Welcome to this CoGrammar Tutorial: Task Walkthrough

The session will start shortly...

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

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Task Walkthrough: Object-Oriented Programming Classes

January 2025

Software Engineering 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**

Software Engineering 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**

- If you are hearing impaired, please kindly use your computer's function through Google chrome to enable captions.

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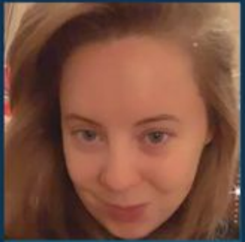
If you are feeling upset or unsafe, are worried about a friend, student or family member, or you feel like something isn't right, speak to our safeguarding team:

Ian Wyles
Designated Safeguarding Lead

Simone Botes

Rafiq Manan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Ian Wyles
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Learning Outcomes

- ❖ Understand and implement Object-Oriented Programming concepts.
- ❖ Utilise dictionaries for efficient data storage and retrieval.
- ❖ Implement functions, conditional statements and loops for user interaction with a user-driven library system.
- ❖ Transfer your learnings to complete the tasks by the end of the session.

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OOP

- A **class** is a blueprint for creating objects, defining attributes and methods that objects from this class can use.
- An **object** is an instance of a class that contains actual values for the attributes defined by the class.
- **Attributes** are variables that belong to an object defined in the class's constructor using the __init__ method.
- **Methods** are functions defined inside a class that operate on instances of that class.
- A **constructor** is a special method that is automatically called when an object is created.
- **Encapsulation** is the practice of bundling related attributes and methods into a structured unit which also involves restricting direct access to data.
- **Self-referencing**: self is a reference to the current instance of the class, allowing methods to access and modify the object's attributes and call other methods within the class.

Task Walkthrough: Auto-graded Task

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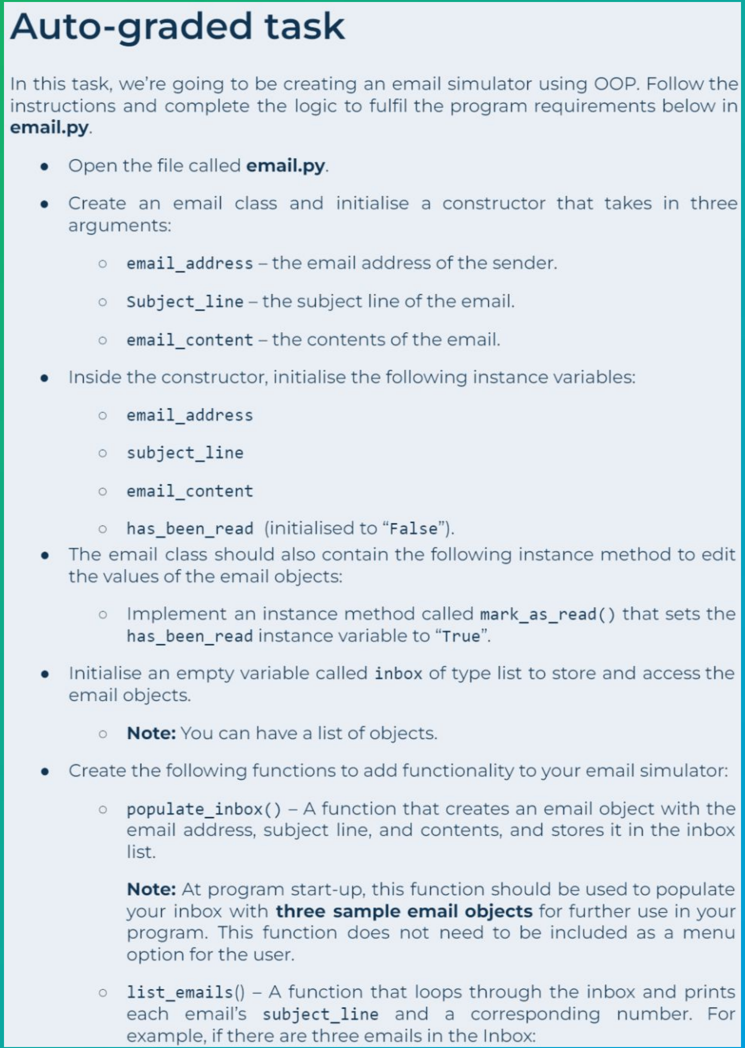
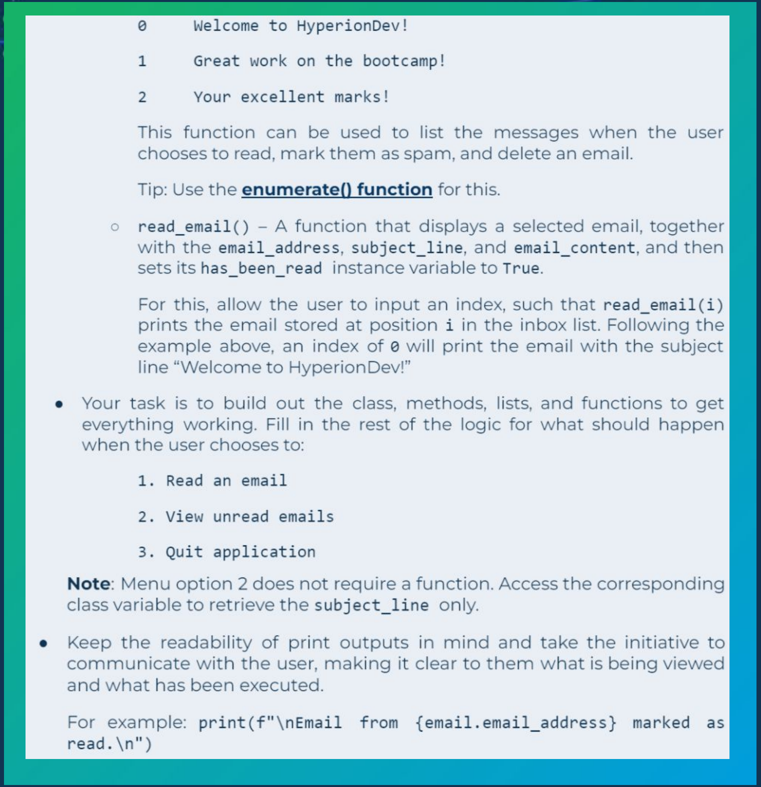


Auto-graded task

In this task, we're going to be creating an email simulator using OOP. Follow the instructions and complete the logic to fulfil the program requirements below in **email.py**.

- Open the file called **email.py**.
- Create an email class and initialise a constructor that takes in three arguments:
  - `email_address` – the email address of the sender.
  - `Subject_line` – the subject line of the email.
  - `email_content` – the contents of the email.
- Inside the constructor, initialise the following instance variables:
  - `email_address`
  - `subject_line`
  - `email_content`
  - `has_been_read` (initialised to "`False`").
- The email class should also contain the following instance method to edit the values of the email objects:
  - Implement an instance method called `mark_as_read()` that sets the `has_been_read` instance variable to "`True`".
- Initialise an empty variable called `inbox` of type list to store and access the email objects.
  - **Note:** You can have a list of objects.
- Create the following functions to add functionality to your email simulator:
  - `populate_inbox()` – A function that creates an email object with the email address, subject line, and contents, and stores it in the inbox list.

    Note: At program start-up, this function should be used to populate your inbox with **three sample email objects** for further use in your program. This function does not need to be included as a menu option for the user.
  - `list_emails()` – A function that loops through the inbox and prints each email's `subject_line` and a corresponding number. For example, if there are three emails in the Inbox:



```
0     Welcome to HyperionDev!

1     Great work on the bootcamp!

2     Your excellent marks!
```

This function can be used to list the messages when the user chooses to read, mark them as spam, and delete an email.

Tip: Use the **enumerate() function** for this.

- `read_email()` – A function that displays a selected email, together with the `email_address`, `subject_line`, and `email_content`, and then sets its `has_been_read` instance variable to `True`.

  For this, allow the user to input an index, such that `read_email(i)` prints the email stored at position `i` in the inbox list. Following the example above, an index of `0` will print the email with the subject line "Welcome to HyperionDev!"

- Your task is to build out the class, methods, lists, and functions to get everything working. Fill in the rest of the logic for what should happen when the user chooses to:

```
1. Read an email

2. View unread emails

3. Quit application
```

Note: Menu option 2 does not require a function. Access the corresponding class variable to retrieve the `subject_line` only.

- Keep the readability of print outputs in mind and take the initiative to communicate with the user, making it clear to them what is being viewed and what has been executed.

  For example: `print(f"\nEmail from {email.email_address} marked as read.\n")`

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Questions and Answers

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Thank you for attending

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