AI Boot Camp

Overview of AI and Machine Learning

Module 1 Day 1

Class Objectives

By the end of class, you will be able to:

1. Identify the instructional team and classmates.
2. Understand the course format and certification requirements.
3. Recall the course topics and agenda.
4. Define AI and ML.
5. Differentiate between AI and ML.
6. Illustrate the differences between generalized and narrow AI.

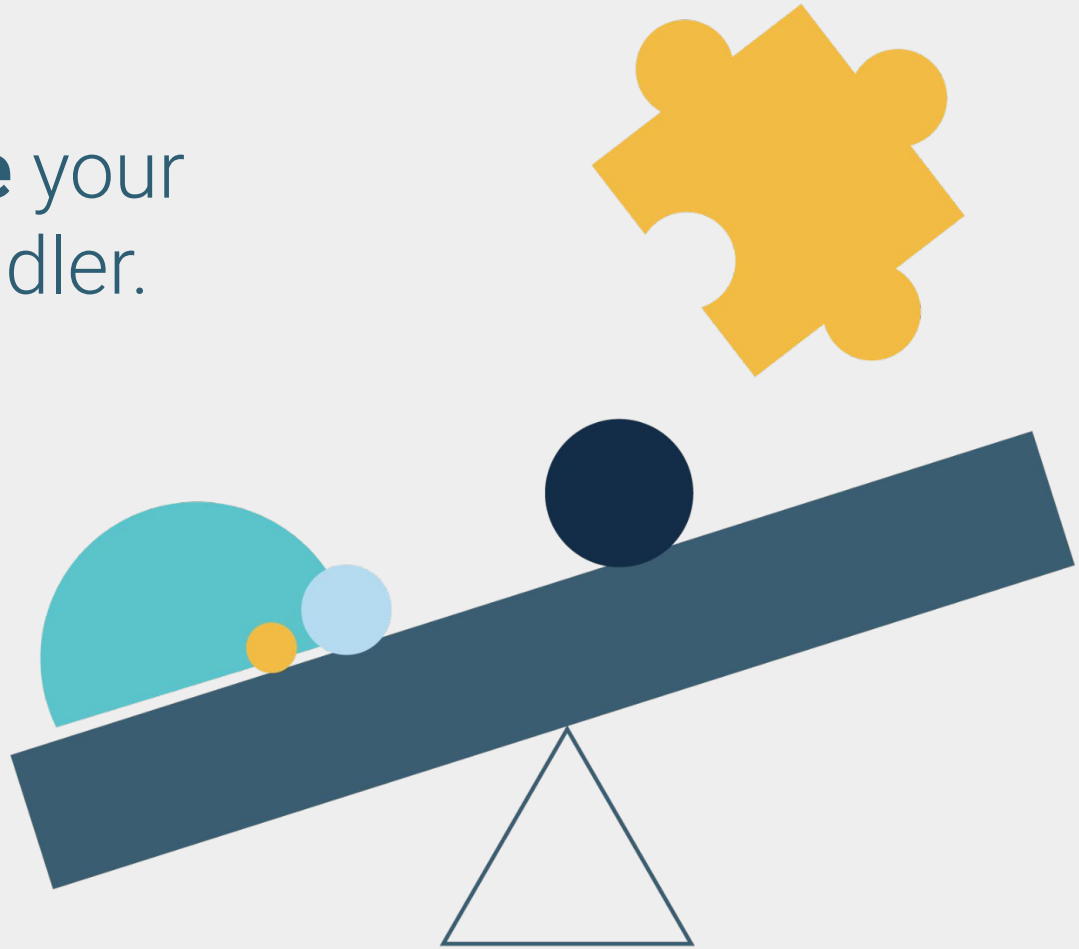
Instructor **Demonstration**

Welcome to the AI Boot Camp!

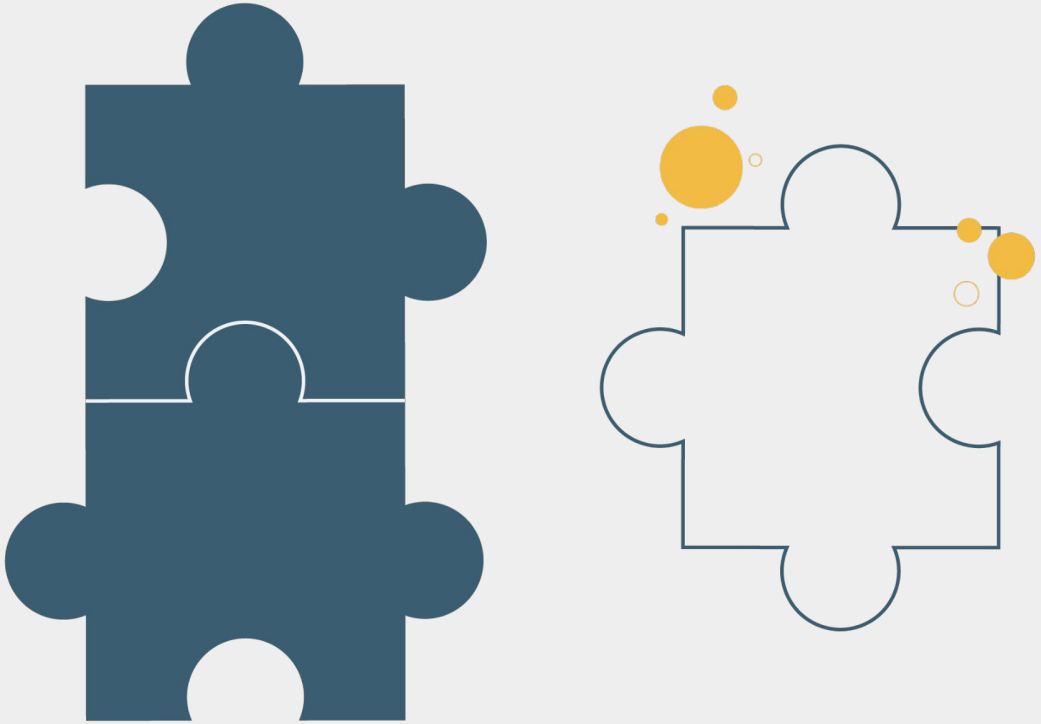
Instructor **Demonstration**

Growth Mindset

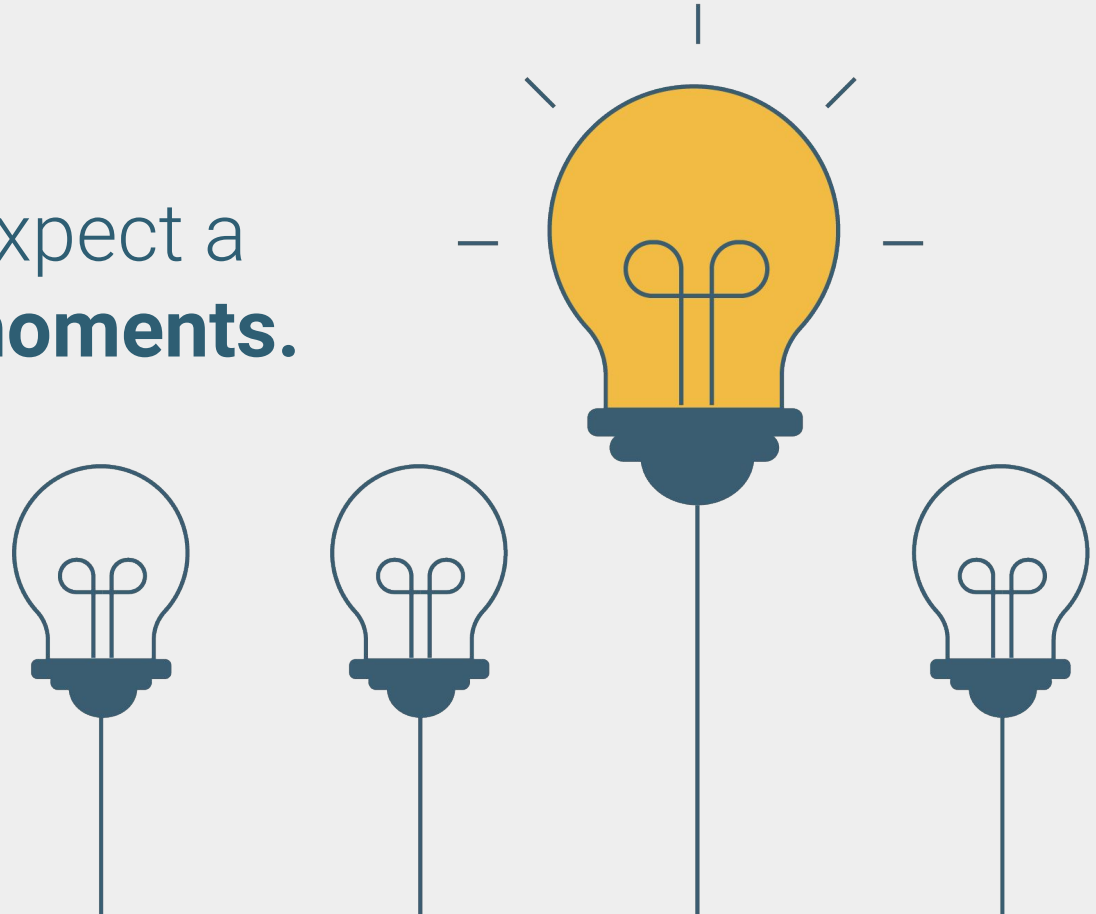
Embrace your
inner toddler.



Brace yourself for **doubt, challenge,** and **confusion**.



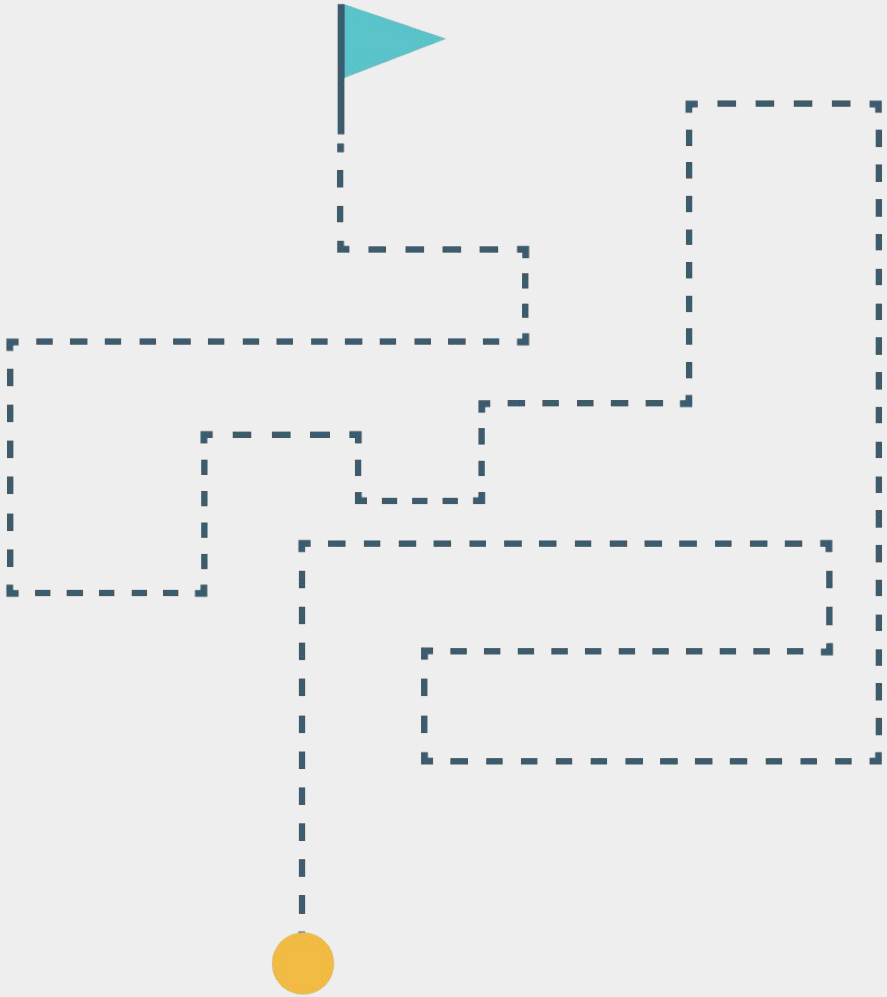
Relish the novice experience and expect a lot of **lightbulb moments.**



Form a community with your classmates.

You and your classmates are in this **process together**. Use each other for help!

You all bring value to the table. Don’t be afraid to speak up!



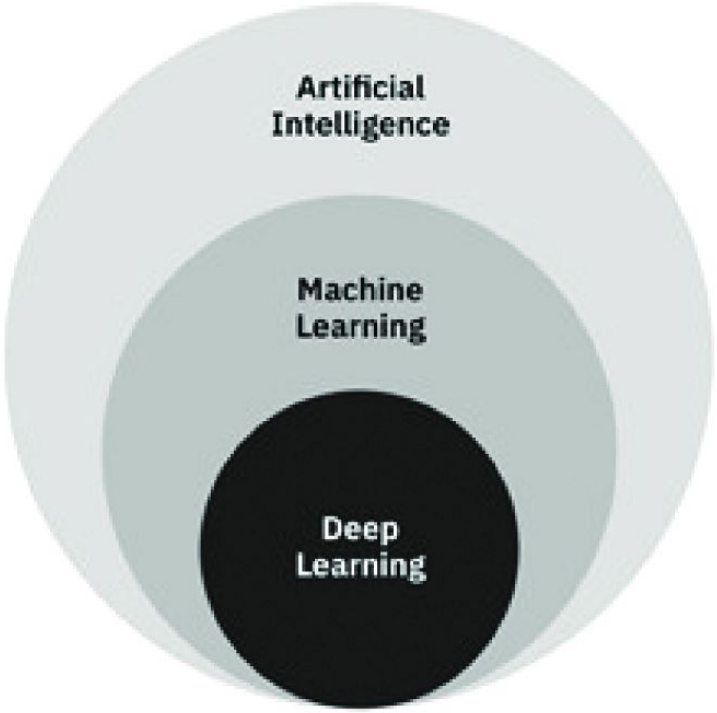
There is **no shortcut**. You've got to put in the hours.

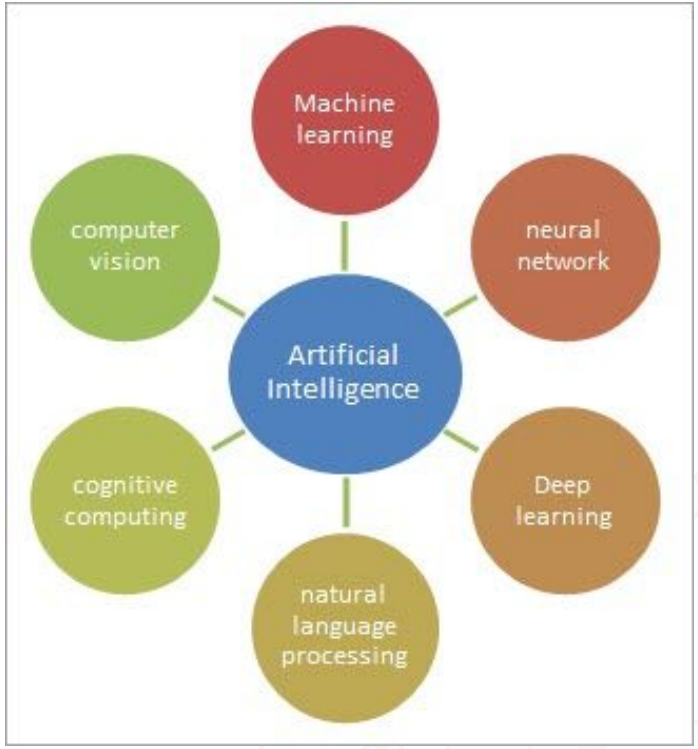
Instructor **Demonstration**

Defining AI

What Exactly is **Artificial Intelligence?**

Artificial intelligence (AI) is the combined application of the computer and data sciences to develop algorithms that can execute “autonomous” problem-solving.


Artificial Intelligence
Machine Learning
Deep Learning


Machine learning
computer vision
neural network
Artificial Intelligence
cognitive computing
Deep learning
natural language processing

What Are Some Applications of AI Technology?

- Self-driving cars
- Robots, both complex (Boston Dynamics) and simple (Roomba)
- Generative AI
- Recommendation algorithms on social media or streaming sites

What is **Machine Learning?**

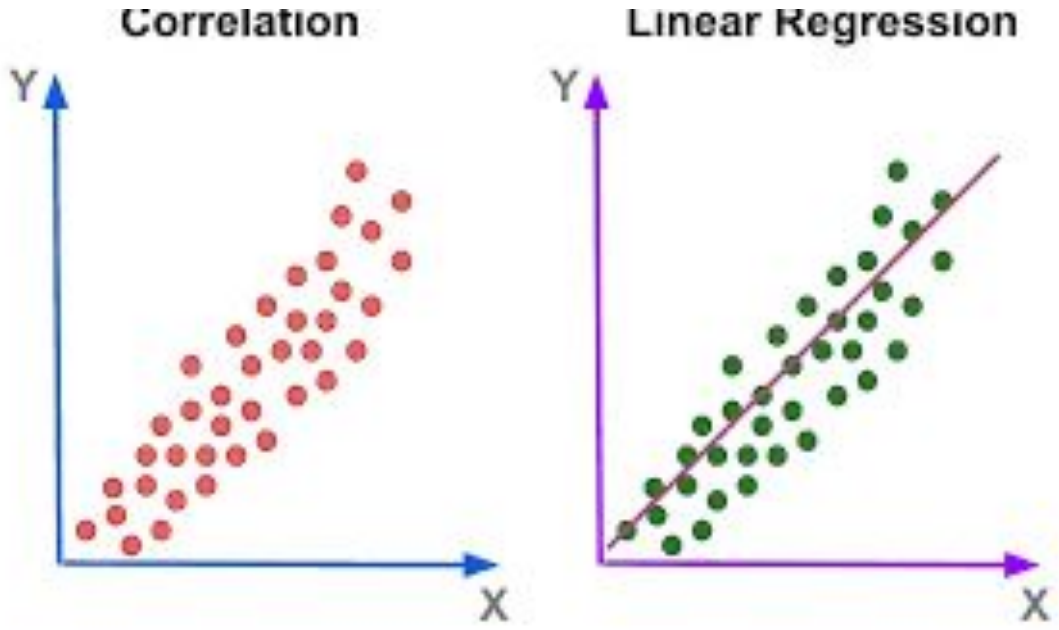
Machine learning (ML) is a subset of AI that enables computer algorithms to learn from data and then make decisions or predictions about future data **without explicit instructions from programmers.**

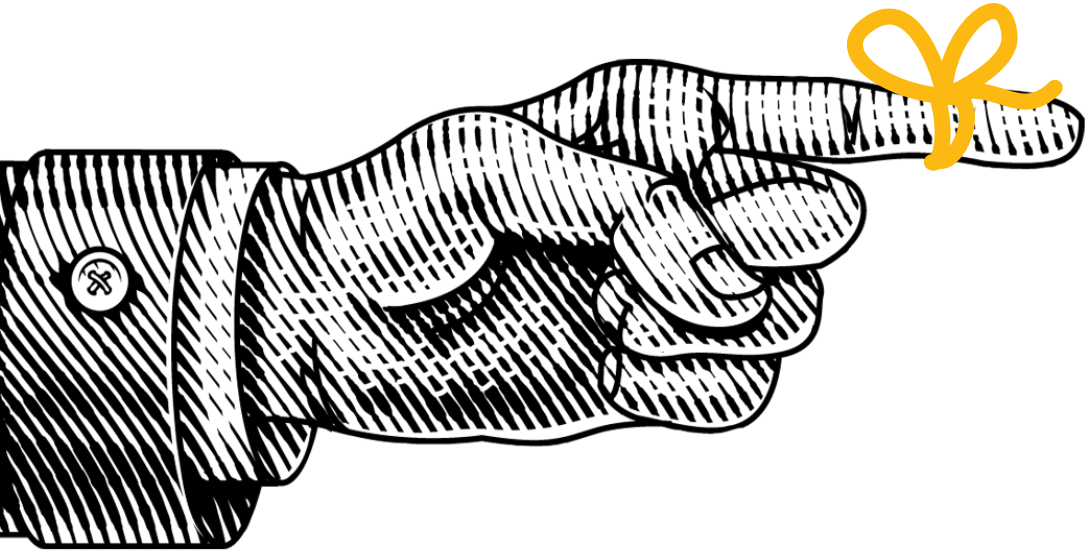
ML and AI

1. Without the aid of AI, programmers must provide a computer with all the rules and objectives required to process data. This is both time-consuming and inefficient.

2. ML differs from traditional programming because it uses data to produce predictive models and then utilizes these models to make predictions.

3. ML uses algorithms to craft and train models that make predictions based on data from the world around us.
    - The computer system improves by identifying which data points are outliers and disregarding them in future predictions, allowing it to make better predictions or decisions moving forward.
    - Best of all, programmers do not need to tell the computer how to improve; it can teach itself from the data.


Correlation
Y
X
Linear Regression
Y
X



Remember,

AI enables computer algorithms to perform tasks in ways similar to a human, while ML enables an algorithm to create its own intelligence.

Key Differences Between ANI and AGI

Narrow AI	General AI
Performs specific tasks as instructed by a user	Performs general tasks with little to no oversight from a user
Unable to transfer knowledge across domains	Can transfer knowledge from one domain to another
Simulates human consciousness but is not conscious	Has human-like consciousness
Currently in use	May be possible in the future

Activity:

AI Discussions

In this activity, you'll be prompted to discuss a series of questions on AI with your class.

Suggested Time:
15 Minutes

AI Discussions

Today has been all about course introductions and lectures. Now it's time to reflect a bit about the following questions:

1. What does AI mean to you? Why is it important?
2. What about AI interests you?
3. Where do you expect AI to take you? What are you looking to do?
4. What about AI may be confusing? What makes sense?

Time’s up!

Let’s review

Break

15 mins

Instructor **Demonstration**

AI Foundations

Structure for the Week

Classes this week will be divided in two parts:

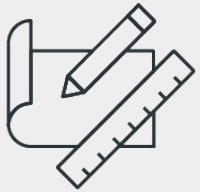
1. Conceptual understanding of AI (this is what we've been doing up to this point)
2. Technical skills you will need to build algorithms (what we will be doing next)

Technical Skills Lesson 1: Terminal

- Terminal is a command-line interface that allows us to interact with the computer directly, an essential skill when working with AI.
- Learning how to use the terminal will set the foundation for creating, manipulating, and testing AI algorithms in future units.
- We will walk you through the basic commands and show you how the terminal can make many tasks more efficient.

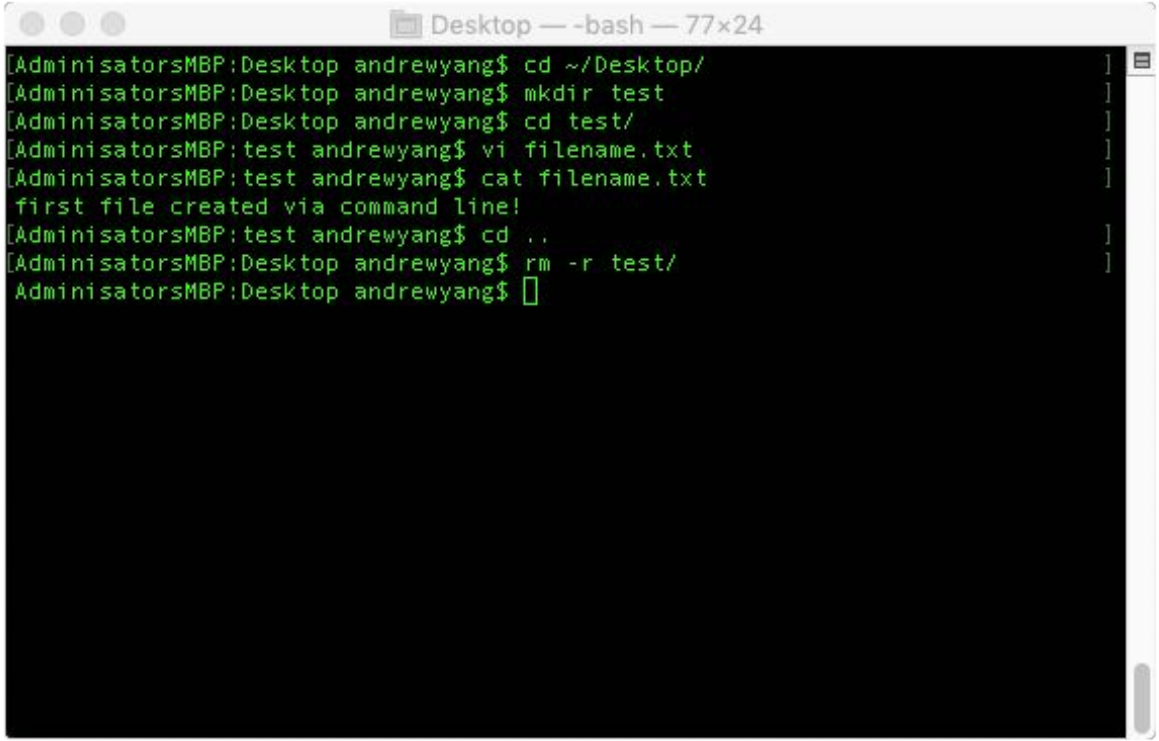
Instructor **Demonstration**

Terminal



Introduction to the **Command Line**

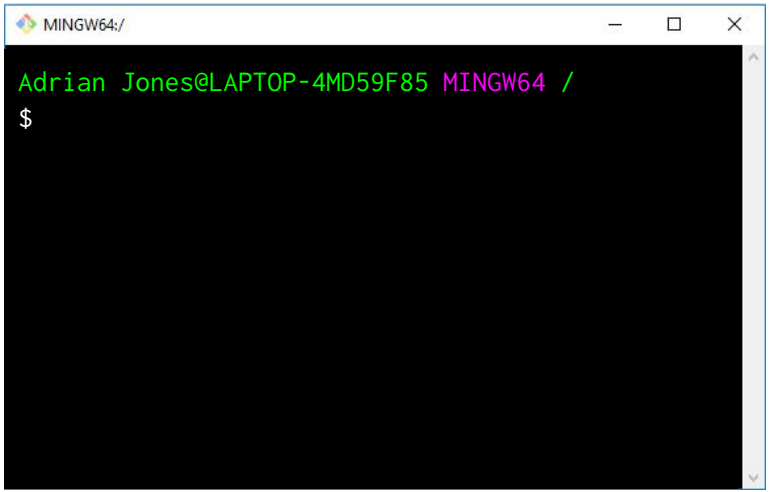
What is the Command Line?



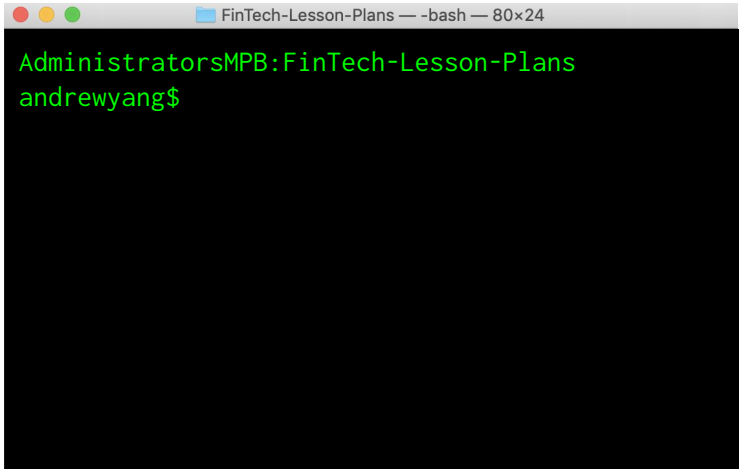
A command line interface (CLI), or **terminal**, allows a user to execute and automate commands without the need for a graphical user interface (GUI).

The Command Line

Windows (Git Bash)



Mac (Terminal)



Activity:

Terminal

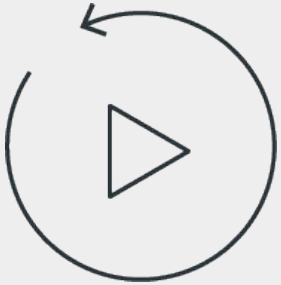
In this activity, you will perform your own file system operations via the command line.

(Instructions sent via Slack.)

Suggested Time:
15 Minutes

Time’s up!

Let’s review



Let’s **recap**

Recap

After today's lesson you are able to:

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Next

In the next lesson, you'll learn the differences between unsupervised and supervised ML, and will then be introduced to more complex models such as neural networks, deep learning, natural language processing, and transformers.

Questions?

The End