Lab Tasks

Task 1:

```
#include <iostream>
using namespace std;
int main()
{
int mat[3][3];
int sum = 0;
for (int i = 0; i < 3;i++)
{
cout << "Enter data for row " << i + 1 << endl;
for (int j = 0; j < 3;j++)
{
cin >> mat[i][j];
}
}
cout << "The resultant matrix\n";
for (int m = 0; m < 3; m++)
{
for (int n = 0;n < 3; n++)
{
cout << mat[m][n]<<" ";
}
cout << endl;
}
for (int k = 0; k < 3;k++)
{
sum += mat[k][k];
}
cout << "The sum of the right diagonal is " << sum << endl;
sum = 0;
for (int z = 2;z>=0 ;z--)
{
sum += mat[2-z][z];
}
cout << "The sum of the left diagonal is " << sum;
return 0;}
```

Task 2:

```
#include <iostream>
using namespace std;
int result(int a[3][3], int b[3][3])
{
int sum[3][3];
for (int i = 0; i < 3; i++)
{
for (int j = 0; j < 3; j++)
{
sum[i][j] = a[i][j] + b[i][j];
}
}
cout << "The resultant matrix after addition is: " << endl;
for (int i = 0; i < 3; i++)
{
for (int j = 0; j < 3; j++)
{
cout << sum[i][j]<<" ";
}
cout << endl;
}
return 0;
}
int main()
{
int num = 0;
int mat1[3][3];
int mat2[3][3];
cout << "Enter the data for matrix number one\n";
for (int i = 0; i < 3;i++)
{
cout << "Enter data for row " << i + 1 << endl;
for (int j = 0; j < 3;j++)
{
cin >> mat1[i][j];
}
}
cout << "The resultant matrix\n";
for (int m = 0; m < 3; m++)
{
for (int n = 0;n < 3; n++)
{
cout << mat1[m][n]<<" ";
}
cout << endl;
}
```

```
cout << "Enter the data for matrix number two\n";
for (int i = 0; i < 3;i++)
{
cout << "Enter data for row " << i + 1 << endl;
for (int j = 0; j < 3;j++)
{
cin >> mat2[i][j];
}
}
cout << "The resultant matrix\n";
for (int m = 0; m < 3; m++)
{
for (int n = 0;n < 3; n++)
{
cout << mat2[m][n] << " ";
}
cout << endl;
}
result(mat1, mat2);
return 0;
}
```

Task 3:

```
#include <iostream>
using namespace std;
int transpose(int a[3][3])
{
int result[3][3];
for (int i = 0; i < 3;i++)
{
for (int j = 0; j < 3; j++)
{
result[j][i] = a[i][j];
}
}
cout << "While the transpose of the matrix is: " << endl;
for (int i = 0; i < 3;i++)
{
for (int j = 0; j < 3; j++)
{
cout << result[i][j]<<" ";
}
cout << "\n";
}
return 0;
```

```
}
int main()
{
int mat[3][3];
for (int i = 0; i < 3;i++)
{
cout << "Enter data of row " << i + 1 << endl;
for (int j = 0; j < 3; j++)
{
cin >> mat[i][j];
}
}
cout << "The resultant matrix is " << endl;
for (int i = 0; i < 3;i++)
{
for (int j = 0; j < 3; j++)
{
cout<< mat[i][j]<<" ";
}
cout << endl;
}
cout << endl;
transpose(mat);
return 0;
}
```

Task 4:

```
#include <iostream>
using namespace std;
int multiply(int a[2][2], int b[2][2])
{
int result[2][2] = { 0 };
for (int i = 0; i < 2;i++)
{
for (int j = 0; j < 2; j++)
{
for (int k = 0; k < 2;k++)
{
result[i][j] += a[i][k] * b[k][j];
}
}
}
cout << "The result of multiplication is: " << endl;
for (int i = 0; i < 2;i++)
```

```
{
for (int j = 0; j < 2; j++)
{
cout << result[i][j]<<" ";
}
cout << endl;
}
return 0;
}
int main()
{
int mat1[2][2];
cout << "Enter data for matrix 1\n";
for (int i = 0; i < 2;i++)
{
cout << "Enter data of row " << i + 1 << endl;
for (int j = 0; j < 2; j++)
{
cin >> mat1[i][j];
}
}
cout << "The resultant matrix is " << endl;
for (int i = 0; i < 2;i++)
{
for (int j = 0; j < 2; j++)
{
cout<< mat1[i][j]<<" ";
}
cout << endl;
}
cout << endl;
int mat2[2][2];
cout << "Enter data for matrix 2\n";
for (int i = 0; i < 2;i++)
{
cout << "Enter data of row " << i + 1 << endl;
for (int j = 0; j < 2; j++)
{
cin >> mat2[i][j];
}
}
cout << "The resultant matrix is " << endl;
for (int i = 0; i < 2;i++)
{
for (int j = 0; j < 2; j++)
{
cout << mat2[i][j] << " ";
}
```

```
cout << endl;
}
cout << endl;
multiply(mat1, mat2);
return 0;
}
```

Task 5:

```
#include <iostream>
using namespace std;
int table(int num, int i)
{
if (i <= 10)
{
cout << num << "*" << i << "=" << num * i << endl;
return table(num, i + 1);
}
else
{
return 1;
}
}
int main()
{
table(15, 1);
return 0;}
```

Home Task 1:

```
#include <iostream>
using namespace std;
int Determinant(int a[2][2])
{
return (a[0][0] * a[1][1]) - (a[0][1] * a[1][0]);
}
int Adjoint(int b[2][2])
{
int temp = 0;
temp = b[0][0];
b[0][0] = b[1][1];
b[1][1] = temp;
temp = -b[0][1];
b[0][1] = -b[1][0];
b[1][0] = temp;
return 0;
}
int Inverse(int a[2][2])
{
cout << "The inverse is :" << endl;
cout << 1 << "/" << Determinant(a) << " multiplied by the matrix :" << endl;
for (int i = 0; i < 2;i++)
{
for (int j = 0; j < 2; j++)
{
cout << a[i][j] << " ";
}
cout << endl;
}
return 0;
}
int InputMatrix(int b[2][2])
{
for (int i = 0; i < 2; i++)
{
cout << "Enter data for row " << i + 1 << endl;
for (int j = 0; j < 2; j++)
{
cin >> b[i][j];
}
}
return 0;
}
int main()
{
int mat[2][2];
```

```
InputMatrix(mat);
cout << "The input matrix :" << endl;
for (int i = 0; i < 2;i++)
{
for (int j = 0; j < 2; j++)
{
cout << mat[i][j] << " ";
}
cout << endl;
}
Determinant(mat);
Adjoint(mat);
Inverse(mat);
return 0;
}}
```