**GIS 2335 Lesson Notes - February 4, 2025**

**Chapter 2: Working with Python Editors & Geoprocessing Tools**

**Key Concepts:**

**Python Editors in GIS:**

* **Python Window in ArcGIS Pro:**
  + Fully integrated with ArcGIS Pro.
  + Ideal for running short Python scripts.
  + Allows saving code to script files and loading existing scripts.
  + **Navigation Tip:** Use the **up/down arrow keys** to cycle through previous commands for easy editing and rerunning.
* **Integrated Development Environments (IDEs):**
  + **IDLE:** Default Python editor, installed with Python.
  + **PyCharm:** Preferred for managing complex projects; pre-installed on virtual machines.
  + **Visual Studio:** Supports multiple languages (Python, C#, etc.); steeper learning curve but acceptable if preferred.
  + **Jupyter Notebooks / ArcGIS Notebooks:** Integrated into ArcGIS Pro; great for interactive data analysis.

**Advantages of Using IDEs:**

* Enhanced error detection and debugging.
* Auto-completion features for parentheses, brackets, and quotes.
* Syntax highlighting:
  + **Purple:** Functions
  + **Green:** Strings
  + **Blue:** Output

**Geoprocessing with Python:**

* **Calling Built-in Tools:** Use Python to automate tools like Get Count to determine row counts in feature classes or tables.
* **Custom Scripts:** Write Python code to enhance geoprocessing workflows or automate repetitive tasks.

**Troubleshooting Code Errors:**

* **Common Mistakes:** Typos, incorrect variable names, missing quotes.
* **Quick Fixes:**
  + Use the **up arrow** to recall and correct previous commands.
  + Leverage auto-completion prompts to reduce typing errors.
* **Instructor’s Advice:**
  + Don’t spend excessive time debugging; seek help when needed.
  + Even small typos can be hard to spot after prolonged debugging.

**Assignment Instructions (Due February 11, 2025):**

**Task:**

* Write and run the following Python code in **three different environments**:

print("Hello World")

**Environments to Use:**

1. **IDLE** (already installed with ArcGIS Pro)
2. **PyCharm** (pre-installed on the virtual machine)
3. **ArcGIS Pro Python Window**

**Submission Guidelines:**

1. **Take Screenshots** of the output from each environment.
2. **Paste Screenshots** into a **Word Document or Google Doc**:
   * Label each screenshot (e.g., **PyCharm**, **IDLE**, **Python Window**).
3. **Upload the Document** to eCampus.

**Optional Work:**

* Complete the **PB&J Sandwich Exercise** (Chapter 1) if not yet submitted.
* Use class time to:
  + Finalize the Chapter 2 assignment.
  + Review PyCharm setup steps if applicable.

**Important Reminders:**

* **Future Assignments:**
  + Will require submission of full Python scripts.
  + Screenshots may still be helpful for error troubleshooting.
* **Seek Help When Needed:**
  + Don’t hesitate to reach out if stuck on coding problems.
  + Balance effort between self-troubleshooting and asking for assistance to avoid unnecessary frustration.

**End of Lesson Notes**