Welcome to the CoGrammar

Week 13 Tutorial

The session will start shortly...

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

Data Science 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**

Data Science Session Housekeeping cont.

- For all **non-academic questions**, please submit a query: **www.hyperiondev.com/support**
- Report a **safeguarding** incident: **www.hyperiondev.com/safeguardreporting**
- We would love your **feedback** on lectures: **Feedback on Lectures**

Skills Bootcamp
8-Week Progression Overview

Fulfil 4 Criteria to Graduation

✅ Criterion 1: Initial Requirements

Timeframe: First 2 Weeks
Guided Learning Hours (GLH): Minimum of 15 hours
Task Completion: First four tasks

Due Date: 24 March 2024

✅ Criterion 2: Mid-Course Progress

60 Guided Learning Hours

Data Science - **13 tasks**
Software Engineering - **13 tasks**
Web Development - **13 tasks**

Due Date: 28 April 2024

CoGrammar

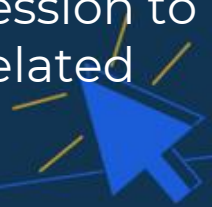
Skills Bootcamp Progression Overview

✅ Criterion 3: Course Progress

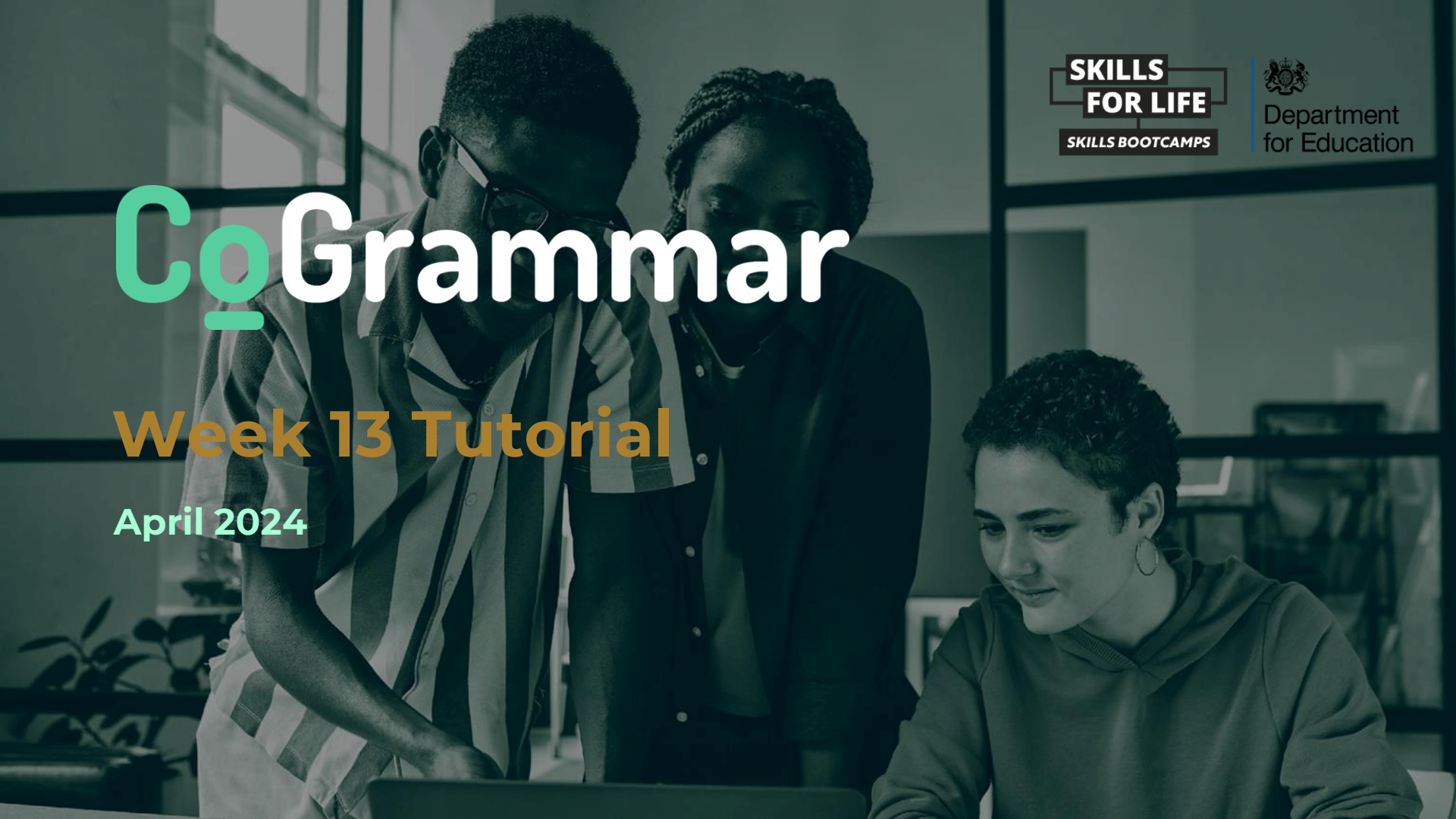
Completion: All mandatory tasks, including Build Your Brand and resubmissions by study period end
Interview Invitation: Within 4 weeks post-course
Guided Learning Hours: Minimum of 112 hours by support end date (10.5 hours average, each week)

✅ Criterion 4: Demonstrating Employability

Final Job or Apprenticeship Outcome: Document within 12 weeks post-graduation
Relevance: Progression to employment or related opportunity



CoGrammar



Week 13 Tutorial

April 2024

Learning objectives

- Recap concepts covered in Theory Summary I and II using polls
- Understand the difference between procedural programming and Object-Oriented Programming
- Walkthrough an example of OOP

Theory Summary I Recap

CoGrammar

Which library is primarily used for numerical computations in Python?

A. pandas
B. seaborn
C. numpy
D. matplotlib

Which library is primarily used for numerical computations in Python?

A. pandas

B. seaborn

C. numpy

D. matplotlib

Which plot is most suitable for visualising the distribution of a single numerical variable?

A. Scatter plot
B. Line plot
C. Histogram
D. Box plot

Which plot is most suitable for visualising the distribution of a single numerical variable?

A. Scatter plot

B. Line plot

C. Histogram

D. Box plot

Which of the following is a supervised learning algorithm?

A. K-means clustering
B. Decision tree
C. Principal component Analysis (PCA)
D. Apriori

Which of the following is a supervised learning algorithm?

A. K-means clustering

B. Decision tree

C. Principal component Analysis (PCA)

D. Apriori

Which machine learning algorithm is best suited for classification problems?

A. Linear regression
B. Logistic regression
C. K-means clustering
D. PCA

Which machine learning algorithm is best suited for classification problems?

A. Linear regression

B. Logistic regression

C. K-means clustering

D. PCA

CoGrammar

What does the color intensity in a correlation matrix heatmap represent?

A. The number of variables
B. The strength and direction of correlations
C. The size of the dataset
D. The number of missing values

What does the color intensity in a correlation matrix heatmap represent?

A. The number of variables

B. The strength and direction of correlations

C. The size of the dataset

D. The number of missing values

Which metric is commonly used to evaluate the performance of a classification model?

A. Mean Absolute Error
B. Mean Squared Error
C. Accuracy
D. R-squared

Which metric is commonly used to evaluate the performance of a classification model?

A. Mean Absolute Error

B. Mean Squared Error

C. Accuracy

D. R-squared

In the K-means clustering algorithm, what does the "K" represent?

A. The number of iterations
B. The number of clusters
C. The number of features
D. The number of data points

In the K-means clustering algorithm, what does the "K" represent?

A. The number of iterations

B. The number of clusters

C. The number of features

D. The number of data points

What is the purpose of using ensemble learning methods?

A. To increase the dataset size
B. To decrease computational complexity
C. To perform dimensionality reduction
D. To combine multiple models to improve performance

What is the purpose of using ensemble learning methods?

A. To increase the dataset size

B. To decrease computational complexity

C. To perform dimensionality reduction

D. To combine multiple models to improve performance

CoGrammar

In a random forest model, what is the purpose of bootstrapping?

A. To create different subsets of the data for each tree
B. To increase the depth of each tree
C. To reduce the number of features
D. To ensure each tree is identical

In a random forest model, what is the purpose of bootstrapping?

A. **To create different subsets of the data for each tree**
B. To increase the depth of each tree
C. To reduce the number of features
D. To ensure each tree is identical

What does the gradient descent algorithm aim to minimise?

A. The number of features
B. The cost function
C. The number of layers in a neural network
D. The size of the dataset

What does the gradient descent algorithm aim to minimise?

A. The number of features

B. The cost function

C. The number of layers in a neural network

D. The size of the dataset

Which of the following best describes backpropagation in neural networks?

A. An algorithm for updating weights to minimise loss
B. A technique for reducing the number of layers
C. A method for initialising weights
D. A way to increase the complexity of the network

Which of the following best describes backpropagation in neural networks?

A. **An algorithm for updating weights to minimise loss**
B. A technique for reducing the number of layers
C. A method for initialising weights
D. A way to increase the complexity of the network

Theory Summary II
Recap: OOP & NLP

CoGrammar

What is the main purpose of using classes in OOP?

A. To store data
B. To perform operations
C. To encapsulate data and functions that operate on the data
D. To organise code into modules

What is the main purpose of using classes in OOP?

A. To store data

B. To perform operations

C. To encapsulate data and functions that operate on the data

D. To organise code into modules

Which of the following is not a principle of OOP?

A. Encapsulation
B. Inheritance
C. Polymorphism
D. Compilation

Which of the following is not a principle of OOP?

A. Encapsulation

B. Inheritance

C. Polymorphism

D. Compilation

Which of the following statements about inheritance is true?

A. A derived class cannot override methods of a base class
B. Inheritance allows a class to use methods and properties of another class
C. A class can only inherit from one other class
D. Inheritance is not supported in Python

Which of the following statements about inheritance is true?

A. A derived class cannot override methods of a base class

B. Inheritance allows a class to use methods and properties of another class

C. A class can only inherit from one other class

D. Inheritance is not supported in Python

What is the purpose of stemming in NLP?

A. To convert words to their base form
B. To remove stop words
C. To tag parts of speech
D. To recognise named entities

What is the purpose of stemming in NLP?

A. **To convert words to their base form**
B. To remove stop words
C. To tag parts of speech
D. To recognise named entities

What are stop words in NLP?

A. Words that are used to indicate the end of a sentence
B. Words that are used to stop a process
C. Words that are frequently used in a language but carry little meaning
D. Words that have a high semantic value

What are stop words in NLP?

A. Words that are used to indicate the end of a sentence
B. Words that are used to stop a process
C. **Words that are frequently used in a language but carry little meaning**
D. Words that have a high semantic value

Questions and Answers

CoGrammar

Thank you for attending

SKILLS FOR LIFE
SKILLS BOOTCAMPS

Department for Education

CoGrammar