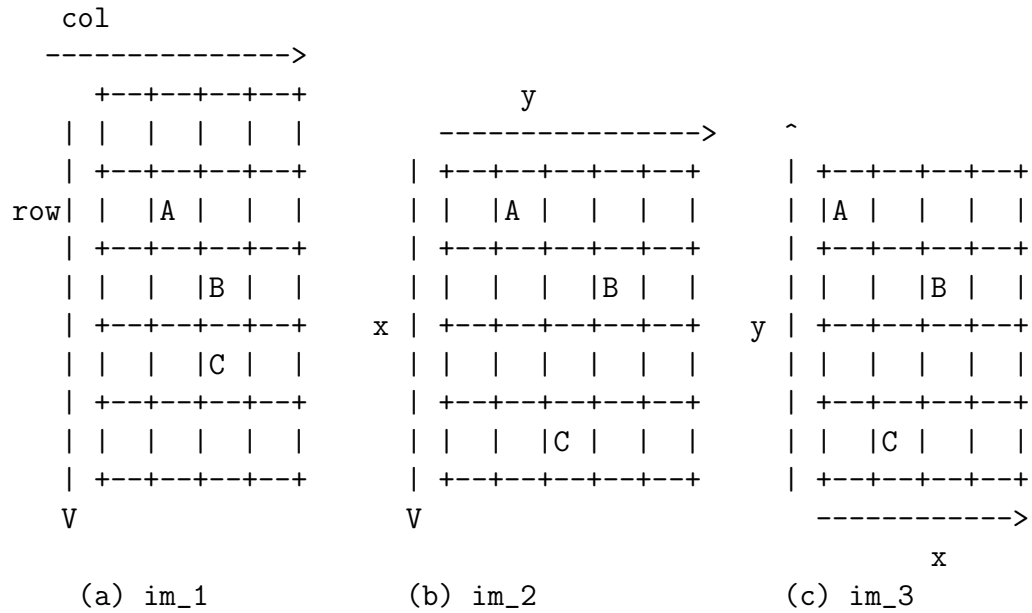


Quiz 1: CS CS4640 Name _____



1a. Consider Figure 1 (a). Give the dimensions (M,N):

$$M = 5$$

$$N = 4$$

1b. Consider Figure 1 (a). Show the directions of the row and column axes (draw and label them next to the array).

1c. Consider Figure 1 (a). Give the (row,col) coordinates of the pixels labeled A, B and C.

$$A = (2, 2)$$

$$B = (3, 3)$$

$$C = (4, 3)$$

1d. Consider Figure 1 (b). Give the dimensions (M,N) of *im₂*.

$$M = 4$$

$$N = 5$$

1e. Consider Figure 1 (b). Show the directions of the x, y axes if the origin is assumed in the upper left corner (draw and label them next to the array).

1f. Consider Figure 1 (b). Give the (x,y) coordinates of the pixels labeled A, B and C.

$$A = (1, 2)$$

$$B = (2, 4)$$

$$C = (4, 3)$$

1g. Consider Figure 1 (c). Give the dimensions (M,N):

$$M = 4$$

$$N = 4$$

1b. Consider Figure 1 (c). Show the directions of the x, y axes (draw and label them next to the array) assuming the origin is in the lower left corner.

1c. Consider Figure 1 (c). Give the (x,y) coordinates of the pixels labeled A, B and C.

$$A = (1, 4)$$

$$B = (3, 3)$$

$$C = (2, 1)$$

2. Discuss how level slicing (splicing) can be used to determine noise or extract the major shapes in a binary image.

It is not possible to level slice 1 bit.

3. Given the rgb image, I_{rgb} , and its corresponding gray level image, I_{gray} , show the exact values that go into setting up the linear system to determine the α , β , and γ transform parameters (i.e., give b and A).

```
I_rgb = [150 163      red
         134 143]
```

```
       [218 226      green
        199 206]
```

```
       [161 179      blue
        143 159]
```

```
I_gray = [191 202
          173 182]
```

```
b = [191,173,202,182]'
```

```
A = [150, 218, 161;
     134, 199, 143;
     163, 226, 179;
     143, 206, 159]
```