Structure and Interpretation of Computer Programs with Python

Lesson 8

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Exercise:

Create a gradebook using a list. It should first asks for user input(), say "Enter the score", then according to the score, append the corresponding grade into the list.

Example: the input is 85, 95, 84, 40

output: [B, A, B, F]

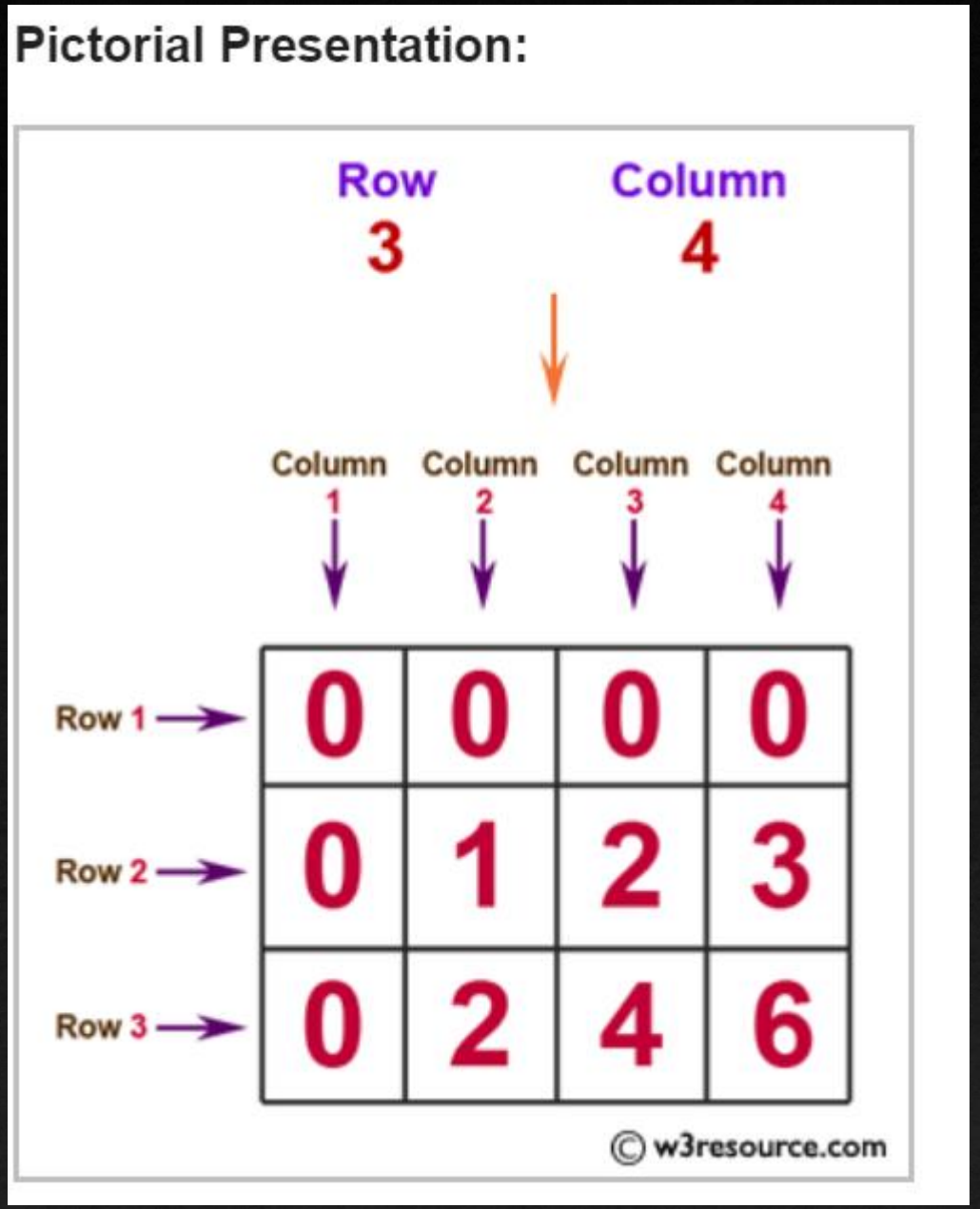
Exercise:

Write a Python program which takes two digits m (row) and n (column) as input and generates a two-dimensional array. The element value in the i-th row and j-th column of the array should be i*j.

Note :

i = 0,1.., m-1

j = 0,1, n-1.



2D Array/List

Python 3.6

```
1  a = [[1, 2], [6, 3], [19, 2]]
```

Edit this code

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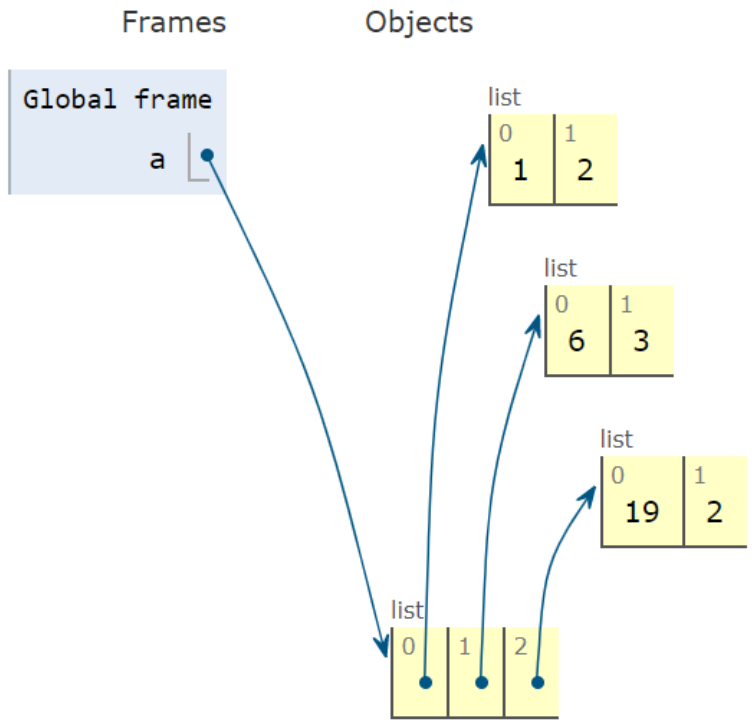
Done running (1 steps)

ion (NEW!)



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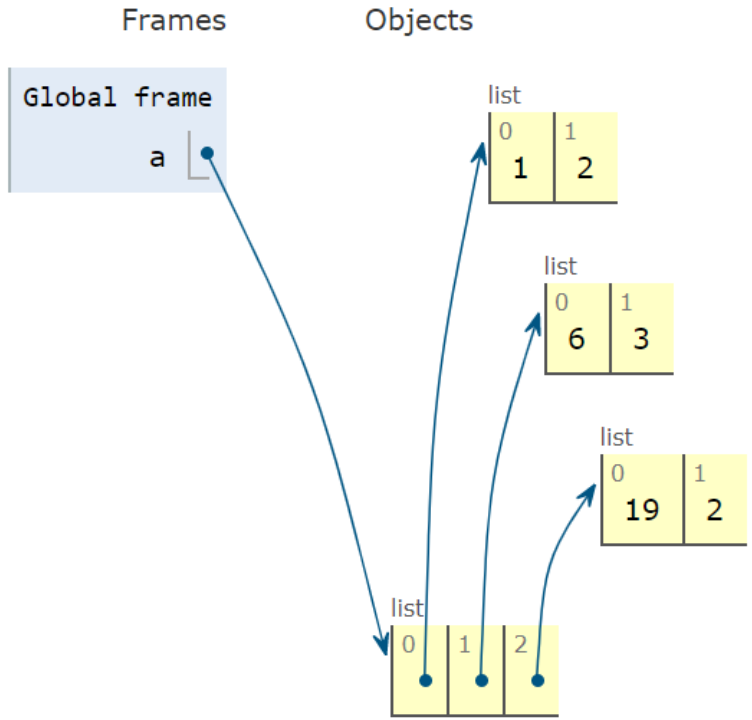


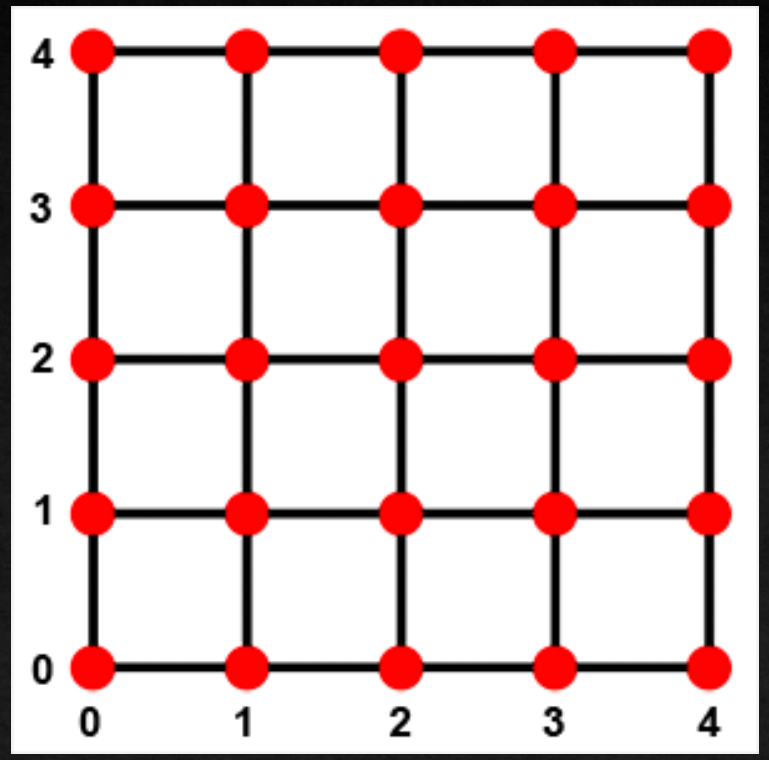
2D Array/List

Identify the points

(1, 2)

(2, 1)

(3, 2)



2D Array/List

Access: arr[a][b]

Example: list = [[1, 2], [7, 5], [8, 12]]

How to access the number 7

8?

2D Array/List

Length: len(arr)

Example: list = [[1, 2], [7, 5], [8, 12]]

Length?

Exercise

```
cinema =[ [ 0, 0, 0, 0, 1 ],
          [ 0, 0, 0, 1, 1 ],
          [ 0, 0, 1, 1, 1 ],
          [ 0, 0, 0, 1, 1 ],
          [ 0, 0, 0, 0, 1 ] ]
```

1. Write “crazy dude” at position [1][0]

Exercise

```
cinema =[ [ 0, 0, 0, 0, 1 ],
          [ 0, 0, 0, 1, 1 ],
          [ 0, 0, 1, 1, 1 ],
          [ 0, 0, 0, 1, 1 ],
          [ 0, 0, 0, 0, 1 ] ]
```

1. Write “crazy dude” at position [1][0]
2. Print the whole thing out using loops and print statements

Exercise

Generate an empty 2D list (contains all 0) of size 6*5

Challenge

Try to write your own version of gomoku (5 in a row)

Step 1

Create an empty 2D list of size 8 * 8 to represent your chess board

Create two empty lists, black and white, to keep track of the position of each step

Step 2

Ask for user input, black first

Input style: 1, 2

Step 3

Change the value at that position to “black”

Add the position to list black

Step 4

Do the same steps for white

Step 5

Check too see if anyone wins (black & white lists might be useful). If so, end the program and indicate the winner. If not, continue.

Step 6

Create a forever loop and put everything in there. Repeat step 1-2 until there is a winner