

2D Array Tasks

Task 1 - 2D array theory

Visit the web page below to recap on arrays, and to introduce an extension to the arrays we have used up to now: the 2 Dimensional (2D) array. Make sure you watch the video at the end.

<https://www.bbc.co.uk/bitesize/guides/zb3yb82/revision/4>

Task 2 - Run a simple 2D array program

Open `2Darray.py` and run it. Feel free to change it and see what happens. Did it do what you expected?

On the first two lines, a 2D array called `movies` is declared. In memory it looks like this:

	0	1
0	Wall-E	2008
1	Up	2009
2	Coco	2017
3	Cars	2006
4	Inside Out	2015

Now answer the following questions (you can use your Python program to check the answer):

1. What would be printed by `print (movies[0][0])` ?
2. What would be printed by `print (movies[0][1])` ?
3. What would be printed by `print (movies[1][1])` ?
4. What would be printed by `print (movies[0][1])` ?
5. What would you replace `x` and `y` with to print Inside Out: `print (movies[x][y])`

6. What would you replace `x` and `y` with to print 2017: `print (movies[x][y])`

7. When the array is declared in line 1 and 2 of the program, what is the purpose of the commas in between the movies (the ones between the close & open square brackets)?



Task 3 - 2D Linear Search

Open `2DarraySearch.py` and run it. Feel free to change it and see what happens, but then restore it to its original state.

The code is pasted below. Explain underneath it exactly what is happening in every line, paying especial detail to the first two lines and last two lines

```
1 movies=[ ['Wall-E', 2008] , ['Up', 2009], ['Coco',2017],
2          [ 'Cars',2006], ['Inside Out',2015] ]
3
4 year=int(input("Type in a year from 2008 to 2017:"))
5
6 print("These Pixar movies were released after", year)
7 for i in range(len(movies)):
8     if movies[i][1] >= year:
9         print(movies[i][1], movies[i][0])
```

Task 4 - 2D Linear Search

Make your own program based on `2DarraySearch.py`, but make it do the following:

The array should contain the names of 8 students, and their mark in a test out of 10.

Your program should ask the user to enter a mark, and then displays all the students who have that mark or higher.

```
Type in a mark:5
Bill passed.
Bob passed.
Babs passed.
Beth passed.
Bibby passed.
Bonita passed.
Berta passed.
Billy passed.
```

