CAREERFOUNDRY

Python for Web Developers Learning Journal

Objective

We find that the students who do particularly well in our courses are those who practice metacognition. Metacognition is the art of thinking about thinking; developing a deeper understanding of your own thought processes. With the help of this Learning Journal, you'll broaden your metacognitive knowledge and skills by reflecting on what you learn in this course.

Thanks to this Learning Journal, when you finish the course you'll have a complete and detailed record of your learning journey and progress over time. We really recommend that you take the time to complete this Journal; students do better in CF courses and in the working world as a result!

Directions

First complete the pre-work section before you start your course. Then, once you've begun learning, take time after each Exercise to return to this Journal and respond to the prompts.

There will be 3 to 5 prompts per Exercise, and we recommend spending about 10 to 15 minutes in total answering them. Don't overthink it—just write whatever comes to mind!

Also make sure that, once you've started filling this document in, you upload it as a deliverable on the platform. This is so that your mentor can also see your Journal and how you're progressing over time. Don't worry though—what you write here won't affect how you're graded for the Exercise tasks. The learning journal is mostly for you and your self-evaluation!

Pre-Work: Before You Start the Course

Reflection questions (to complete before your first mentor call)

1. What experiences have you had with coding and/or programming so far? What other experiences (programming-related or not) have you had that may help you as you progress through this course?
2. What do you know about Python already? What do you want to know?
3. What challenges do you think may come up while you take this course? What will help you face them? Think of specific spaces, people, and times of day of week that might be favorable to your facing challenges and growing. Plan for how to solve challenges that arise.

Remember, you can always refer to Exercise 1.4 of the Orientation course if you're not sure whom to reach out to for help and support.

Exercise 1.1: Getting Started with Python

Learning Goals

- Summarize the uses and benefits of Python for web development
- Prepare your developer environment for programming with Python

Reflection Questions

1. In your own words, what is the difference between frontend and backend web development? If you were hired to work on backend programming for a web application, what kinds of operations would you be working on?

2. Imagine you're working as a full-stack developer in the near future. Your team is asking for your advice on whether to use JavaScript or Python for a project, and you think Python would be the better choice. How would you explain the similarities and differences between the two languages to your team? Drawing from what you learned in this Exercise, what reasons would you give to convince your team that Python is the better option?
   (Hint: refer to the Exercise section "The Benefits of Developing with Python")

3. Now that you've had an introduction to Python, write down 3 goals you have for yourself and your learning during this Achievement. You can reflect on the following questions if it helps you. What do you want to learn about Python? What do you want to get out of this Achievement? Where or what do you see yourself working on after you complete this Achievement?

Response

1. The frontend is responsible for the user interface, and everything related to the user interaction with the app or webpage. The backend, on the other hand, focuses on handling data transmission and interaction between the database, server, API, and the user.. Some operations could involve the creation and integration of database and managing API calls.

2. Still not sure.

3. Learn as much as possible about Python as it is a widely used programming language in different fields and so not exclusively in web development. Create a side-project using Python. Improve my backend skills

Exercise 1.2: Data Types in Python

Learning Goals

- Explain variables and data types in Python
- Summarize the use of objects in Python
- Create a data structure for your Recipe app

Reflection Questions

1. Imagine you're having a conversation with a future colleague about whether to use the iPython Shell instead of Python's default shell. What reasons would you give to explain the benefits of using the iPython Shell over the default one?

   1. iPython offers a more intuitive layout where lines of code are displayed in a more clear way, furthermore it is also possible to check all the command of certain method by clicking tab after the point.

2. Python has a host of different data types that allow you to store and organize information. List 4 examples of data types that Python recognizes, briefly define them, and indicate whether they are scalar or non-scalar.

Data type	Definition	Scalar or Non-Scalar?
Int	An integral number from 0 to infinity in both negative and positive	Scalar
Bool	Data type that stores two values: True or False	Scalar
Tuples	Data type that can contain different data type values	Non-Scalar
Dictionaries	Data type that stores keys with its value	Non-Scalar

3. A frequent question at job interviews for Python developers is: what is the difference between lists and tuples in Python? Write down how you would respond.

   3. A list is mutable so each element inside can be modified.

4. In the task for this Exercise, you decided what you thought was the most suitable data structure for storing all the information for a recipe. Now, imagine you're creating a language-learning app that helps users memorize vocabulary through flashcards. Users can input vocabulary words, definitions, and their category (noun, verb, etc.) into the flashcards. They can then quiz themselves by flipping through the flashcards. Think about the necessary data types and what would be the most suitable data structure for this language-learning app. Between tuples, lists, and dictionaries, which would you choose? Think about their respective advantages and limitations, and where flexibility might be useful if you were to continue developing the language-learning app beyond vocabulary memorization.

4. flaschcard_1 = {'word' : string, 'definition' : string, 'category' : string}. Each of this cards can be stored in a list

Exercise 1.3: Functions and Other Operations in Python

Learning Goals

- Implement conditional statements in Python to determine program flow
- Use loops to reduce time and effort in Python programming
- Write functions to organize Python code

Reflection Questions

1. In this Exercise, you learned how to use **if-elif-else** statements to run different tasks based on conditions that you define. Now practice that skill by writing a script for a simple travel app using an **if-elif-else** statement for the following situation:

   - The script should ask the user where they want to travel.
   - The user's input should be checked for 3 different travel destinations that you define.
   - If the user's input is one of those 3 destinations, the following statement should be printed: "Enjoy your stay in _____!"
   - If the user's input is something other than the defined destinations, the following statement should be printed: "Oops, that destination is not currently available."

Write your script here. *(Hint: remember what you learned about indents!)*

```python
dest_1 = "bari"
dest_2 = "paris"
dest_3 = "berlin"

destination = input(f"Enter your destination between {dest_1}, {dest_2}, {dest_3}: ")

if destination == dest_1 or destination == dest_2 or destination == dest_3:
    print(f"Enjoy your stay in {destination}!")
else:
    print("Oops, that destination is not currently available.")
```

2. Imagine you're at a job interview for a Python developer role. The interviewer says "Explain logical operators in Python". Draft how you would respond.

   2. Logical operators are used to combine conditional statements and are: and, or, not.

3. What are functions in Python? When and why are they useful?

   3. A function in python is a sequence of steps of code that perform an action every time that the function is called. They are useful if a certain action repeat itself.

4. In the section for Exercise 1 in this Learning Journal, you were asked in question 3 to set some goals for yourself while you complete this course. In preparation for your next mentor call, make some notes on how you've progressed towards your goals so far.

   4. I have been learning a bit more about Python

Exercise 1.4: File Handling in Python

Learning Goals

- Use files to store and retrieve data in Python

Reflection Questions

1. Why is file storage important when you're using Python? What would happen if you didn't store local files?

   Files storage is important because allows you to save file that would get lost after the termination of a specific program.

2. In this Exercise you learned about the pickling process with the **pickle.dump()** method. What are pickles? In which situations would you choose to use pickles and why?

   pickles are packaged stream of bytes and they are used to convert complex data when simple txt files is not enough.

3. In Python, what function do you use to find out which directory you're currently in? What if you wanted to change your current working directory?

   os.getcwd() is used to check on which directory you re working. If you want to change you can use os.chdir().

4. Imagine you're working on a Python script and are worried there may be an error in a block of code. How would you approach the situation to prevent the entire script from terminating due to an error?

   I will implement a try-excepts block.

5. You're now more than halfway through Achievement 1! Take a moment to reflect on your learning in the course so far. How is it going? What's something you're proud of so far? Is there something you're struggling with? What do you need more practice with? Feel free to use these notes to guide your next mentor call.

Exercise 1.5: Object-Oriented Programming in Python

Learning Goals

● Apply object-oriented programming concepts to your Recipe app

Reflection Questions

1. In your own words, what is object-oriented programming? What are the benefits of OOP?

   It is a way of programming where objects and their data are encapsulated in classes. Some benefits can be the reusability of a class methods with different objects and a more structured workflow

2. What are objects and classes in Python? Come up with a real-world example to illustrate how objects and classes work.

   We can take the example given in the exercise where class refers to Recipes and each recipe is an object. This object has different attributes and this attributes can be 'manage' with call methods.

3. In your own words, write brief explanations of the following OOP concepts; 100 to 200 words per method is fine.

Method	Description
Inheritance	It is when a sub class inherit the attribute of its parent
Polymorphism	If a method has the same name but it is used in different Classe, python will perform the operation based on the class the method refers.

Operator Overloading	Operators are not supported in customise classes and therefore you need to write your own methods which has the same function.

Exercise 1.6: Connecting to Databases in Python

Learning Goals

- Create a MySQL database for your Recipe app

Reflection Questions

1. What are databases and what are the advantages of using them?

   Databases are a collection of data, they are used to store electronically information and data in an organised way. Some advantages include data security, data sharing and access to organised informations.

2. List 3 data types that can be used in MySQL and describe them briefly:

Data type	Definition
String	Normal strings
Numeric	All standards numeric data types
Data and time	Represent temporal value of each data type.

3. In what situations would SQLite be a better choice than MySQL?

   In cases where a smaller database is needed (SQLite is less heavy than mySQL)

4. Think back to what you learned in the Immersion course. What do you think about the differences between JavaScript and Python as programming languages?

   Even though they can be used for similar projects, I think they perform best in different task. JavaScript would be more suitable for interactive web pages, and web development while Python more for the back end of web development, AI, and data science.

5. Now that you're nearly at the end of Achievement 1, consider what you know about Python so far. What would you say are the limitations of Python as a programming language?

It is slow in runtime as it is an interpreted languag. It shows errors only during runtime. For intensive task is not recommended it as it use a lot of memory.

Exercise 1.7: Finalizing Your Python Program

Learning Goals

- Interact with a database using an object-relational mapper
- Build your final command-line Recipe application

Reflection Questions

1. What is an Object Relational Mapper and what are the advantages of using one?

2. By this point, you've finished creating your Recipe app. How did it go? What's something in the app that you did well with? If you were to start over, what's something about your app that you would change or improve?

3. Imagine you're at a job interview. You're asked what experience you have creating an app using Python. Taking your work for this Achievement as an example, draft how you would respond to this question.

4. You've finished Achievement 1! Before moving on to Achievement 2, take a moment to reflect on your learning in the course so far:
   a. What went well during this Achievement?
   b. What's something you're proud of?
   c. What was the most challenging aspect of this Achievement?
   d. Did this Achievement meet your expectations? Did it give you the confidence to start working with your new Python skills?
   e. What's something you want to keep in mind to help you do your best in Achievement 2?

Well done—you've now completed the Learning Journal for Achievement 1. As you'll have seen, a little metacognition can go a long way!

Pre-Work: Before You Start Achievement 2

In the final part of the learning journal for Achievement 1, you were asked if there's anything—on reflection—that you'd keep in mind and do similarly or differently during Achievement 2. Think about these questions again:

- Was your study routine effective during Achievement 1? If not, what will you do differently during Achievement 2?
- Reflect on your learning and project work for Achievement 1. What were you most proud of? How will you repeat or build on this in Achievement 2?
- What difficulties did you encounter in the last Achievement? How did you deal with them? How could this experience prepare you for difficulties in Achievement 2?

Note down your answers and discuss them with your mentor in a call if you like.

Remember that can always refer to Exercise 1.4 of the Orientation course if you're not sure whom to reach out to for help and support.

Exercise 2.1: Getting Started with Django

Learning Goals

- Explain MVT architecture and compare it with MVC
- Summarize Django's benefits and drawbacks
- Install and get started with Django

Reflection Questions

1. Suppose you're a web developer in a company and need to decide if you'll use vanilla (plain) Python for a project, or a framework like Django instead. What are the advantages and drawbacks of each?

   Th advantage of Using Vanilla Python are a lightweight code, a more customisable design in terms of data structure and data flowing with a lot of flexibility. However for more complicated programs, this approach becomes very complicated and time consuming and doesn't give the opportunity to scale it. Using a framework makes thing easier, it is more secure and scalable but the developer is forced to use a certain structure in designing paths.

2. In your own words, what is the most significant advantage of Model View Template (MVT) architecture over Model View Controller (MVC) architecture?

   Less time spent in taking care of the control logic.

3. Now that you've had an introduction to the Django framework, write down three goals you have for yourself and your learning process during this Achievement. You can reflect on the following questions if it helps:
   - What do you want to learn about Django?
   - How it works and its main features

- What do you want to get out of this Achievement?
- Being able to work on projects with this technology
- Where or what do you see yourself working on after you complete this Achievement?
- Probably a side project for my portfolio

Exercise 2.2: Django Project Set Up

Learning Goals

- Describe the basic structure of a Django project
- Summarize the difference between projects and apps
- Create a Django project and run it locally
- Create a superuser for a Django web application

Reflection Questions

1. Suppose you're in an interview. The interviewer gives you their company's website as an example, asking you to convert the website and its different parts into Django terms. How would you proceed? For this question, you can think about your dream company and look at their website for reference.
   (*Hint: In the Exercise, you saw the example of the CareerFoundry website in the Project and Apps section.*)

   I would divide the website components in different Django apps and trying to understand possible connections between each other.

2. In your own words, describe the steps you would take to deploy a basic Django application locally on your system.

   I would first migrate the project using "manage.py migrate" and after I will run it on a. Local server with "manage.py runserver"

3. Do some research about the Django admin site and write down how you'd use it during your web application development.

   I would use it to test the logic of the app without a proper UI, manage users permission, manage content without direct access to database

Exercise 2.3: Django Models

Learning Goals

- Discuss Django models, the "M" part of Django's MVT architecture
- Create apps and models representing different parts of your web application
- Write and run automated tests

Reflection Questions

1. Do some research on Django models. In your own words, write down how Django models work and what their benefits are.

2. In your own words, explain why it is crucial to write test cases from the beginning of a project. You can take an example project to explain your answer.

Exercise 2.4: Django Views and Templates

Learning Goals

- Summarize the process of creating views, templates, and URLs
- Explain how the "V" and "T" parts of MVT architecture work
- Create a frontend page for your web application

Reflection Questions

1. Do some research on Django views. In your own words, use an example to explain how Django views work.

2. Imagine you're working on a Django web development project, and you anticipate that you'll have to reuse lots of code in various parts of the project. In this scenario, will you use Django function-based views or class-based views, and why?

3. Read Django's documentation on the Django template language and make some notes on its basics.

Exercise 2.5: Django MVT Revisited

Learning Goals

- Add images to the model and display them on the frontend of your application
- Create complex views with access to the model
- Display records with views and templates

Reflection Questions

1. In your own words, explain Django static files and how Django handles them.

2. Look up the following two Django packages on Django's official documentation and/or other trusted sources. Write a brief description of each.

Package	Description
ListView	
DetailView	

3. You're now more than halfway through Achievement 2! Take a moment to reflect on your learning in the course so far. How is it going? What's something you're proud of so far? Is there something you're struggling with? What do you need more practice with? You can use these notes to guide your next mentor call.

Exercise 2.6: User Authentication in Django

Learning Goals

- Create authentication for your web application
- Use GET and POST methods
- Password protect your web application's views

1. In your own words, write down the importance of incorporating authentication into an application. You can take an example application to explain your answer.

2. In your own words, explain the steps you should take to create a login for your Django web application.

3. Look up the following three Django functions on Django's official documentation and/or other trusted sources and write a brief description of each.

Function	Description
authenticate()	
redirect()	
include()	

Exercise 2.7: Data Analysis and Visualization in Django

Learning Goals

- Work on elements of two-way communication like creating forms and buttons
- Implement search and visualization (reports/charts) features
- Use QuerySet API, DataFrames (with pandas), and plotting libraries (with matplotlib)

Reflection Questions

1. Consider your favorite website/application (you can also take CareerFoundry). Think about the various data that your favorite website/application collects. Write down how analyzing the collected data could help the website/application.

2. Read the Django official documentation on QuerySet API. Note down the different ways in which you can evaluate a QuerySet.

3. In the Exercise, you converted your QuerySet to DataFrame. Now do some research on the advantages and disadvantages of QuerySet and DataFrame, and explain the ways in which DataFrame is better for data processing.

Exercise 2.8: Deploying a Django Project

Learning Goals

- Enhance user experience and look and feel of your web application using CSS and JS
- Deploy your Django web application on a web server
- Curate project deliverables for your portfolio

Reflection Questions

1. Explain how you can use CSS and JavaScript in your Django web application.

2. In your own words, explain the steps you'd need to take to deploy your Django web application.

3. (Optional) Connect with a few Django web developers through LinkedIn or any other network. Ask them for their tips on creating a portfolio to showcase Python programming and Django skills. Think about which tips could help you improve your portfolio.

4. You've now finished Achievement 2 and, with it, the whole course! Take a moment to reflect on your learning:
   a. What went well during this Achievement?
   b. What's something you're proud of?
   c. What was the most challenging aspect of this Achievement?
   d. Did this Achievement meet your expectations? Did it give you the confidence to start working with your new Django skills?

Well done—you've now completed the Learning Journal for the whole course.