

# ECMM455 Python Worksheet 11: Lists and *for* loops

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## 1 Aims

- Practice iterating over lists with *for* loops

## 2 Lists & for loops

To repeat a process for each item in a list, use a *for* loop - a good way is to use the *in* operator to iterate through every item in the list:

```
for x in mylist:  
    print x
```

Look at the example below to get an idea how it works:

```
1 dogs = ['peke', 'labrador', 'poodle']  
2 for d in dogs:  
3     print(d)
```

### 2.1 Exercise

1. Create a program that declares a list of fruits, then displays each fruit in the list.

## 3 Ranges

The *range()* function is a useful way to make sequential lists of numbers:

- *range(a,b)* - creates a list of sequential integers from *a* to *b*-1
- *range(a,b,s)* - creates a list of sequential integers from *a* to *b*-1 with step size *s*

*For* loops can be used with *range()* to iterate over a sequence of numbers

### 3.1 Exercises

In interactive mode, use the *range()* function to create:

1. A list of all even numbers from 0 to 50.
2. A list of numbers descending from 5 to 1.

## 4 Exercises on list iteration

1. Write a program that creates a list of numbers and then uses a for loop to find their total.
2. Write a program that uses a for loop to display the message "hello world" six times.
3. Write a program that constructs a list of the squares of the integers 1 to 10.
4. Write a program that prompts the user for 5 tree species, displays the original list, then displays a list of those that begin with a vowel.
5. Write a program that creates a list of numbers then finds the length of the list WITHOUT using the built-in len() function.

## 5 More exercises

1. Write a program that will display all numbers between 200 and 300 that are divisible by 7.
2. Write a program that asks the user to enter five numbers, checks if the numbers were entered in ascending order, then displays the outcome.
3. Write a program that asks the user to enter five numbers, then displays how many times each number was repeated.
4. Write a program that prompts the user for two words, tests if they are anagrams of each other, and then displays the result.
5. Write a program to display the following pattern. (Hint: Use one for loop nested inside another.)

```
*  
**  
***  
****  
*****
```