

CompSci 101 Lab 5

Part A

range() function
for ... in range(...) loops



The range() function

- The range() function defines a sequence of integer values and has the following syntax:
 - range(**start**, **stop**, **step**)
- If the **step** is omitted, the default step is 1.
- If the **start** is omitted, the default start is 0.
- **stop** is **one more than** the last required value.

range(start, stop, step)

- `range(2, 13, 3)`
 - returns the sequence 2, 5, 8, 11
- `range(20, 12, -2)`
 - returns the sequence 20, 18, 16, 14
- `range(0, 5)`
 - returns the sequence 0, 1, 2, 3, 4
- `range(5)`
 - returns the sequence 0, 1, 2, 3, 4

The `for .. in range(...)` Loop

- The `for...in range(...)` loop provides a compact structure for counter-controlled loops.
- The format of a `for ... in range(...)` loop is:
`for value in range(start, stop, step)`

for ... in range() Loop

- The following code would print out all the even numbers between 10 and 30 inclusive.

```
for number in range(10, 31, 2):  
    print(number)
```

Converting a while loop into a for loop

Components of a while loop

- Loop initialisation
- Loop condition
- Body of loop
- Increment

Converting a while loop into a for .. in range() loop

- Identify the 4 components of the while loop and translate into the for .. in range() loop format.

Converting a while loop into a for loop

```
number = 5                                # Initialisation
while number < 100:                        # Loop condition
    print(number * 2)                      # Body of
    number += 3                            loop
    # Increment
```

```
for number in range(5, 100, 3):
    print(number * 2)
```

Initialisation Loop condition Increment

← Body of loop