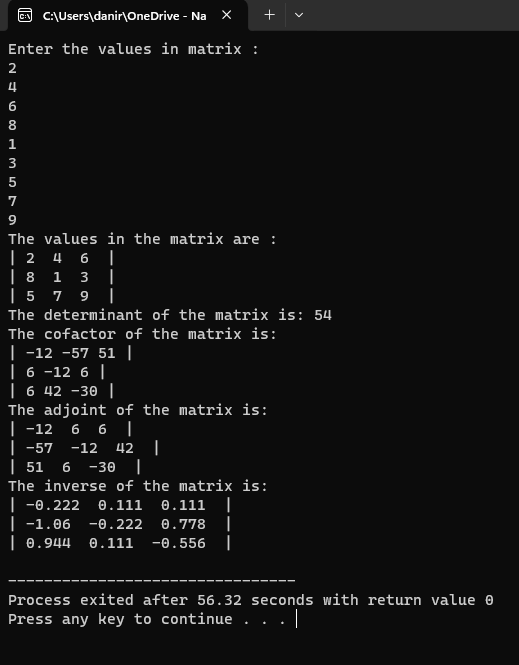
}

cout<<"|"<<endl;

}

return 0;

}

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