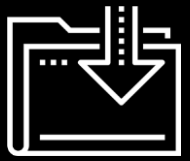
UNIX/LINUX Environment

Contrary to popular belief, UNIX is user friendly. It just happens to be very selective about who it decides to make friends with.

-unknown

Cybersecurity

Terminal 101 Day 1

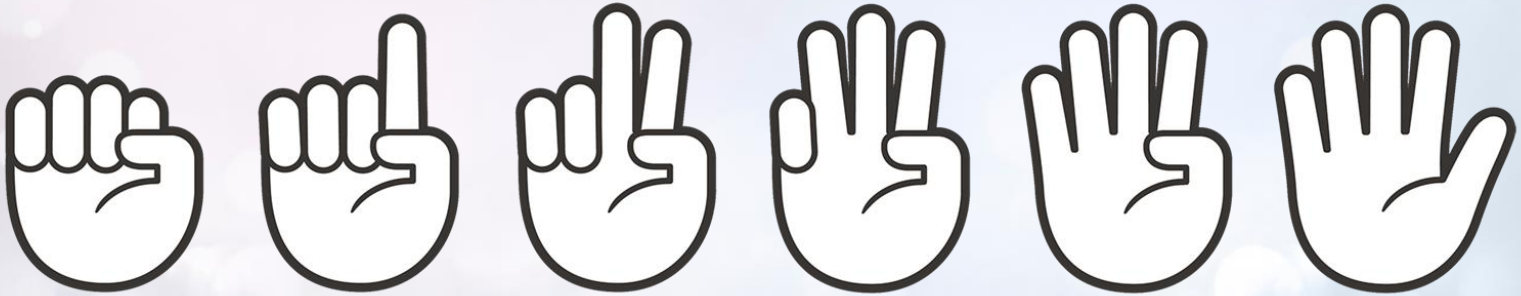


Class Objectives

By the end of class today, students will be able to:

- [ ] Explain why the command line is important for IT and security professionals
- [ ] Use commands like `ls`, `cd`, `mkdir`, `touch`, `cp`, `mv`, and `cat` for file navigation manipulation.
- [ ] Navigate deeply nested folder structures using relative file paths.
- [ ] Use commands like head, tail and less to preview files in the command line.
- [ ] Combine the above commands to accomplish relevant IT tasks

Why the Command Line?

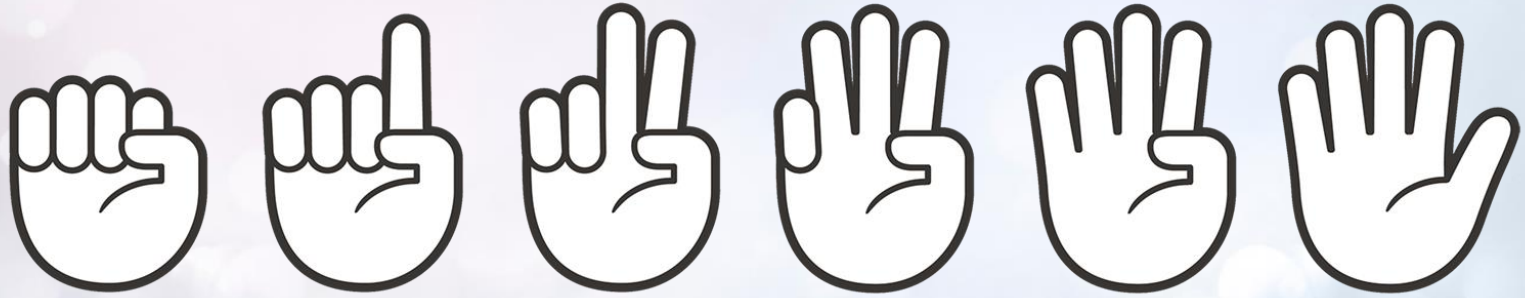


FIST TO FIVE:

Raise a Fist: If you've never worked with the command line and barely know what it is.

Raise a Five: IF you work with the command line on a daily basis.

Raise One, Two, Three or Four: if you fall somewhere in between.



FIST TO FIVE:

For those of you who have used the command line, where have you used it and what for?

The command line is a critical core competency for the job.

Why Learn the Command Line?

As security professionals, the command line is:

The *only* way to achieve a desired outcome.
In many cases, you will find yourself working with a system or set of tools with no GUI interface to use at all. This is typical of many servers. The command line will be your only mode for configuration.

The *fastest* way to achieve a desired outcome.
With powerful tools and an ability to execute repeatable scripts, the command line can speed up processes that require significant manual effort.

The *most flexible* way to achieve a desired outcome.
While working with a GUI may be the most familiar, working directly with the command line provides greater control than the standard GUI. You will be able to output logs directly where you like, combine files in unique ways, and string together commands more liberally.

Words to the Wise

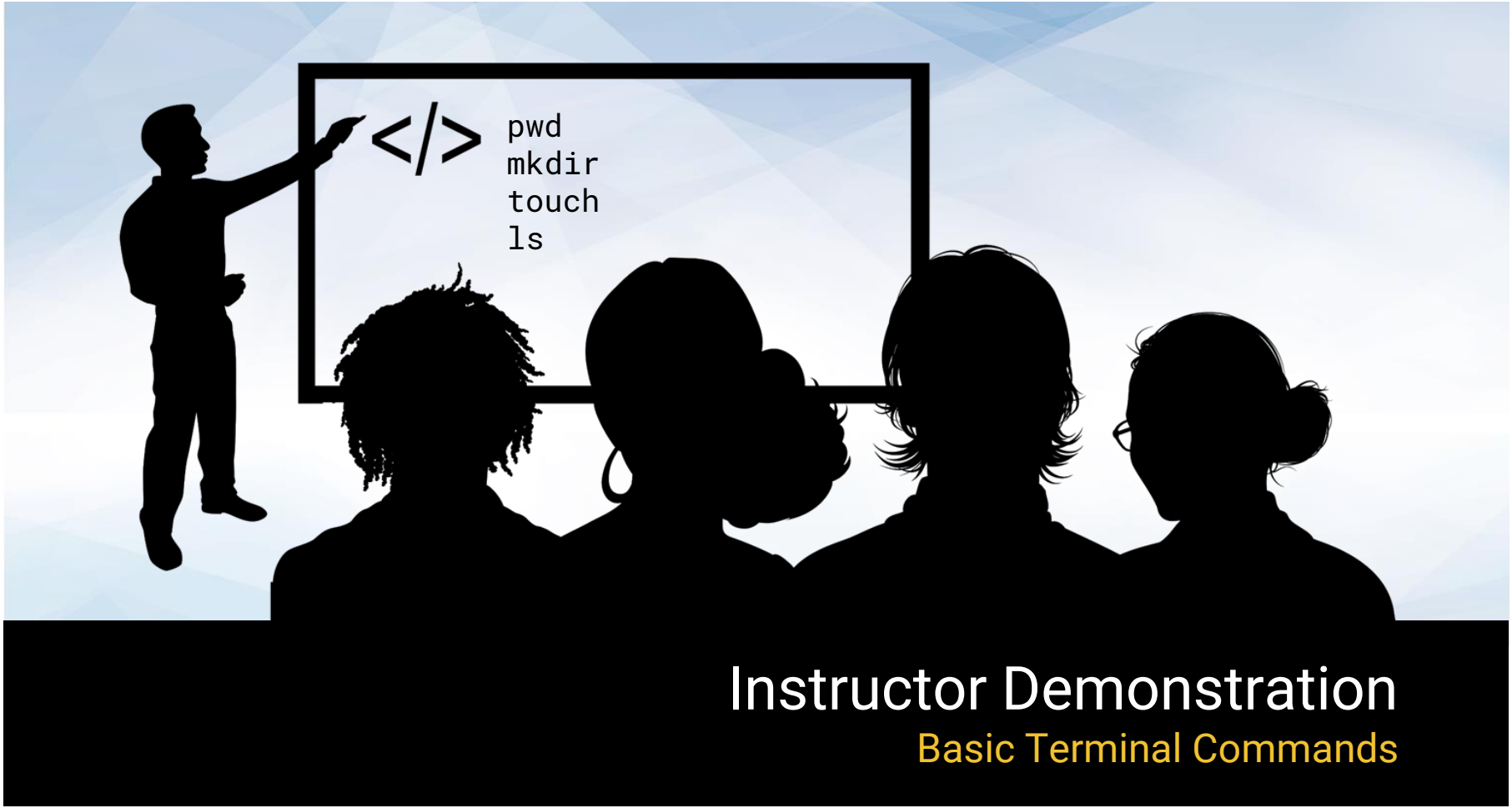
A few tips to follow:

The best way to learn the command line is to use it.

This week will be heavily oriented around hands-on activities.

Take notes during each demo and try your best on activities.

Remember: Practice makes perfect!



Instructor Demonstration

Basic Terminal Commands

Activity: MyHacks Folder

In this activity, you will navigate through directories and create new folders/files using the command line.

Instructions sent via Slack

Suggested Time:
7 Minutes

Your Turn: MyHacks Folder

Instructions:

Using only the command line, complete the following:

1. Create a folder on your desktop called `MyHacks`.
2. Navigate into the `MyHacks` folder.
3. From within the `MyHacks` folder, print the working directory.
4. Create three files inside the `MyHacks` folder: `DoS.txt`, `Phishing.txt`, and `Keylogger.txt`.
5. Display all of the files created.
6. Open the folder in your file explorer.
7. Clear the terminal history.

10 Minutes

Time’s Up! Let’s Review.

MyHacks Folder

Relative and Absolute Paths

Relative vs. Absolute Paths

There are two different methods of navigating through folders and files on the command line

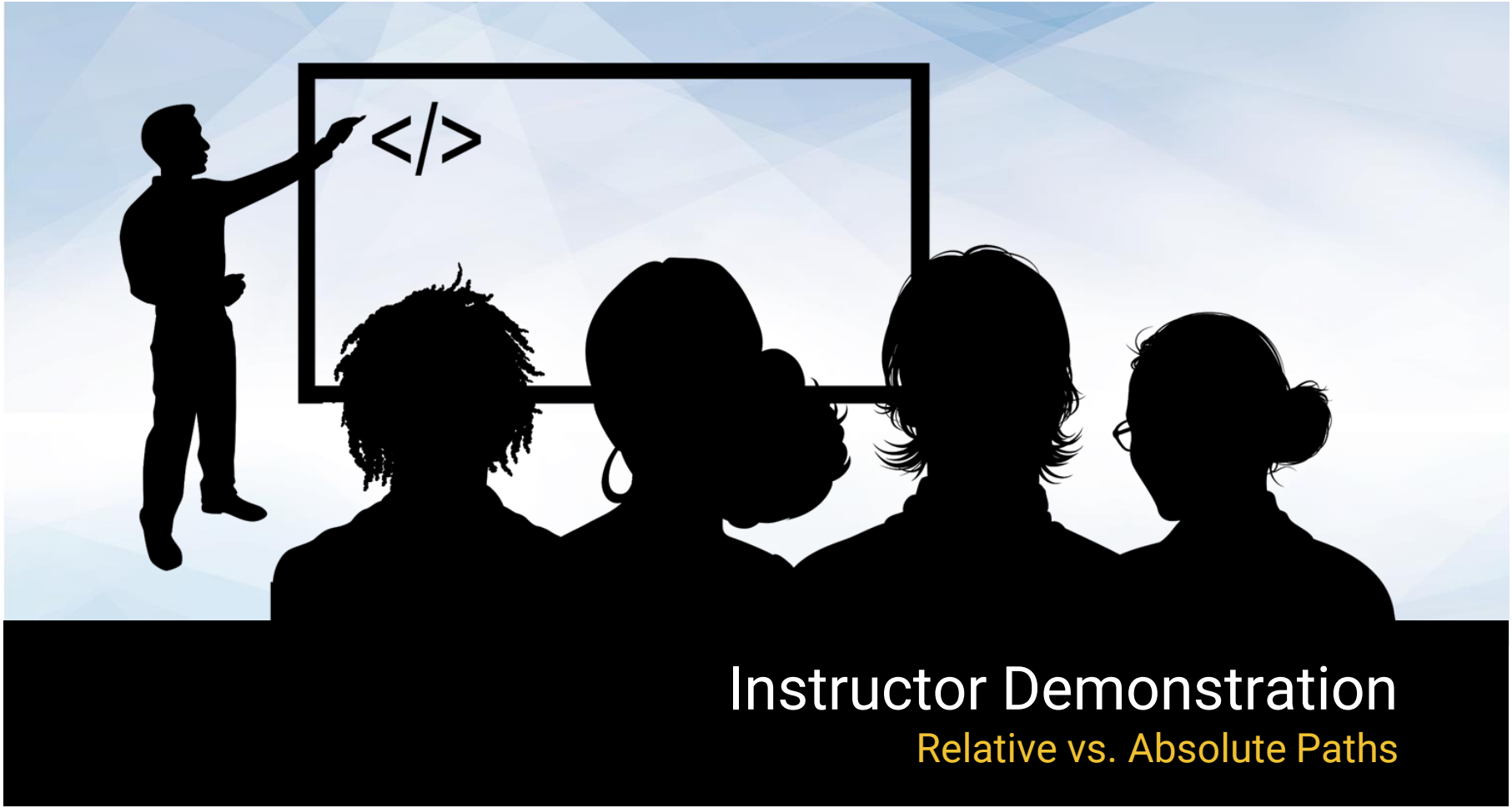
An absolute path points to the same location in the file system regardless of current working directory.

The path must include the root directory.

`Example: C:\home\sally\statusReport`

A relative path starts from the current working directory. It can only be used when inside the C:\home directory.

Example: `\sally\statusReport`



Instructor Demonstration

Relative vs. Absolute Paths

Activity: Terminal Decor

In this activity, you will use a file tree to create a folder structure that mimic a home and its rooms.

Instructions sent via Slack

Suggested Time:
15 Minutes

Your Turn: Terminal Decor

Instructions:

Using *only* the terminal, complete the following tasks:

1. Create a folder on the desktop called My_House.
2. Inside the My_House folder, create three subfolders: Bedroom, Living_Room, and Kitchen.
3. Navigate into the Living_Room folder and create two files called tv.txt and sofa.txt.
4. Navigate into the Kitchen folder and create two files called oven.txt and sink.txt.
5. Navigate into the Bedroom folder and create a file called bed.txt and a folder called Bathroom.
6. Copy the sink.txt file from the Kitchen folder into the Bathroom folder.
7. Move the tv.txt file from the Living_Room folder and into the Bedroom folder.

15 Minutes

Time’s Up! Let’s Review.

Terminal Decor

Activity: Terminal Maze

In this activity, you will use the terminal to navigate through a few tricky folder structures.

Instructions sent via Slack

Suggested Time:
15 Minutes

Your Turn: Terminal Maze

Instructions:

You were just provided three folder mazes. Each folder maze is composed of a set of deeply nested subfolders. At the base of each folder is a file called start.txt.

1. Copy the `start.txt` file into the End folder that is buried somewhere in the maze of folders. You may use only one copy command as part of each solution.

Hints:

Your final solutions should each take the form of:

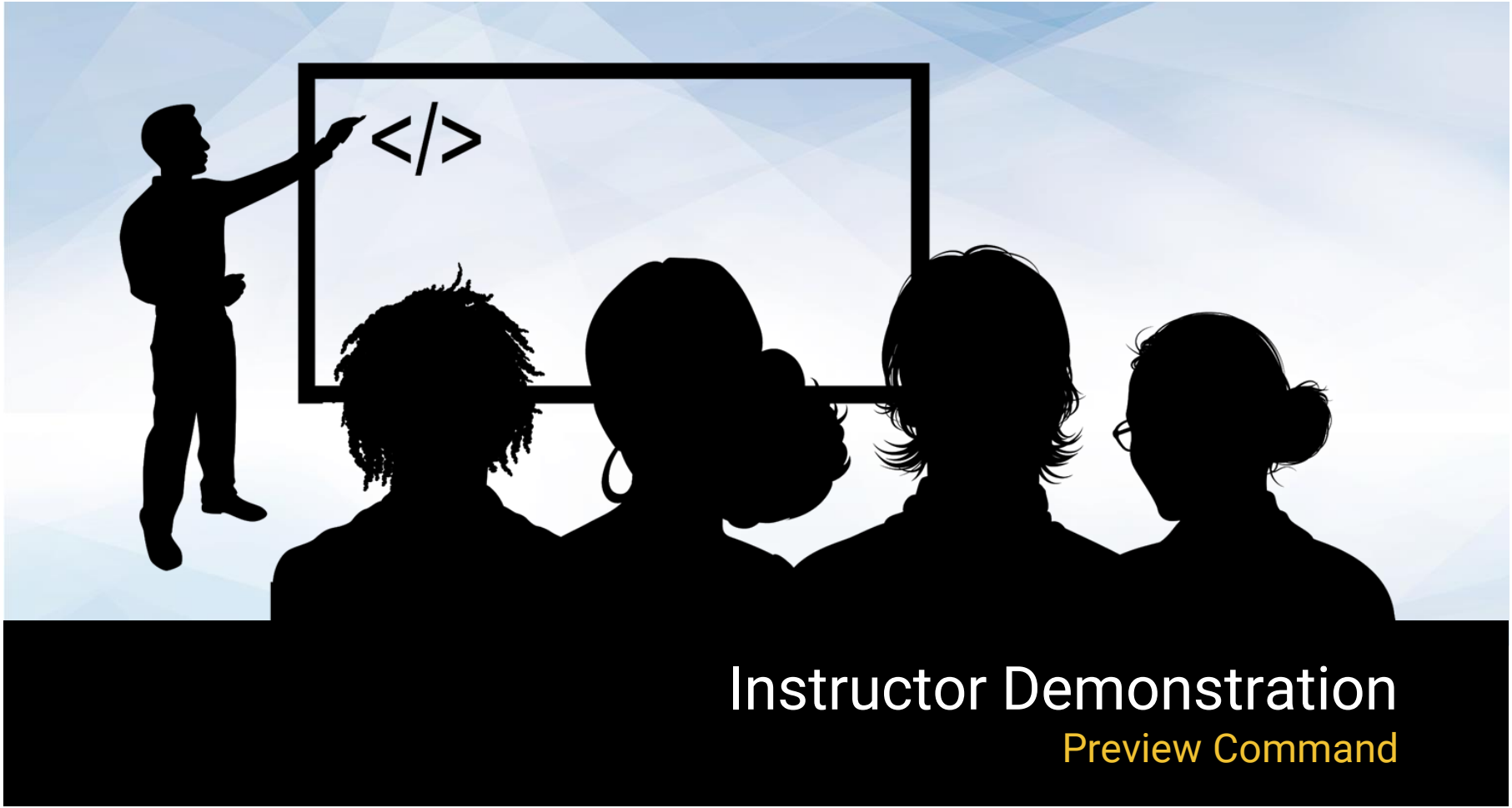
```
cp start.txt ./Left/Left/Right/Left/End/
```

Review the file tree sent to you for a breakdown of Maze

15 Minutes

Time’s Up! Let’s Review.

Terminal Maze



Instructor Demonstration

Preview Command

Activity: Preview Practice

In this activity, you will use head, tail and less commands to sift through various files.

Instructions sent via Slack

Suggested Time:
15 Minutes

Your Turn: Terminal Maze

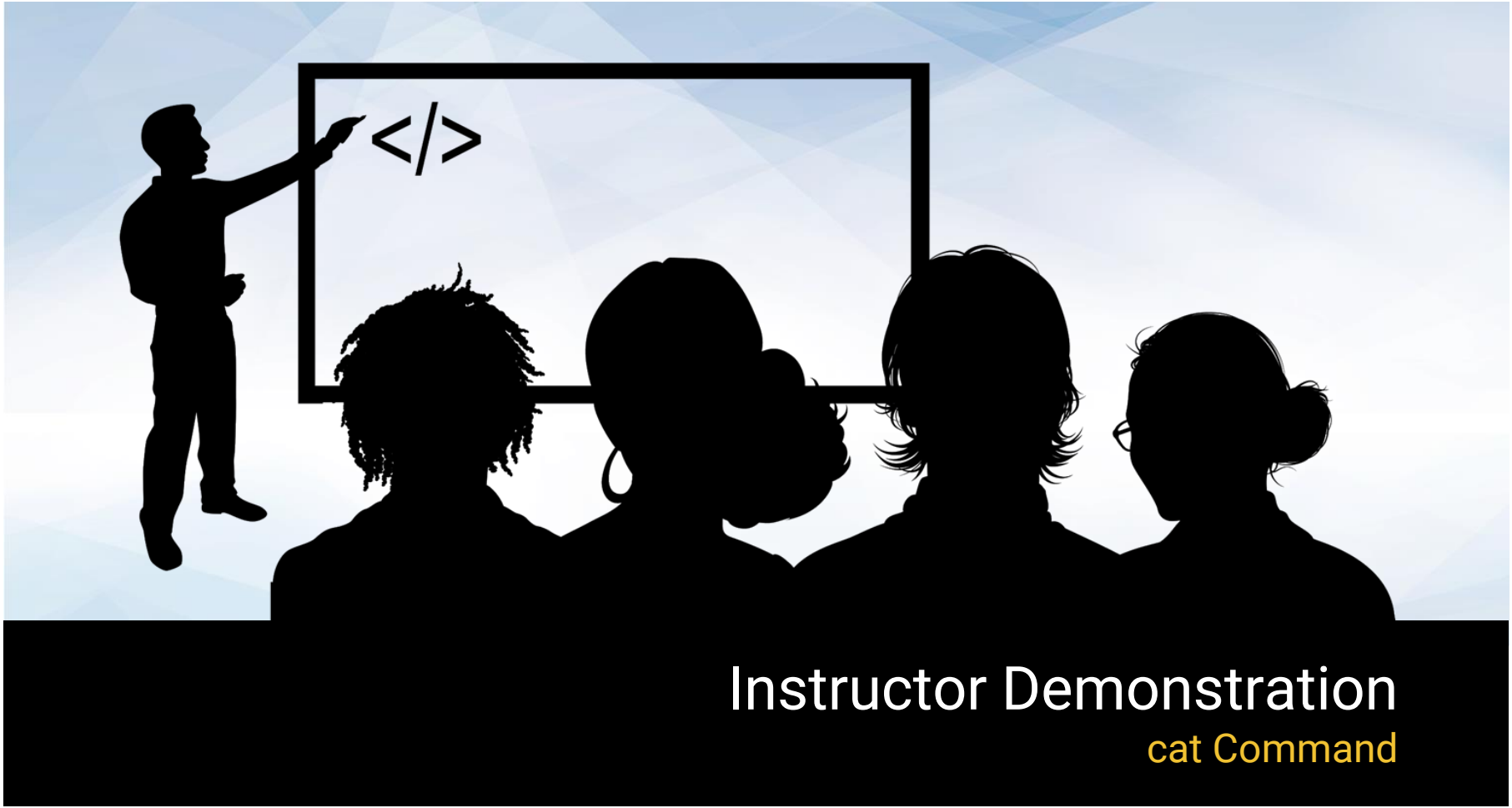
Instructions:

1. You've just been given a zip folder filled with book chapters in text format.
2. Use the `head`, `less`, and `tail` commands to preview each of the files.
3. Use each command and specify a number of lines at least once.
4. Warning! One of the files included is actually not a text file.
5. Using a command, identify the non-text file.

15 Minutes

Time’s Up! Let’s Review.

Preview Practice



Instructor Demonstration

cat Command

Activity: Create Library

In this activity, you will use a combination of commands to preview contents of a folder, combine them into a single text file and move the output to a new location.

Instructions sent via Slack

Suggested Time:
10 Minutes

Your Turn: Great Library

Instructions:

1. You've just been given a folder filled with books.
2. Your task is to sift through each of the book files to identify which are text based.
3. Combine these files into a single text file called full.txt.
4. Confirm that the combination worked successfully, before moving the new file to a folder called Summary.

Bonus:

See if you can determine the correct file format of the non-text file. Rename the file extension and be ready to share what you found. Hint: Read the gibberish.

10 Minutes

Time’s Up! Let’s Review.

Great Library

Lesson Recap

Which command would we use to retrieve a list of all files in a folder?

Which command would we use to retrieve a list of all files in a folder?

`ls`

Which command would we use to create a folder?

Which command would we use to create a folder?

`mkdir`

Which command would we use to create a file?

Which command would we use to create a file?

`touch`

What do `explorer .` and `open .` commands do?

What do `explorer .` and `open .` commands do?

The open the present working directory in the file explorer.

Which commands could we use to preview a file’s contents?

Which commands could we use to preview a file’s contents?

```
head
tail
less
```

Which command would we use to combine two files together?
How would we make it so the output was save?

Which command would we use to combine two files together?
How would we make it so the output was save?

```
cat
cat {files} >
```

Today’s Summary

We covered a lot today:

`ls:` Lists all files in a directory
`cd {folder}:` Change directory
`mkdir {folder}:` Make a new folder
`touch {file}:` Make a new file
`cp {file} {destination}:` Copies a file
`mv <file> {destination}:` Moves a file
`cat {files}:` Combines files
`head:` Previews first 10 lines of a file
`tail:` Previews last 10 lines of a file
`less:` Opens file previewer

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