Welcome to the CoGrammar

Control Structures

The session will start shortly...

Questions? Drop them in the chat. We'll have dedicated moderators answering questions.

Cyber Security Session Housekeeping

- The use of disrespectful language is prohibited in the questions, this is a supportive, learning environment for all - please engage accordingly. **(Fundamental British Values: Mutual Respect and Tolerance)**
- No question is daft or silly - **ask them!**
- There are **Q&A sessions** midway and at the end of the session, should you wish to ask any follow-up questions. Moderators are going to be answering questions as the session progresses as well.
- If you have any questions outside of this lecture, or that are not answered during this lecture, please do submit these for upcoming Academic Sessions. You can submit these questions here: **Questions**

Cyber Security Session Housekeeping cont.

- For all **non-academic questions**, please submit a query: **www.hyperiondev.com/support**
- We would love your **feedback** on lectures: **Feedback on Lectures**
- Find all the lecture **content** in you **Lecture Backpack** on GitHub.

Safeguarding & Welfare

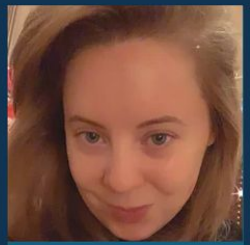
We are committed to all our students and staff feeling safe and happy; we want to make sure there is always someone you can turn to if you are worried about anything.

If you are feeling upset or unsafe, are worried about a friend, student or family member, or you feel like something isn't right, speak to our safeguarding team:

Ian Wyles
Designated Safeguarding Lead

Simone Botes

Rafiq Manan



Charlotte Witcher

Nurhaan Snyman

Ronald Munodawafa

Tevin Pitts

Scan to report a safeguarding concern

or email the Designated Safeguarding Lead:
Ian Wyles
safeguarding@hyperiondev.com

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Learning Objectives & Outcomes

- Define the boolean data type.
- Explain what the boolean data type is used for
- Use the boolean data type within Python code.
- Define what a conditional statement is.
- Explain what a conditional statement is used for.
- Implement conditional statements to run code based on a specific condition.

Control Structures

April 2024

Control Structures

Have you ever created a program where some of the code does not have to run every time?

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Did you try to solve this problem? If so, how did you do it?

Polls

Please have a look at the poll notification and select an option.

What is the boolean value of the expression 3 > 5?

A. True
B. False
C. None

Polls

Please have a look at the poll notification and select an option.

What is the output of the following code?

A. True
B. False
C. None

```
x = True
if x:
    print("True")
else:
    print("False")
```

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Boolean Data Type

- Represents True or False.
- Can be used to represent other binary system.
- Used in conditional statements.
- Represent the binary data in databases.
- Do you have an idea of where you would use the boolean data type?

Conditions

- Produce a True or False result from a comparison.
- Operators:
  - >
  - <
  - <=
  - >=
  - ==
  - !=

Greater and Less Than

- Determines if one value is larger or smaller than the other.
- Greater than (>)
  - 10 > 5 - True
  - 3 > 7 - False
  - 5 > 5 - False
- Less than (<)
  - 2 < 8 - True
  - 7 < 4 - False
  - 3 < 3 - False

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Equal and Not Equal

- Determines if two values are equal or not equal to each other.
- Equal (==)
  - 10 == 10 - True
  - “Hello” == “Hello” - True
  - 5 == 1 - False
  - 5 == “5” - False
- Not Equal (!=)
  - 3 != 6 - True
  - “Hello” != “Hi” - True
  - 5 != 5 - False
  - “Hello” != “Hello” - False

Equal or Greater and Equal or less

- Determines if a value is greater than, less than or equal to another value.
- Greater than or equal (>=)
  - 10 >= 5 - True
  - 3 >= 7 - False
  - 5 >= 5 - True
- Less than or equal (<=)
  - 2 <= 8 - True
  - 7 <= 4 - False
  - 3 <= 3 - True

AND

- We can use ‘and’ to add more conditions
- All conditions have to be True for overall condition to be True
  - 4 < 5 and 10 > 7 - True
  - ‘Dave’ == ‘Dave’ and 2 <= 5 - True
  - ‘Good’ == ‘bye’ and 1 > 2 - False
  - 10 < 20 and 5 == 4 - False

OR

- We can also use ‘or’ to add more conditions
- Only one conditions has to be True for overall condition to be True
  - 10 > 7 or 20 > 1 - True
  - 5 == 5 or ‘1’ == 1 - True
  - 20 < 10 or 5 == 4 - False

Conditions

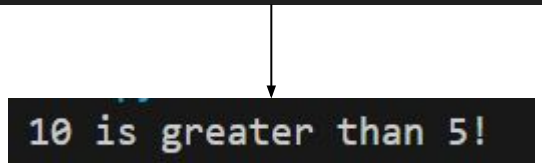
Give me the conditions for the following scenarios:

- How can I determine if an integer variable named “num” is smaller than 5?
- How can I determine if a string variable named “name” is equal to “John”?
- How can I determine if two variables named “num1” and “num2” are not equal to each other and “num1” is smaller than 5?

If-Statements

- Checks if a certain condition is True.
- If the conditional result is True the code inside the if-block will run.

```
if 10 > 5:
    print('10 is greater than 5!')
```

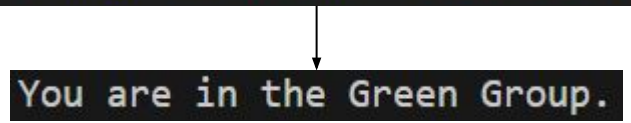


```
10 is greater than 5!
```

If-Elif-Statements

- Compare data to more than 1 value.
- Use ELIF to add another condition to an if-statement.
- If first condition is False the next condition is checked until one of the conditions is True or if there are no more conditions.

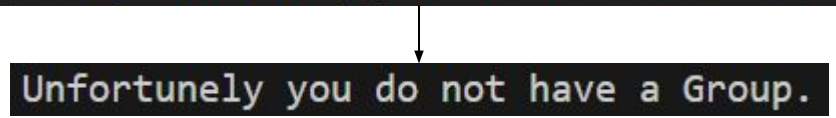
```
letter = "B"
if letter == "A":
    print("You are in the Blue Group.")
elif letter == "B":
    print(f"You are in the Green Group.")
```



If-Elif-Else-Statements

- Allows for a final clause in our if statement that will execute if no other conditions are True.

```
user_group = "C"
if user_group == "A":
    print("You are in the Blue Group.")
elif user_group == "B":
    print(f"You are in the Green Group.")
else:
    print("Unfortunely you do not have a Group.")
```



Summary

- Boolean values are used to represent True and False, or binary values.
- Conditions compare values and produce a result of True and False
- Conditions are used in If-statements to have code execute based on a specific condition.
- We have different types of operators to create a variety of different conditions.
- Elif can be used to add more than one condition to check in an if-statement.
- Else allows for a clause at the end of an if-statement to execute if none of the conditions are True.

Questions and Answers

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Thank you for attending

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