Introduction to Python: DÚ

Official python tutorial: https://docs.python.org/3.8/tutorial/index.html

URL https://github.com/jerry-git/learn-python3

Task 1

You are given an array of strings:

```
array_to_split = ["Fiit", "fiit", "megadlhystring!!!",
"autobiografia", "Alica", "python", "pip", "env", "jupyter", "IAU"]
```

Write a function that, for the given array of strings, returns a new array containing only strings at prime indices. Then call this function with the field declared above as a parameter.

```python
def is_prime(n):
    if n <= 1:
        return False
    for i in range(2, int(n**0.5) + 1):
        if n % i == 0:
            return False
    return True

def prime_indices(array):
    result = []
    for i in range(len(array)):
        if is_prime(i):
            result.append(array[i])
    return result
```

```
print(prime_indices(array_to_split))
```

```
['megadlhystring!!!', 'autobiografia', 'python', 'env']
```

Write a program that divides the above declared array into 3 new arrays, where in one array there will be strings of length less than 5. In the second array, strings of length between 5 and 10 (inclusive) and strings starting with the letter "a" or any uppercase letter while string of **any** length. In the third field, all other things.

```
less5 = []
fivetoten = []
other = []
for string in array_to_split:
    if len(string) < 5:
        less5.append(string)
    elif (5 <= len(string) <= 10) or (string[0] == "a" or
string[0].isupper()):
        fivetoten.append(string)
    else:
        other.append(string)

less5, fivetoten, other
```

```
(['Fiit', 'fiit', 'pip', 'env', 'IAU'],
 ['autobiografia', 'Alica', 'python', 'jupyter'],
 ['megadlhystring!!!'])
```

Task 2

We have entered an array of numbers of type Interger (int).

```
array1 = [1, 4, 5, 1, 7, 5, 1, 5, 4, 2, 3, 4]
array2 = [1,2,3,4,5,5,6,6,4,4,5,5,12,12,1,1,1,1,1,2,1]
array3 = [1,1,2,20]
```

Write a function that tells us, for an array of ints, whether the array can be split into two arrays with the same sum. Then call this function on the field declared above. List two such fields (any that satisfy the condition of equal sum).

```
def can_find_subset(arr, index, current_sum, target):
    if current_sum == target:
        return True
    if current_sum > target or index >= len(arr):
        return False

    return (can_find_subset(arr, index + 1, current_sum + arr[index],
target) or
```

```python
            can_find_subset(arr, index + 1, current_sum, target))

def can_divide(arr):
    total_sum = sum(arr)

    if total_sum % 2 != 0:
        return False

    target = total_sum // 2

    return can_find_subset(arr, 0, 0, target)

print(can_divide(array1))
print(can_divide(array2))
print(can_divide(array3))
```

```
True
True
False
```