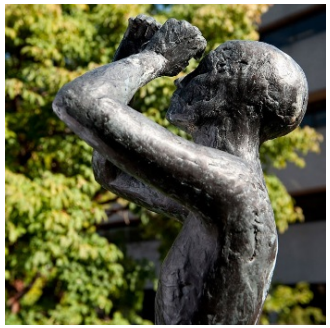


CS1117 – Introduction to Programming

Dr. Jason Quinlan,

School of Computer Science and Information Technology

A TRADITION OF INDEPENDENT THINKING

UCC

University College Cork, Ireland

Coláiste na hOllscoile Corcaigh

Announcements

Continuous Assessment 1

Wednesday – 23rd October 3-4pm in room 107

Multiple Choice Questions

We will cover some sample questions
over the next few lectures

Announcements

Continuous Assessment 2

Canvas access from 12th November 9am

Submission deadline 23rd November 1am

Covering Lectures from week 1 to week 9

Announcements

Lab 5 and Lab 6

This week I will release Lab 5 and Lab 6 on Tuesday 15th of October @ 9am

Lab 5 will have a submission deadline of

19th October @ 1am

Lab 6 will have a submission deadline of

26th October @ 1am

Announcements

CS1117 day off

I'm off campus next Monday, 21st October, so:

No morning class, no coding class, no office drop-in, no catch-up class and no evening class.

We will have labs on Tuesday/Wednesday and the Multiple Choice Quiz on Wednesday

Announcements

CS1117 day off

Monday, 28th October, is a bank holiday, and as such:

No morning class, no coding class, no office drop-in, no catch-up class and no evening class.

We will have labs on Tuesday/Wednesday and class on Wednesday as per normal

Announcements

Continuous Assessment 1

This Multiple Choice Quiz covers the first 5 weeks

This is a good chance for you to see if you understand what we have covered in the first 5 weeks

Announcements

Continuous Assessment 1

Available only on Canvas

So you will need a laptop, tablet, etc, to take the quiz.

If you do not have one of these, please let me know by email and I will arrange alternative access for the quiz.

Announcements

Continuous Assessment 1

Available only on Canvas

You will need access to Eduroam WiFi
so make sure you have signed up

IP filtering will be used for access to the quiz

Announcements

Continuous Assessment 1

Available only on Canvas

A code will be needed to access the quiz

This will be given out at the beginning of the class

Announcements

Continuous Assessment 1

Mobile phones will be turned off and placed on the desk in front of you.

You should not access online website for answers during the quiz

If you are seen surfing these sites, you will get a zero grade for this quiz.

Announcements

Continuous Assessment 1

This work must be your own,
so no asking your neighbour for answers

Do not take answers from others machines

There is no guarantee they are correct :)

Announcements

Sign-In

To practise new IP and access code filtering,
you will sign-in to a quiz today ☺

So, make sure you are on Eduroam

If you do not have access to Eduroam or can not sign-in,
let me know now or after class.

Announcements

Sign-In

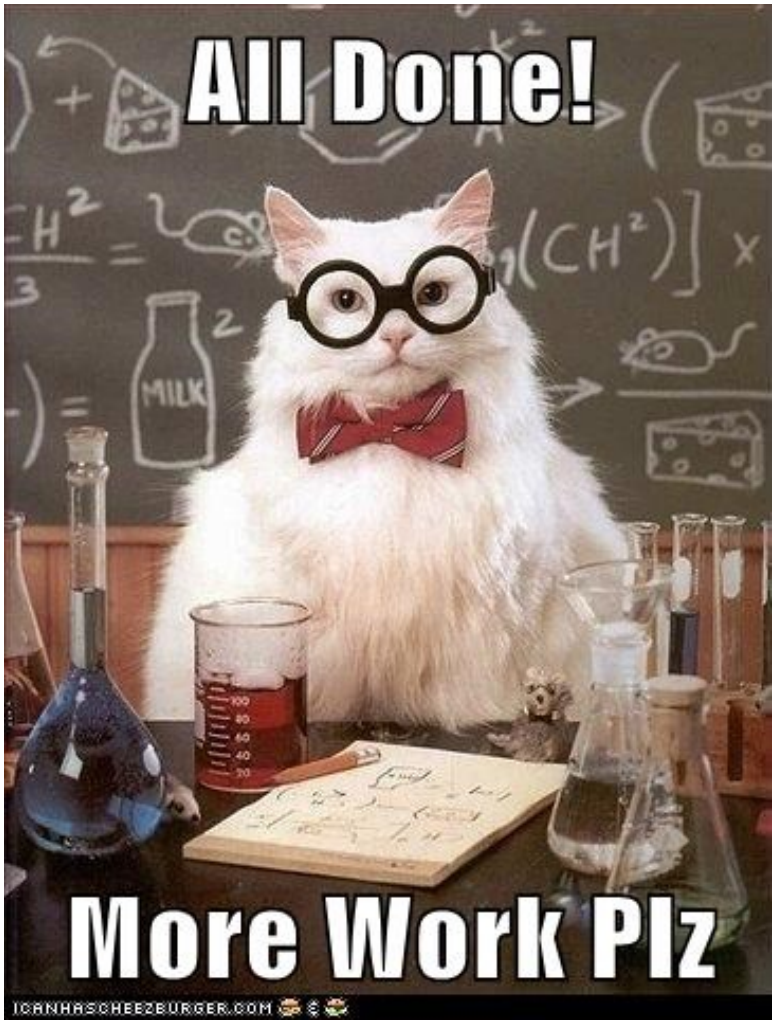
Let’s look at what sign-in looks now

Canvas / Student view

Canvas Student App

Let's Sign into this lecture now

Access Code:
12345



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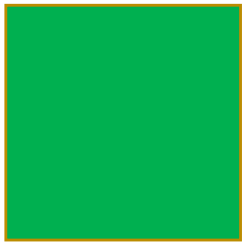
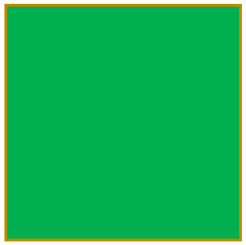
if from week 3



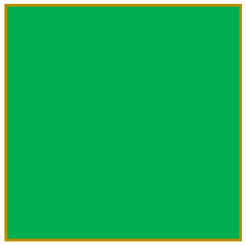
```
val = "e"
item_to_check = "Hello"
if val in item_to_check:
    print(val, "is a character in Hello")
else:
    print("looks like", val, "is not a character in Hello")
```

while from week 5



```
# WHILE EXAMPLES FROM WEEK 5
i = 0
while i < 10:
    print(i)
    i += 1
```

while from week 5

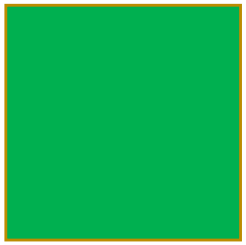


```
word = list(input("Please input a word/phrase >>> "))
word_size = len(word)
i = 0
while i < word_size:
    if i == word_size-1:
        print(word[i])

    elif word[i] != " ":
        print(word[i], end="_")

    i += 1
```

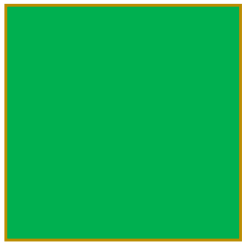
while from week 5



```
print("Printing odd numbers - v2")
limit = int(input("Provide a maximum number >>> "))

i = 1
while i < limit:
    if i % 2 == 0:
        i += 1
        continue
    print(i, end=" ")
    i += 1
else:
    print("\nPhew. The While has stopped")
```

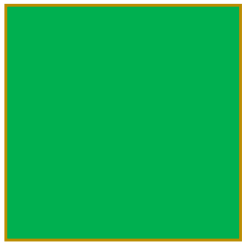
while from week 5



```
print("Printing even numbers up to maximum of value of 8 - v2")
limit = int(input("Provide a maximum number >>> "))

i = 1
max_value = 8
while i < limit:
    if i % 2 == 0:
        if i > max_value:
            print("\n")
            break
        print(i, end=" ")
    i += 1
else:
    print("\nPhew. The While has stopped")
```

while from week 5



```
def reverse(a_list):

    reversed_list = []
    i = 0
    while i < len(a_list):
        j = 0
        while j < len(a_list[i]):
            reversed_list = [a_list[i][j]] + reversed_list
            j += 1
        i += 1

    return reversed_list


my_list = [[1, 2, 3, 4], [5, 6, 7, 8, 9]]
print(reverse(my_list))
```

While recap

We have a mechanism for looping over repeating code

We use a While loop when we're not sure how many times to execute a piece of code i.e. **indefinite** loop

While the condition remains True,

execute the statement block

Remember we need some way to make the condition False

Otherwise it becomes an infinite loop…

LiveSlides web content

To view

Download the add-in.

liveslides.com/download

Start the presentation.

loops

We have a second mechanism for
looping over repeating code

We use a for loop when we know how many times to execute a piece of code i.e. **a count-controlled** loop

for a set number of loops remain True,
and execute the statement block

We do not need a counter to make the condition False

The chances of an infinite loop are reduced

for loops

for loops are normally used when we want to loop over a sequence of data, e.g.

Lists

Tuples

Strings

Dictionaries (to be covered soon)

for loops

As our if and while are both Booleans and we could replace if with while in some cases

Can we replace if and while with for?

Let's see:

for loops

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Let's see:

```
val = "e"
item_to_check = "Hello"
if val in item_to_check:
    print(val, "is a character in Hello")
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```
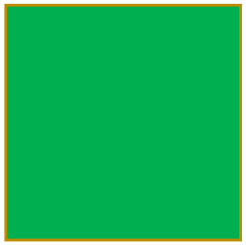

What is the output??

for loops



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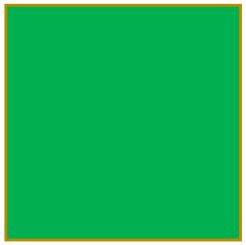
for loops



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for val in item_to_check:
    print(val, "is a character in Hello")
else:
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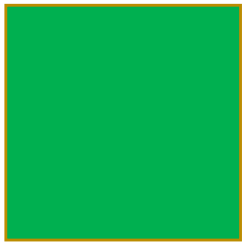
```

```
H is a character in Hello
e is a character in Hello
l is a character in Hello
l is a character in Hello
o is a character in Hello
```

for loops



for every value in item_to_check, print the value

```
val = "e"
item_to_check = "Hello"
for val in item_to_check:
    print(val, "is a character in Hello")
else:
    print("looks like", val, "is not a character in Hello")
```

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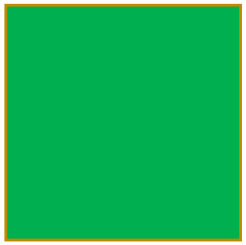
for loops



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```

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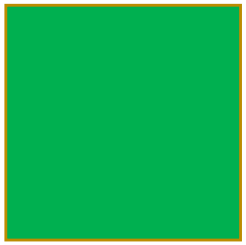
e is a character in Hello
l is a character in Hello
l is a character in Hello
o is a character in Hello
looks like o is not a character in Hello
```

Oops….

for loops



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```

```
H is a character in Hello
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l is a character in Hello
o is a character in Hello
looks like o is not a character in Hello
```
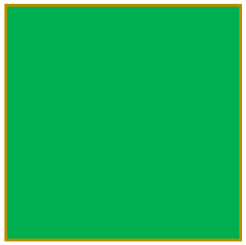

Remember in for/else and while/else:
else is a form of “do this when the loop ends”

for loops



Let's rewrite our for loop a little

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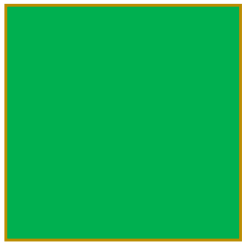
for loops



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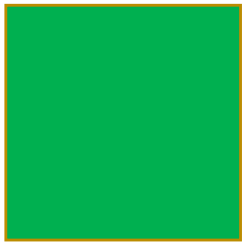
    print(val, "is a character in Hello")
else:
    print("looks like", val, "is not a character in Hello")
```

```
item_to_check = "hello"
for val in item_to_check:
    print(val, "is a value in", item_to_check)
else:
    print("looks like", val, "is the last value in", item_to_check)
```

for loops



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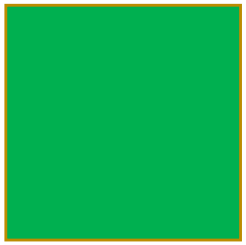
for loops



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for val in item_to_check:
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```

Output:

```
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e is a value in hello
l is a value in hello
l is a value in hello
o is a value in hello
looks like o is the last value in hello
```
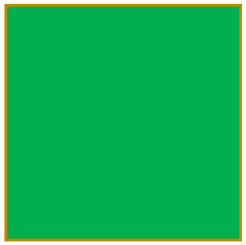
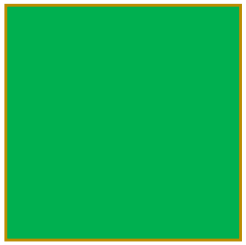

for loops



Will this work for other inputs?

```
item_to_check = [1, 2, 3, 4, 5]
for val in item_to_check:
    print(val, "is a value in", item_to_check)
else:
    print("looks like", val, "is the last value in", item_to_check)
```

for loops



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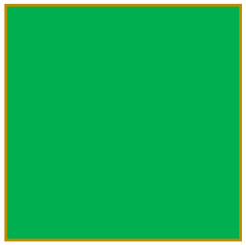
item_to_check = [1, 2, 3, 4, 5]
for val in item_to_check:
    print(val, "is a value in", item_to_check)
else:
    print("looks like", val, "is the last value in", item_to_check)
```

Output:

```
1 is a value in [1, 2, 3, 4, 5]
2 is a value in [1, 2, 3, 4, 5]
3 is a value in [1, 2, 3, 4, 5]
4 is a value in [1, 2, 3, 4, 5]
5 is a value in [1, 2, 3, 4, 5]
looks like 5 is the last value in [1, 2, 3, 4, 5]
```

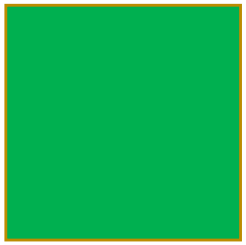
for loops



And what about reverse?

```
reverse = []
item_to_check = [1, 2, 3, 4, 5]
for val in item_to_check:
    print(val, "is a value in", item_to_check)
    reverse = [val] + reverse
else:
    print("looks like", val, "is not the last value in", reverse)
```

for loops



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    reverse = [val] + reverse
else:
    print("looks like", val, "is not the last value in", reverse)
```

Output:

```
1 is a value in [1, 2, 3, 4, 5]
2 is a value in [1, 2, 3, 4, 5]
3 is a value in [1, 2, 3, 4, 5]
4 is a value in [1, 2, 3, 4, 5]
5 is a value in [1, 2, 3, 4, 5]
looks like 5 is not the last value in [5, 4, 3, 2, 1]
```

for loops

As our if and while are both Booleans and we could replace if with while in some cases

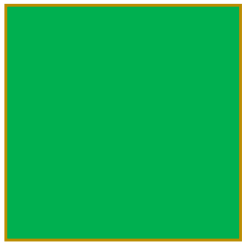
Can we replace if and while with for?

Let's see:

Okay, we can replace if with for

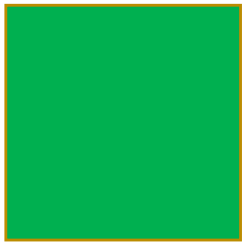
But what about while…

while from week 5



```
# WHILE EXAMPLES FROM WEEK 5
i = 0
while i < 10:
    print(i)
    i += 1
```

while from week 5



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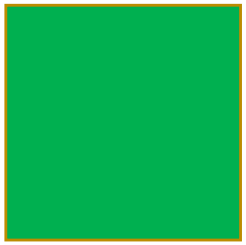

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No

Live Coding Time…

Let’s see why not…

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