CSC 120 **ICA-10**

Work with your neighbor. (This will be graded for participation only.)

1. What is a reference? If a variable `x` is a reference to a list (array), does `x` actually contain the list?

   ANS:

   Every data value (or object) has a unique identity number. We call the unique identity number a *reference*. (You can think of this as the address of the object in memory.)

   If `x` is a list, then `x` does not contain the list. The list's identity number (reference) is stored in `x`.

2. We said that the line of code

   ```
   x = [1,2,3,4,5]
   ```

   is executed in two steps. What are these steps?

   ANS:

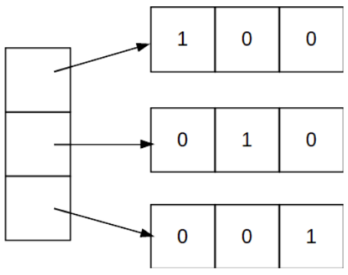
   i. Construct the list in memory somewhere
   ii. Store a reference to this list in `x` (i.e., store the identity number of the list in `x`)

3. Draw the data structure diagram (that is, the reference diagram) for the following:

   [[1,0, 0], [0,1,0], [0,0,1]]

   Discuss with your group. Make sure everyone can see the diagram and that you agree on the diagram!

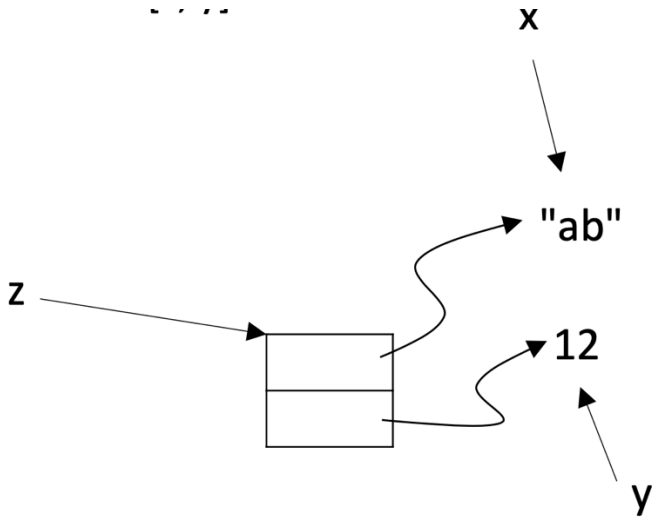
   ANS:



4. Draw the diagrams for the following:

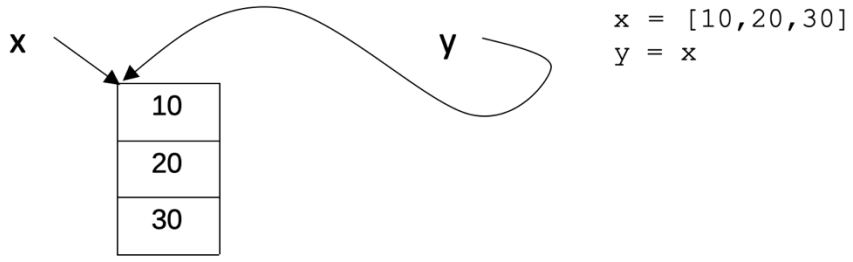
```
x, y = "ab", 12

z = [x,y]
```

ANS:

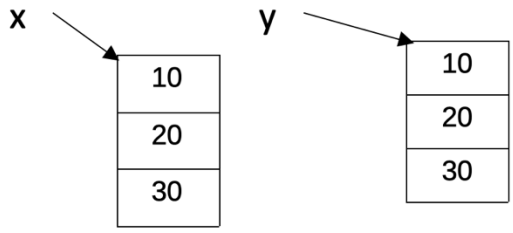


5. Slide 24: Write the code that produces the two different diagrams.

ANS:

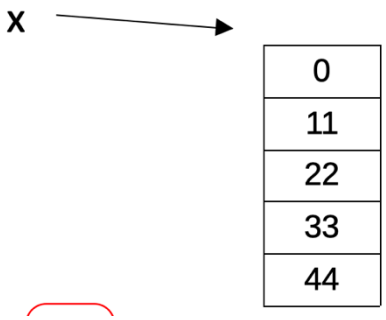



```
x = [10,20,30]
y = x
```




```
x = [10,20,30]
y = [10,20,30]
```

6. Slide 27: Write the code that produces the diagram shown.



ANS:

```
x = []
for i in range(5):
    x.append(i*11)
```

7. Slide 28: What is the diagram for z?

ANS:

```
>>> x = [10, 20, 30]     # a list containing 3 values
>>> y = ["ab", "cd"]     # a list containing 2 values
>>> z = [x, y]           # a list containing 2 values
```