```
/*Write a C program to calculate Inverse of a given matrix.*/
#include<stdio.h>
#include<math.h>
float determinant(float [][25],float);
void cofactor(float [][25],float);
void transpose(float [][25],float [][25],float);
void main()
{
	float a[25][25],k,d;
	int i,j;
	clrscr();
	printf("Enter the order of the Matrix:- ");
	scanf("%f",&k);
	printf("Enter the elements of %.0fX%.0f Matrix:- \n",k,k);
	for(i=0;i<k;i++)
	{
		for(j=0;j<k;j++)
		{
			scanf("%f",&a[i][j]);
		}
	}
	d=determinant(a,k);
	if(d==0)
		printf("\nInverse of Entered Matrix is not possible \n");
	else
		cofactor(a,k);
	getch();
}
```

```
/*For calculating Determinant of the Matrix */
float determinant(float a[25][25],float k)
{
	float s=1,det=0,b[25][25];
	int i,j,m,n,c;
	if(k==1)
	{
		return (a[0][0]);
	}
	else
	{
		det=0;
		for(c=0;c<k;c++)
		{
			m = 0;
			n = 0;
			for(i=0;i<k;i++)
			{
				for(j=0;j<k;j++)
				{
					b[i][j]=0;
					if(i!=0 && j!=c)
					{
						b[m][n]=a[i][j];
						if(n<(k-2))
							n++;
						else
						{
							n=0;
							m++;
						}
					}
				}
			}
			det=det+s*(a[0][c]*determinant(b,k-1));
			s= -1*s;
		}
	}
	return(det);
}
```

```
void cofactor(float num[25][25],float f)
{
	float b[25][25],fac[25][25];
	int p,q,m,n,i,j;
	for(q=0;q<f;q++)
	{
		for(p=0;p<f;p++)
		{
			m=0;
			n=0;
			for(i=0;i<f;i++)
			{
				for(j=0;j<f;j++)
				{
					if (i!=q && j!=p)
					{
						b[m][n]=num[i][j];
						if(n<(f-2))
							n++;
						else
						{
							n=0;
							m++;
						}
					}
				}
			}
			fac[q][p]=pow(-1,q+p)*determinant(b,f-1);
		}
	}
	transpose(num,fac,f);
}
```

```
/*Finding transpose of matrix*/
void transpose(float num[25][25],float fac[25][25],float r)
{
	int i,j;
	float b[25][25],inverse[25][25],d;
	for(i=0;i<r;i++)
	{
		for(j=0;j<r;j++)
		{
			b[i][j]=fac[j][i];
		}
	}
	d=determinant(num,r);
	for(i=0;i<r;i++)
	{
		for(j=0;j<r;j++)
		{
			inverse[i][j]=b[i][j]/d;
		}
	}
	printf("\n\n\nThe inverse of matrix is:- \n");
	for(i=0;i<r;i++)
	{
		for(j=0;j<r;j++)
		{
			printf("\t%f",inverse[i][j]);
		}
		printf("\n");
	}
	getch();
}
```