PLTW COMPUTER SCIENCE

Activity 3.1.1

Python Programming on Cloud9

goals

- Get Started with Cloud9 collaborations
- Get started with Interactive Python
- Apply coding fundamentals in a text-based language
- Apply file naming conventions and version control
- Develop and test code incrementally
- Create a Cloud9 account and explore collaboration in the cloud

description of TASK

Create a professional online identity and explore cloud-based collaboration tools

Essential Questions

1. What are some advantages and challenges of cloud computing?
2. How is abstraction in the programming language I am using managing complexity in my program?
3. How am I applying independent, cooperative, and collaborative strategies to find my own answers?

essential Concepts

- File Management, Bash, and Cloud Collaboration

Resources

Cloud9 File Structure and Naming

Cloud 9 and Python

New Coding Language and Platform

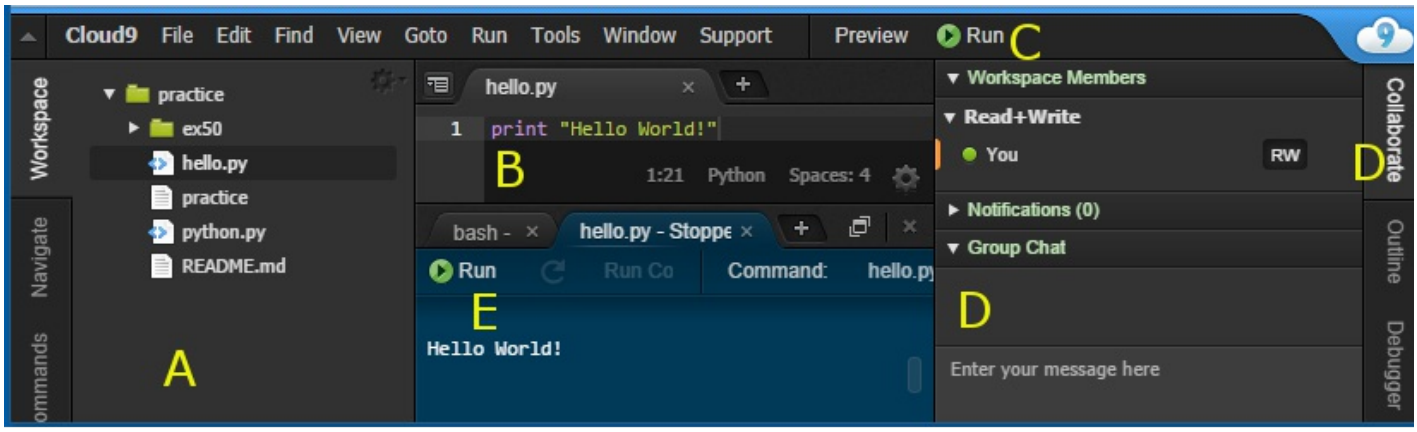
Using a link that your teacher sends to your Gmail account, you will create a Cloud9 account. With a Cloud9 account, you will be able to collaborate freely with your peers to learn and practice programming in the *Python*® programming language. Cloud9 workspaces are hosted in the **cloud**. This means that, although you can see your work on your computer, all of it is remotely stored and run on servers that could be states or even countries away. If anything were to happen to your computer, you could still access your work from any desktop, laptop, or tablet. You will spend the next couple of days learning how to work with Cloud9.

At the end of this unit, you will use the collaboration tools built into Cloud9 to create a website as a team. The goal of this development is to present your functionality to a local business or organization as a solution to fulfill a need that they have.

Creating a Cloud9 Account

1. Click the link sent by your instructor.
2. Select **Create new account**. After each of the following steps, click the **Next** button. You may have to scroll to find it.
    - Enter your name or a professional alias, which will be visible in your public Cloud9 user profile.
    - Enter a username; choose something “timeless and classy”.
    - Under “What kind of developer are you?”, select **Student**; under “How will you use Cloud9?”, select **Coursework**.
    - Confirm your details. This is your last chance to edit.
    - Complete the test to verify that you are not a robot and click **Create account**.
3. Now that you have created an account, click **Join team** to be added to the team to which your teacher has invited you.
4. When you receive an email from support@c9.io, use the link provided to reset your password.

Demonstration of Cloud9



5. View an instructor-led demonstration of Cloud9. For now, just pay attention to the demonstration and don't bother taking notes; you'll have a chance to practice this more in a moment.

   In this demonstration, you will see:

   - How to create a Public Python*workspace*.
   - The version control system built into Cloud9.
   - How to create a *Python* file.
   - Simultaneous editing features of Cloud9.
   - How to run your *Python* code.
   - How to invite another user to collaborate.
   - How to use the chat feature of Cloud9.
   - Where the running code is shown.
   - Where you can try out your own code.

6. Review the helpful reminders about Cloud9 file structure and naming.

   Cloud9 File Structure and Naming

Collaboration in Cloud9

It's your turn to collaborate in Cloud9. Your teacher will identify three people for you to collaborate with around a very simple program in which you can focus on file creation, collaboration, and version control.

PLTW DEVELOPER'S JOURNAL Record the names of the three people your instructor directs you to partner with.

7. Pair with your first partner as directed by your instructor.

8. As you perform the following tasks, use the set of documents found at

https://docs.c9.io/docs/ as a resource:

Note: The “Create A Workspace” and “Run an Application” pages and videos may be particularly useful.

- Create a public *Python* workspace.
- Share your workspace with your partner.
- Type in the group chat window to your partner.
- Create a *Python* file named “hello.py”.
- Type “print "Hello World!"” into your partner’s *hello.py* file.
- Run your *hello.py* file.

  Important: If you do not see the option to run your program it may not be saved as a .py file. If the file is missing the .py a t the end, you can add it in the directory structure or save as and add the .py.

- Use the revision history tool to revert your *hello.py* file back to the state it was in before your partner typed in it.

9. Pair with your second partner as directed by your instructor.
10. As you perform the following tasks, refer to the documents found at https://docs.c9.io/docs/ as a resource:

    - Create a public *Python* workspace.
    - Share your workspace with your partner.
    - Type in the group chat window to your partner.
    - Create a *Python* file named “hello.py”.
    - Add a print statement with a new string of your choosing into your partner’s *hello.py* file.
    - Run your *hello.py* file.
    - Let your partner change the message to one of their own choosing.
    - Let them run the *hello.py* file.
    - Use the revision history tool to revert your *hello.py* file to the state it was in before your partner typed in it.

11. Pair with your third partner as directed by your instructor.
12. Complete the same tasks as you did with your second partner.

Python Programming Language

Over the next few activities, you will explore many of the same coding fundamentals you learned earlier in the course. This time, however, you will use *Python* as your primary programming language.

A powerful resource as you learn more about the *Python* programming language is the Runestone Interactive Textbook, How to Think Like a Computer Scientist.

13. Take a moment to visit Chapter 1.3 The Python Programming Language in the textbook.

The chapter introduces:

- High-level and low-level programming languages
- Interpreters and compilers
- Shell mode and program mode

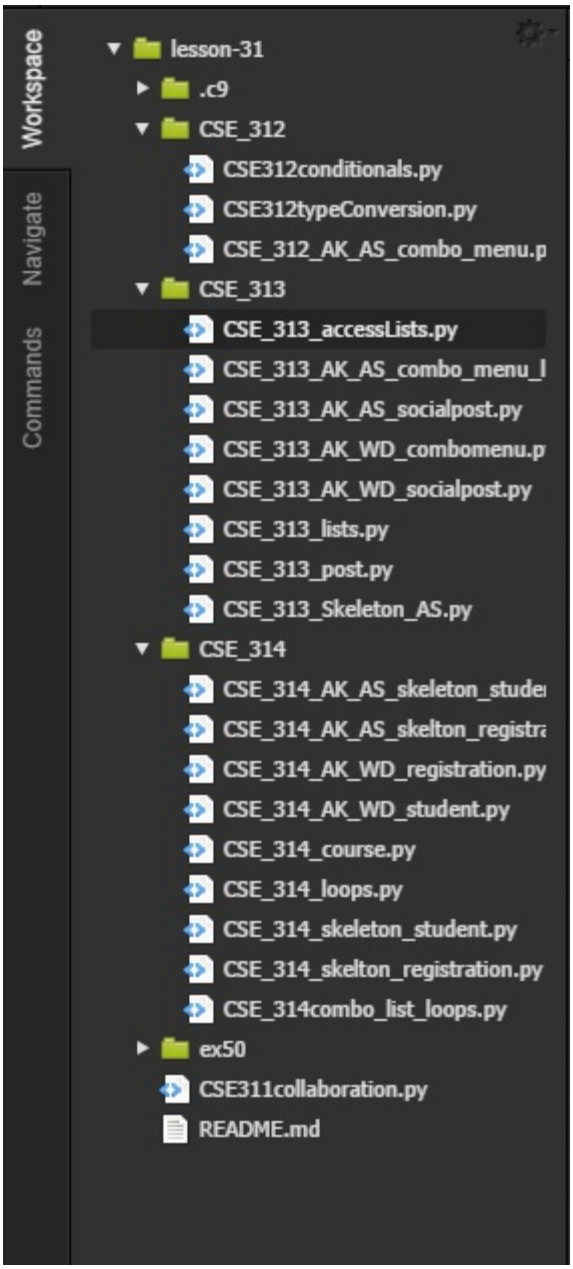
14. To check your understanding, answer the three interactive questions at the end of Chapter 1.3.

Conclusion

1. What is cloud computing?
2. What is an IDE?
3. Why is the “Hello World” program so popular for trying code in a new language or on a new IDE?
4. How did you interpret and respond to the **essential questions**? Capture your thoughts for future conversations.

Cloud9 File Structure and Naming

- In *Python* languages, the standard file naming convention is *underscore_case*, because every character and space matter.
- In Cloud9, a file must show a .py extension in the workspace, otherwise it is not a *Python* file and will not respond in the way shown in the examples.
- Because the number of files may be significant for any individual activity, the use of folders helps to differentiate those activities.
- You are collaborating, and it is important to identify your own files versus someone else's. As seen in the image to the right, there are files with an AS and a WD author. You can work with a partner or a team to develop naming conventions for projects or problems, and compare afterwards to see the differences and similarities in the layout.



- It is important to identify the files that you have been working on versus the original source files provided by the teacher. For example, the "AK" in a file name, as in the image above, was used by the course developers to differentiate a working solution file from files that were not working.

- You will have code that you copy and paste from activities to see how those parts work. You may create many small files that show the introduction of specific *Python* programming code, or one file per activity with all the code together. Having descriptive names helps a person go back and locate those specific skills when they were first introduced.

- Having a naming scheme and folders that identify the course and the APB helps when you are downloading and compiling multiple files to share with your teacher or team.

- If you continue in the PLTW Computer Science Pathway and continue to use the same Cloud9 account, you will appreciate being able to review code from previous courses while making sure to focus and develop in the current course.