# Welcome to the

# CoGrammar

## Open Class: Data Types

### The session will start shortly...

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

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# 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.

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# 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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# Primitive Data Types

- **String:** A string is a sequence of characters enclosed in either single (') or double (") quotes
- **Integer:** An integer is a whole number without any fractions
- **Floating-Point (float/double):** A floating-point (or float) number is a number that has a decimal point.
- **Boolean:** A boolean is a data type that can hold one of two values: True or False

# Strings

- A string is a list of letters, numerals, symbols, and special characters that are put together.
- Strings must be written within quotation marks (" " ).
- Strings can comprise of surname, name, address of a person e.t.c...
- Multi-line strings (long strings) are written within triple single quotes (''' ''').

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# String Manipulation

- Common actions that can be performed on strings:
    - **Indexing:** Access individual characters in a string
    - **Slicing:** Extract a substring from a string
    - **Extended slicing:** Extract a substring with a specific step
    - **Using string methods:** Utilise built-in methods to manipulate and analyse strings.
    - **Concatenation:** Combining two or more strings using the + operator.

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# String Manipulation

```python
1    #String indexing
2    name = 'Walobwa'
3    print(name[0]) #-> Outputs: W
4
5    #String Slicing
6    name = 'Walobwa'
7    print(name[0:3]) #-> Outputs: Wal
8
9    #String Concatenation
10   first_name = 'Dan'
11   last_name = 'Walobwa'
12   full_name = first_name + ' ' + last_name
13   print(full_name) #-> Outputs: Dan Walobwa
14
15   #String Extended Slicing
16   name = 'Walobwa'
17   print(name[0:6:2]) #-> Outputs: Wl
18
19
```

index.py

Snipped

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# Numbers

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# Numbers

- **Types:**
    - **Integers:** Represents whole numbers, both positive and negative, without a fractional part.
    - **Floating-Point(float):** Represents numbers with decimal (floating-point) part.
    - **Complex Numbers:** Represents complex numbers, which have both a real part and an imaginary part.

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# Basic Arithmetic Operations

- Python provides the following basic arithmetic operations that can be performed on numbers.
    - \+ : Addition
    - \- : Subtraction
    - \* : Multiplication
    - / : Division (floating point)
    - // : Floor division (integer)
    - % : Modulus (remainnder)
    - ** : Exponentiation (power)

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# Basic Arithmetic Operations

```python
1    #Arithmetic Operations
2
3    #Addition
4    print(2+3)
5
6    #Subtraction
7    print(2-3)
8
9    #Multiplication
10   print(2*3)
11
12   #Division
13   print(2/3)
14
15   #Modulus
16   print(2%3)
17
18   #Exponentiation
19   print(2**3)
20
21   #Floor Division
22   print(2//3)
23
24
```

index.py

Snipped

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# Mathematical Functions

- Python's built-in math module provides various mathematical functions to perform more complex calculations.
- Common functions:
  - math.sqrt(x)
  - math.pow(x, y)
  - math.log(x, base)

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# Type checking and casting

- The type() method is a built-in python function that returns the data type of an object.
- You can convert between different numeric types using built-in functions: int(), float() and complex()
- You can convert other data types into a string using the str() function.

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# Questions and Answers

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# Thank you for attending

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*SKILLS BOOTCAMPS*

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