

numpy_and_control_flow_workbook_answers

September 22, 2020

1 NUMPY AND CONTROL FLOW WORKBOOK ANSWERS

Have a go at the following questions to practice your new found skills.

If you have any questions, go back to the course videos and have another look. One version of the answers is available in the next download. Remember, there are different ways to write code to get the same answer, so your answer can be correct and different to the answer example!

If you feel stuck and want some in person help, then have a look at the events page to join in a workshop <https://swamphen.co.uk/events>.

```
In [ ]: # import numpy
import numpy as np
```

```
In [ ]: # we will look at the post example again
```

```
In [ ]: post = [(7,5,0.5), (10,10,1.5), (25,13,7), (20, 5, 5), (24, 16.5, 0.5)]
# length, width, thickness of an item of post
```

```
In [ ]: # change this from a list of tuples to a NumPy array
post = np.array(post)
print(post)
```

```
In [ ]: # iterate over this NumPy array and print out the width
for item in post:
    print(item[2])
```

```
In [ ]: # iterate over this NumPy array and add the three values together
# print to screen
for item in post:
    print(item[0] + item[1] + item[2])
```

```
In [ ]: # calculate the volume of the items of post and save to a new array
volume = []

for item in post:
    volume.append([item[0] * item[1] * item[2]])

print(volume)
```

```

In [ ]: # add this volume value as a fourth column in the array
        # make sure you have your volume array in the correct format!
        volume = np.array(volume)
        print(volume)
        post = np.hstack([post, volume])
        print(post)

In [ ]: mass = [[.2], [1.5], [.5], [.1], [4]]
        # if the mass (kg) of the parcel is as the above list of lists
        # add this to the original array as a new column
        post = np.hstack([post, mass])
        print(post)

In [ ]: # calculate the density of the parcel and print out
        for item in post:
            print(item[4] / item[3])

In [ ]: # if a small letter has maximum dimensions
        max_dimensions = [24, 16.5, 0.5]
        # select the small letters from the list

        for item in post:
            if item[0] <= 24:
                if item[1] <= 16.5:
                    if item[2] <= 0.5:
                        print(item, 'small letter')

```