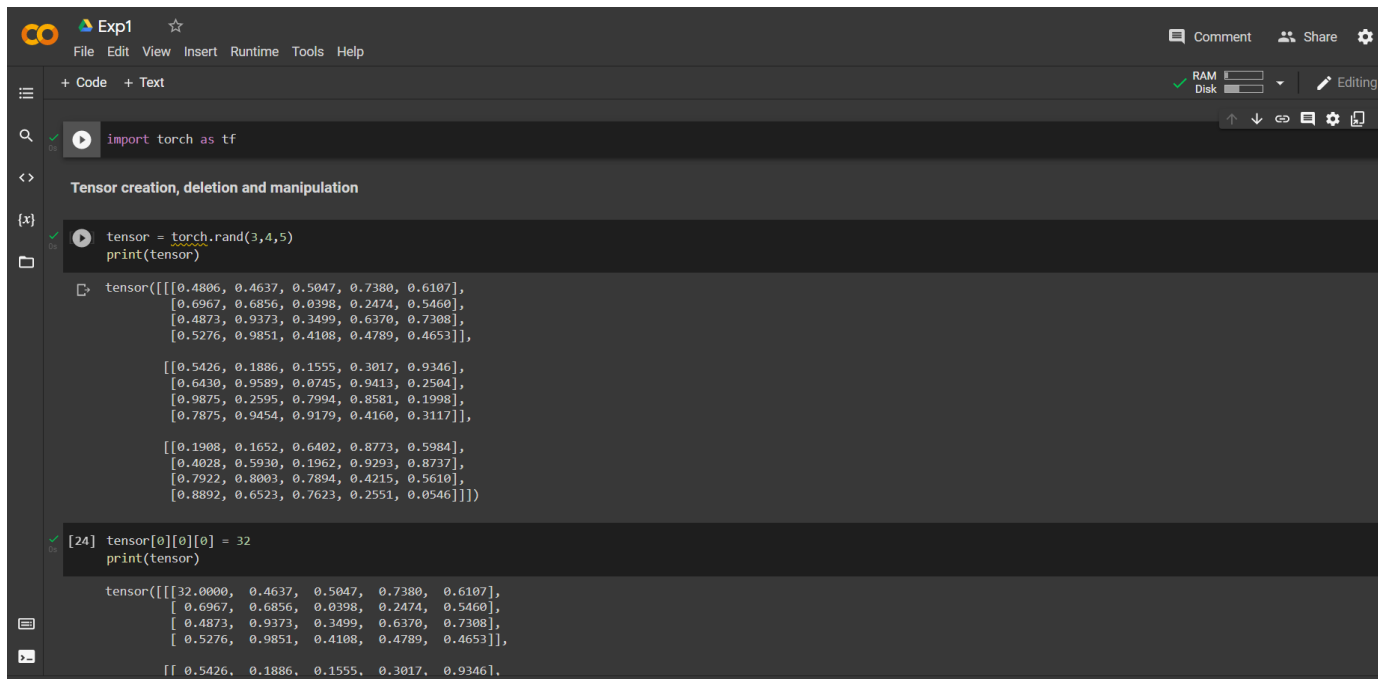**ROHAN NYATI**

500075940

R177219148

BATCH – 5 (Ai & Ml)

Experiment -1

Q1) Implement the following things on PyTorch:-(Python)

1) Explore the tools with different options like

- ➢ **installation**
- ➢ **tensor creation deletion**
- ➢ **tensor manipulation**

CO   ▲ Exp1   ☆
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Disk ▬ ▾   ✏ Editing

```
[23]            [[0.1908, 0.1652, 0.6402, 0.8773, 0.5984],
                 [0.4028, 0.5930, 0.1962, 0.9293, 0.8737],
                 [0.7922, 0.8003, 0.7894, 0.4215, 0.5610],
                 [0.8892, 0.6523, 0.7623, 0.2551, 0.0546]]])
```

```
[24] tensor[0][0][0] = 32
     print(tensor)

     tensor([[[32.0000,  0.4637,  0.5047,  0.7380,  0.6107],
              [ 0.6967,  0.6856,  0.0398,  0.2474,  0.5460],
              [ 0.4873,  0.9373,  0.3499,  0.6370,  0.7308],
              [ 0.5276,  0.9851,  0.4108,  0.4789,  0.4653]],

             [[ 0.5426,  0.1886,  0.1555,  0.3017,  0.9346],
              [ 0.6430,  0.9589,  0.0745,  0.9413,  0.2504],
              [ 0.9875,  0.2595,  0.7994,  0.8581,  0.1998],
              [ 0.7875,  0.9454,  0.9179,  0.4160,  0.3117]],

             [[ 0.1908,  0.1652,  0.6402,  0.8773,  0.5984],
              [ 0.4028,  0.5930,  0.1962,  0.9293,  0.8737],
              [ 0.7922,  0.8003,  0.7894,  0.4215,  0.5610],
              [ 0.8892,  0.6523,  0.7623,  0.2551,  0.0546]]])
```
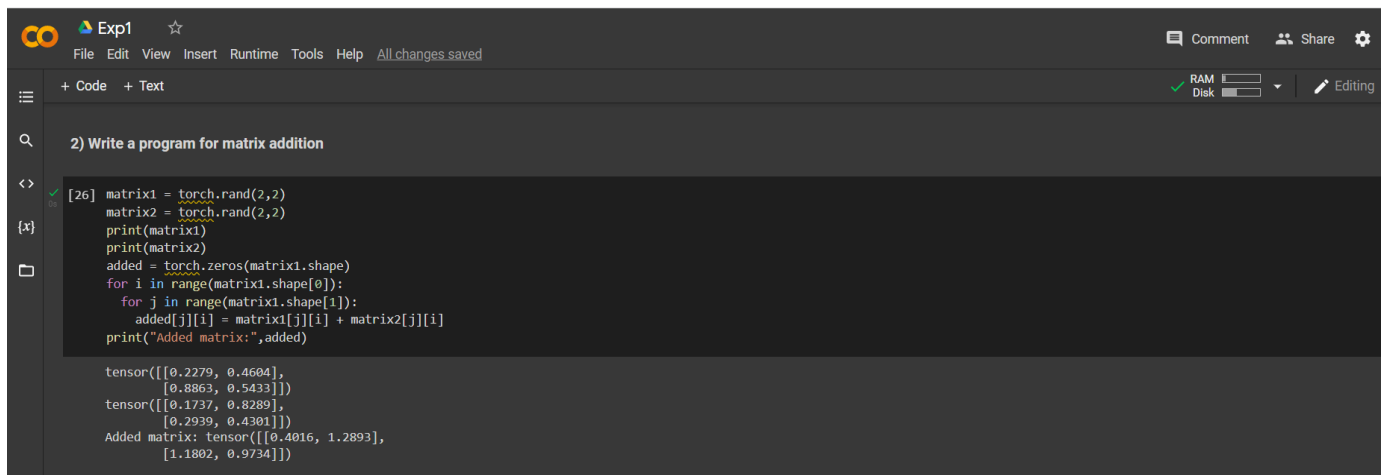
```
▶  del tensor
   print("Tensor deleted")

☐→ Tensor deleted
```

2) Write a Program for Matrix Addition

CO   ▲ Exp1   ☆
File   Edit   View   Insert   Runtime   Tools   Help   All changes saved

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RAM ▬
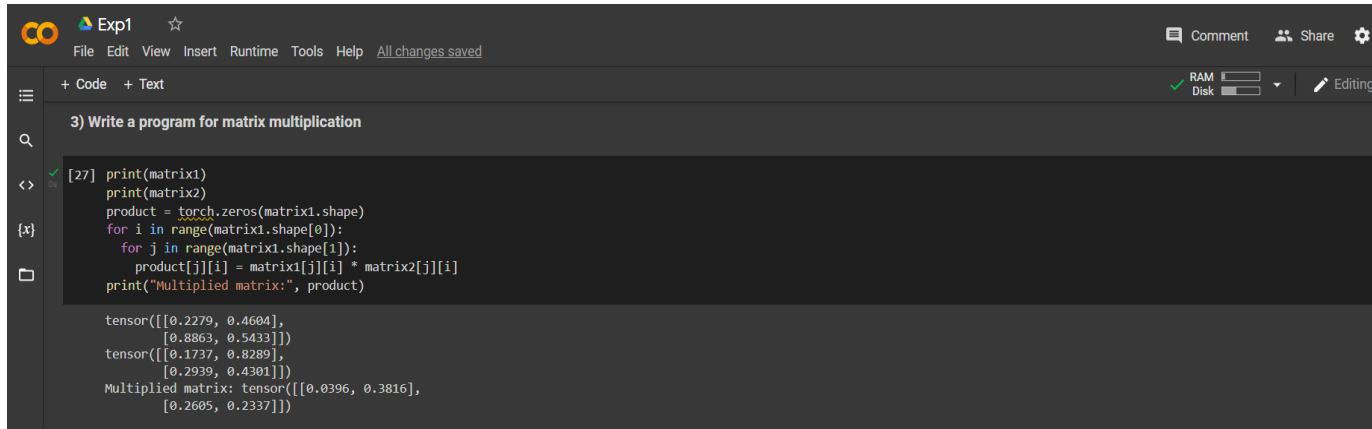Disk ▬ ▾   ✏ Editing

2) Write a program for matrix addition

```
[26] matrix1 = torch.rand(2,2)
     matrix2 = torch.rand(2,2)
     print(matrix1)
     print(matrix2)
     added = torch.zeros(matrix1.shape)
     for i in range(matrix1.shape[0]):
       for j in range(matrix1.shape[1]):
         added[j][i] = matrix1[j][i] + matrix2[j][i]
     print("Added matrix:",added)

     tensor([[0.2279, 0.4604],
             [0.8863, 0.5433]])
     tensor([[0.1737, 0.8289],
             [0.2939, 0.4301]])
     Added matrix: tensor([[0.4016, 1.2893],
             [1.1802, 0.9734]])
```

3) Write a Program for Matrix Multiplication

Exp1 ☆

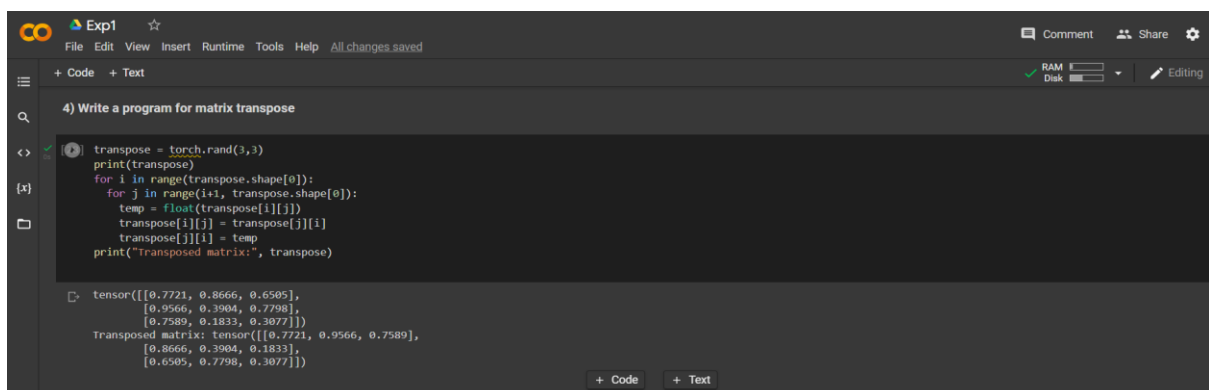File Edit View Insert Runtime Tools Help All changes saved

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3) Write a program for matrix multiplication

```
[27]  print(matrix1)
      print(matrix2)
      product = torch.zeros(matrix1.shape)
      for i in range(matrix1.shape[0]):
        for j in range(matrix1.shape[1]):
          product[j][i] = matrix1[j][i] * matrix2[j][i]
      print("Multiplied matrix:", product)


      tensor([[0.2279, 0.4604],
              [0.8863, 0.5433]])
      tensor([[0.1737, 0.8289],
              [0.2939, 0.4301]])
      Multiplied matrix: tensor([[0.0396, 0.3816],
              [0.2605, 0.2337]])
```

4) Write a Program for Matrix Transpose

Exp1 ☆

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4) Write a program for matrix transpose

```
transpose = torch.rand(3,3)
print(transpose)
for i in range(transpose.shape[0]):
  for j in range(i+1, transpose.shape[0]):
    temp = float(transpose[i][j])
    transpose[i][j] = transpose[j][i]
    transpose[j][i] = temp
print("Transposed matrix:", transpose)


tensor([[0.7721, 0.8666, 0.6505],
        [0.9566, 0.3904, 0.7798],
        [0.7589, 0.1833, 0.3077]])
Transposed matrix: tensor([[0.7721, 0.9566, 0.7589],
        [0.8666, 0.3904, 0.1833],
        [0.6505, 0.7798, 0.3077]])
```

+ Code + Text