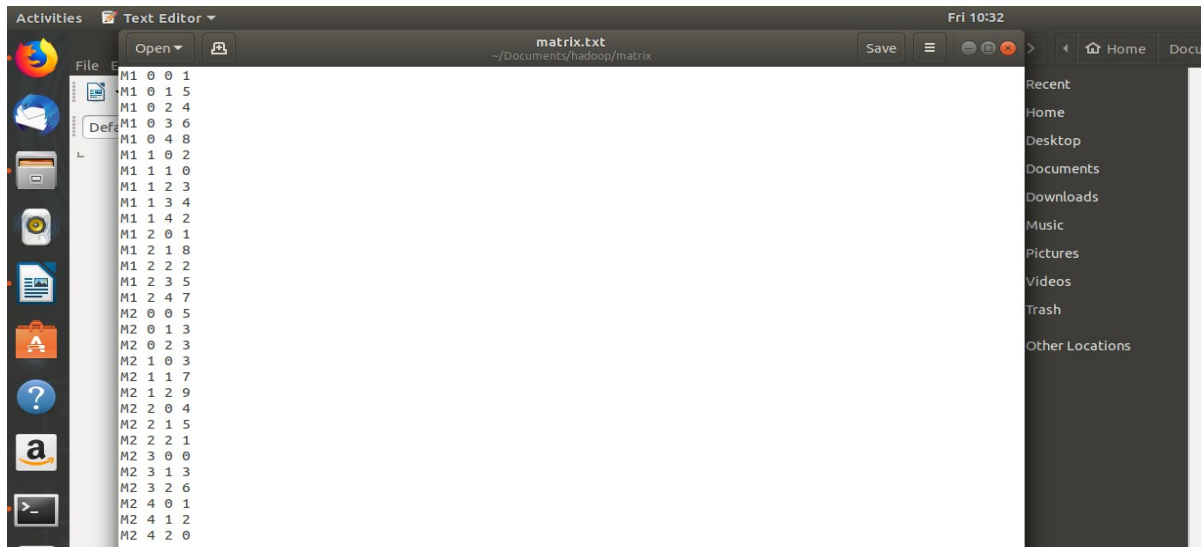


## ASSIGNMENT-6

### MATRIX MULTIPLICATION

Dataset-



A screenshot of a text editor window titled 'matrix.txt' located at '~Documents/hadoop/matrix'. The editor displays a list of matrix multiplication inputs, each on a new line. The inputs are categorized by matrix type (M1 or M2) and their dimensions. The data is as follows:

Matrix Type	Row 1	Row 2	Row 3	Row 4
M1	0 0 1	0 1 5	0 2 4	0 3 6
M1	0 4 8	1 0 2	1 1 0	1 2 3
M1	1 3 4	1 4 2	2 0 1	2 1 8
M1	2 2 2	2 3 5	2 4 7	0 0 5
M2	0 1 3	0 2 3	1 0 3	1 1 7
M2	1 2 9	2 0 4	2 1 5	2 2 1
M2	2 2 1	3 0 0	3 1 3	3 2 6
M2	4 0 1	4 1 2	4 2 0	

Mapper code-

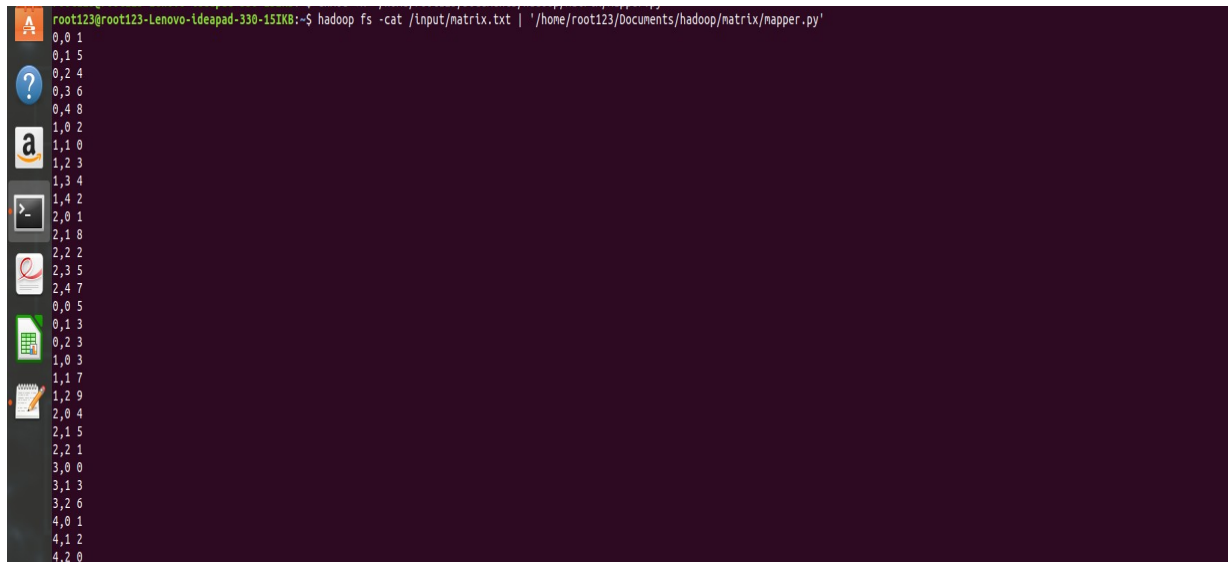


A screenshot of a text editor window titled 'mapper.py' located at '~Documents/hadoop/matrix'. The editor displays the following Python code:

```
#!/usr/bin/python3
import sys
M1_row=0
M1_col=0
M2_row=0
M2_col=0
for line in sys.stdin:
    a=line.strip().split(" ")
    if(a[0]=='M1'):
        print(a[1]+","+a[2],a[3])
    else:
        print(a[1]+","+a[2],a[3])
```

## Mapper output-

```
root123@root123-Lenovo-Ideapad-390-15IKB:~$ hadoop fs -cat /input/matrix.txt | '/home/root123/Documents/hadoop/matrix/mapper.py'
```



## Reducer code-

```
#!/usr/bin/python3
import sys
a={}
b={}
result={}
for line in sys.stdin:
    x=line.strip().split(" ")
    if(x[0]=='matrix2'):
        break
    a[str(x[0])+str(x[1])]=int(x[2])

for line in sys.stdin:
    x=line.strip().split(" ")
    b[str(x[0])+str(x[1])]=int(x[2])

#multiplication
row1=int(str(list(a.keys()))[-1])[0])
row2=int(str(list(b.keys()))[-1])[0])
col2=int(str(list(b.keys()))[-1][1])
for i in range(row1+1):
    for j in range(col2+1):
        result[str(i)+str(j)]=0
        for k in range(row2+1):
            result[str(i)+str(j)]+=a[str(i)+str(k)]*b[str(k)+str(j)]
print(result)
```

## **Reducer output**

```
Result of Matrix Multiplication is :  
[[14, 49, 35, 57, 67], [26, 87, 51, 91, 101], [15, 28, 33, 49, 49], [12, 48, 21, 42, 48], [5, 5, 10, 14, 12]]
```