# Python Fundamentals:

This week, you will work in groups. Please reach out to your instructor to identify which group you are assigned to.

As a group, you work on two separate projects. You will need to provide information pertaining to your group’s SDLC and also work together to develop a program that will interface with a cloud-based Cisco router.

*I am expecting two files for this hands-on activity. A word document outlining your group’s SDLC criteria and a .py file of your program. Everyone in your group needs to make sure that the program is running as expected and that the SLDC document meets the listed objectives. Everyone within the group will receive the same grade. Only one person from the group will need to upload the two files.*

**Software Development Life Cycle for Cisco cloud-based Router Program:**

As a class, we discussed the software development life cycle. We also discussed the differences between using the waterfall and Agile methods of systems development. As a group, I would like you to identify which method (Waterfall or Agile) would best suit the development of this project. Provide at least three reasons why you made your choice. And remember, this is a college class. Please provide more than just one sentence per reason. Discuss this as a group and provide a well thought-out response.

**Programming Project:**

As a group, your goal is to develop a GUI interface using Python and the Tkinter module. You will apply the fundamental concepts that you’ve learned within the Python architecture, to create a program which will send commands to a cloud-based Cisco router and display it on the screen.

Here are more details pertaining to this project:

1. Create a GUI-based program that will take input from the user and authenticate to the cloud-based Cisco router using Python Tkinter.
2. The user will also be required to input a send command that will send simple outputs such as:
   1. List running Cisco configurations
   2. Show the iOS version
   3. Identify the local IP information on the router
3. Cisco cloud-based router information:
   1. If you don’t already have one, you may need to register your SMC account with Cisco.
   2. The link to the Cisco router DevNet Sandbox lab is located within the link below. Make sure to reference the login credentials that’s provided within, to use in your program:
      1. <https://devnetsandbox.cisco.com/RM/Diagram/Index/27d9747a-db48-4565-8d44-df318fce37ad?diagramType=Topology>
4. I’ve pasted a sample code to help get you started. This does not have the GUI functionality, it will be up to your group to use the Tkinter platform to help develop that feature.
5. You’ll need to import the Netmiko library module to help create the connection handler object for this activity. If you copy and paste into your code editor, you may want to debug the code prior to running it.

Starter Code Expected Sample GUI Output

|  |  |
| --- | --- |
| from netmiko import ConnectHandler  csr = { 'device\_type': 'cisco\_ios',  'ip': 'sandbox-iosxe-recomm-1.cisco.com',  'username': 'developer',  'password': 'lastorangerestoreball8876', }  net\_connect = ConnectHandler(\*\*csr)  net\_connect.enable  cmd\_list = [ 'show ip int brief', 'show arp']  for cmd in cmd\_list:  output = net\_connect.send\_command(cmd)  print(output)  net\_connect.exit\_enable\_mode  net\_connect.disconnect |  |