Practical 1

Aim: Write a python program to perform 2x2 Matrix multiplication

Code:

```
x = [[1,2],[3,4]]
y = [[1,2],[3,4]]

result = [[0,0],[0,0]]

for i in range(len(x)):
    for j in range(len(y[0])):
        for k in range(len(y)):
            result[i][j] += x[i][k] * y[k][j]
for r in result:
    print(r)
```

OR

```
def Matrix():
    matrix = [[int(input(f"Enter value for [{i}][{j}] index: "))for
    j in range(2)]for i in range(2)]
    MatOutput(matrix)
    return matrix

def MatOutput(mat):
    for i in mat:
        print(i)

def Multiplication(x,y):
    result = [[0,0],[0,0]]
    for i in range(len(x)):
        for j in range(len(y[0])):
            for k in range(len(y)):
                result[i][j] += x[i][k] * y[k][j]
    MatOutput(result)

print("Matrix multiplication (2x2)")
print("For 1st matrix:")
a = Matrix() #taking input and printing the mat at the same time
print("\nFor 2nd matrix:")
b = Matrix()
```

```
print("\nResultant Matrix: ")
result = Multiplication(a,b)
```

1st code output:

```
[7, 10]
[15, 22]
```

AND

2nd code output:

```
Matrix multiplication (2x2)
For 1st matrix:
Enter value for [0][0] index: 1
Enter value for [0][1] index: 2
Enter value for [1][0] index: 3
Enter value for [1][1] index: 4
[1, 2]
[3, 4]

For 2nd matrix:
Enter value for [0][0] index: 1
Enter value for [0][1] index: 2
Enter value for [1][0] index: 3
Enter value for [1][1] index: 4
[1, 2]
[3, 4]

Resultant Matrix:
[7, 10]
[15, 22]
```