

## About this Course

Welcome to AI Fundamentals! This course is designed to teach students how artificial intelligence works and how to use it effectively and responsibly. During this course, we will not be going into deep technical aspects of Artificial Intelligence. Instead we will be focusing on understanding the foundation of AI, how data plays an important role in AI, and the ethical use of AI.

The course is made up of six sections:

- Artificial Intelligence Fundamentals
- Generative AI Basics
- Natural Language Processing Basics
- Data Analytics Fundamentals
- Correlation and Regression
- Responsible Creation of Artificial Intelligence

## Course Objectives

- Define the term artificial intelligence
- Define machine learning and how it relates to AI
- Describe the role of neural networks in machine learning
- Describe capabilities of generative AI that use language models
- Describe natural language processing
- Define bias and fairness in artificial intelligence

## How to Teach this Course

This course is set up to teach the foundations of Artificial Intelligence. The course uses Trailhead Units to introduce the topic. The course includes two different assignments for each unit. The first is proof of completion that the student finished the unit. The second is a discussion forum where the students can talk/discuss something they learned in the unit. The design of the course is to provide a flipped classroom approach where the students absorb the content via Trailhead and then additional learning can take place during the class discussion.



While this course discusses the topic of Artificial Intelligence, it does not incorporate any AI models into the actual assignments. The course is designed for students who have little or no experience with AI. All assignments and discussion posts can be completed using a standard web browser and online document editor.

Along with the assignments provided, additional assignments can be created. Examples of those types of assignments are provided below.

- Individual submissions - Each discussion post can be converted to an individual student submission.
- Group projects - Each discussion post can be used as a group project and/or group discussion.
- Term paper - Using the prompts from each week's discussion post, ask the students to summarize their learnings from the course. What did they learn and what was their biggest takeaway?
- Webinar team debate/discussion - Give each group a topic from one of the units. Ask them to present/debate the topic in a webinar style format. See this video as an example.

## What is Trailhead?

### About Trailhead

Trailhead is your students' path into the Salesforce economy. It is a fun way to learn the skills your students need to transform, earn credentials that grow their career, and connect with a global movement of Trailblazers to continue learning together.

Trailhead is our online platform where you can learn at your own pace through guided learning paths, collecting badges, and scoring points – getting rewarded for the skills you learn. Bonus: it is all completely free.

Trailhead provides students the ability to learn new topics and get hands-on. Our challenge engine allows students to complete real-world business challenges in a safe Salesforce instance called a Trailhead Playground. Once they've completed the necessary steps, our engine will check to ensure the student completed each step as required providing real-time feedback on their work. We are constantly adding brand-new content to Trailhead including new Salesforce content, soft skills like



leadership, presenting, and diversity, and even other technology like iOS development and Google Analytics.

## Create Trailhead Accounts in Class

Take the opportunity to have every student create their [Trailhead account](#) together in class. If your organization already provides students with a Salesforce login, they can use that. Students should put their school/program in the organization field and choose Student as their role. This login is also what students will use to access the Trailblazer Community and Salesforce events. Additional information on how to incorporate Trailhead into your classroom environment is available in the [Trailhead in the Classroomhelp article](#). For further information on Trailhead, ask the students to complete the '[Get Started with Trailhead](#)' trail.

## Trailhead Proof of Completion Assignments

With Trailhead, there is no need to grade assignments as our assessment engine is already verifying the learner has successfully completed each knowledge check.

The best way for you to track student progress is by having students submit a screenshot into an online submission assignment. By including a screenshot of the unit completion, you'll be able to verify the student and their progress and assign a grade/points. If you want to 100% confirm the badge completion, ask the student to share their Trailhead profile with you. Using this profile, you can confirm if the unit is complete in the badges section of the profile page.

[Where do I find my Trailhead Profile?](#)



# Get Started with Artificial Intelligence - Unit Objectives

## Objectives

In this section, the foundations of AI are covered. At the end of this unit, you will be able to:

- Explain the importance of understanding fundamental concepts of artificial intelligence.
- Identify the challenges that make defining artificial intelligence difficult.
- Describe the types of tasks artificial intelligence can perform.
- Define the term *artificial intelligence*.

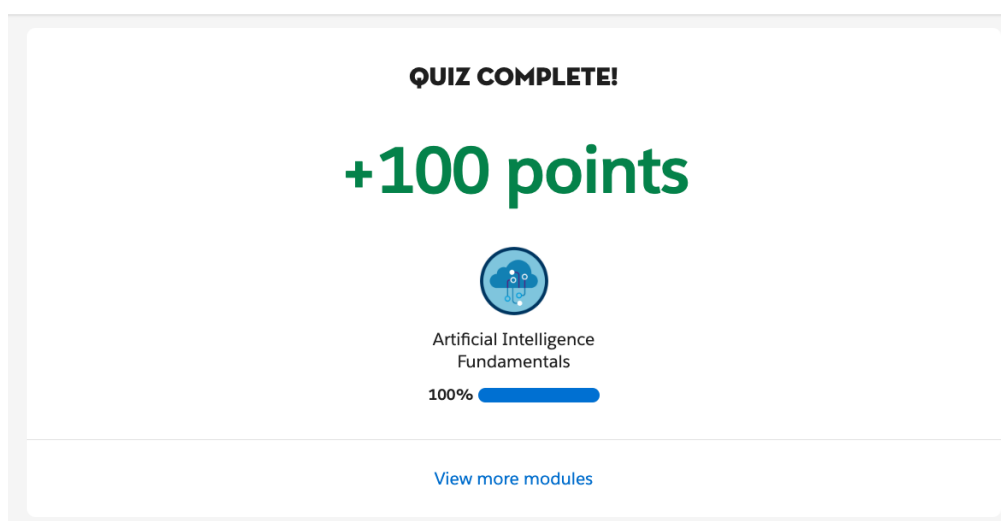
## Complete the Trailhead Unit

Complete the Trailhead unit on [Getting Started with Artificial Intelligence](#).

## Completion Assignment

At the end of the Trailhead unit, complete the challenge quiz. After completing the quiz, take a screenshot of your results and send it with your teacher. They will provide the method of sharing. Include a link to your Trailhead profile when you share. *Note - each module will be checked for point accuracy compared to the screenshot submitted.*

Screenshot example



## Additional Resources

Optional Reading: [Glossary of Generative AI terms](#)

## Class Discussion

The first unit discussed what AI is and the difficulty defining it. It included the different types of AI currently available. Discussing in class, share your answers to the following questions.

### *Discussion Questions*

1. When did you first hear about AI technology? Do you remember what the product was?
2. Of the different types discussed in this module, which type excites you the most?
3. **Along with your answer, review another classmate's answer. Did they have a similar experience with an AI technology?**



# Turn Data into Models - Unit Objectives

## Objectives

This section explains how data, math, and processing power make up the behind the scenes action of AI. At the end of this unit, you will be able to:

- Explain differences between hand-coded algorithms and trained models.
- Define machine learning and how it relates to AI.
- Distinguish between structured and unstructured data and how it affects training.

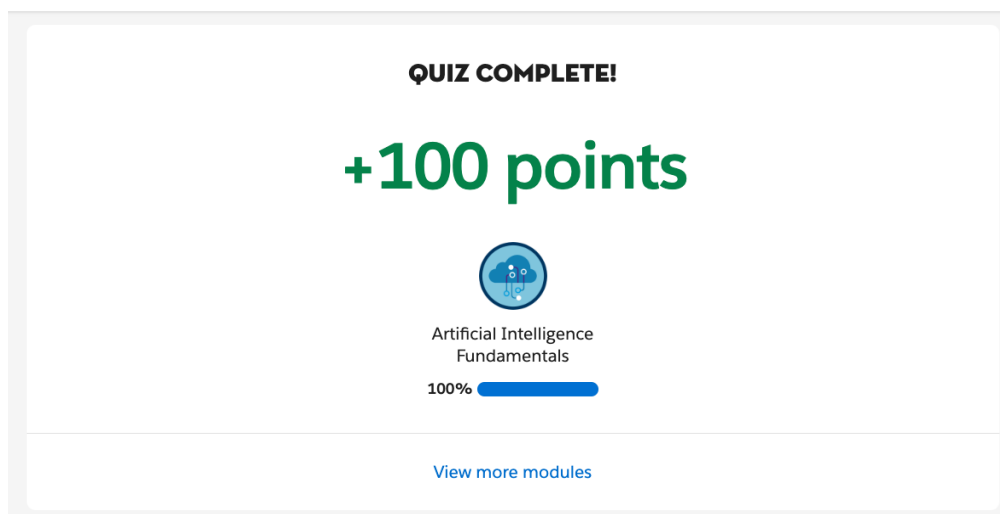
## Complete the Trailhead Unit

Complete the Trailhead unit on [Turn Data into Models](#)

## Completion Assignment

At the end of the Trailhead unit, complete the challenge quiz. After completing the quiz, take a screenshot of your results and send it with your teacher. They will provide the method of sharing. Include a link to your Trailhead profile when you share. *Note - each module will be checked for point accuracy compared to the screenshot submitted.*

Screenshot example



## Class Discussion

This unit discussed the magic behind AI and how you train AI. Discussing in class, share your answers to the following questions.

### *Discussion Questions*

1. The unit used a milk run graph example to demonstrate how to train an AI model. What is something you do in your daily life that could be used to train an AI model? What data would you need to capture?
2. Upload a drawing of your graph (see the example in the [trailhead unit](#)). Which lines (inputs) would you weigh heavier than others? Explain your reasoning for these weights.
3. **Along with your share, respond to another classmate. What additional data could they capture for their model?**



# Understand the Need for Neural Networks - Unit Objectives

## Objectives

This section explains networks, why we need them, and how they train AI. At the end of this unit, you will be able to:

- Explain the limitation of AI models that only consider the weight inputs.
- Describe the role of neural networks in machine learning.
- Define the major components of neural networks.
- Describe how complexity is added to neural networks, and define deep learning.
- Explain how it is impossible to interpret the weights and biases determined through training.

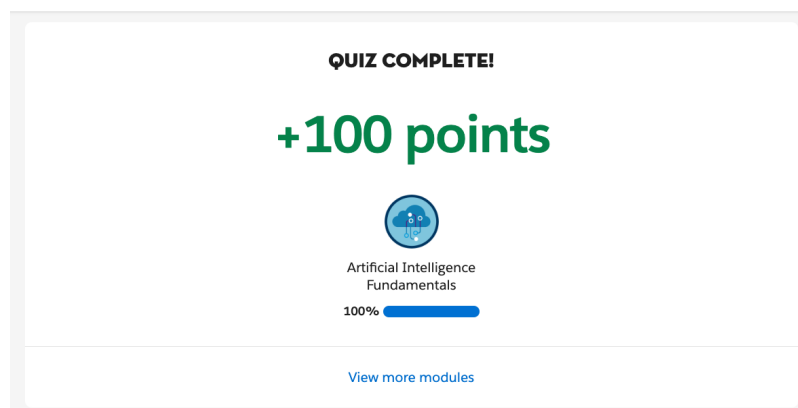
## Complete the Trailhead Unit

Complete the Trailhead unit on [Understand the Need for Neural Networks](#)

## Completion Assignment

At the end of the Trailhead unit, complete the challenge quiz. After completing the quiz, take a screenshot of your results and send it with your teacher. They will provide the method of sharing. Include a link to your Trailhead profile when you share. *Note - each module will be checked for point accuracy compared to the screenshot submitted.*

Screenshot example





## Additional Resources

Optional reading: [New neural network building block allows faster and more accurate text understanding.](#)

## Class Discussion

This unit discussed the magic behind AI and how you train AI. Discussing in class, share your answers to the following questions.

### *Discussion Questions*

1. Thinking about your graph, what are two other scenarios you can think about? How does that change your weights? (Include photos of graphs if possible.)
2. What did you think about bias and deep learning? Were there any sections that were confusing? If so, what were they and why?
3. **Along with your share, respond to another classmate. Can you help provide additional context to areas that might have been confusing?**



# Explore the Capabilities of Generative AI - Unit Objectives

## Objectives

In this section, the qualities and capabilities of generative AI are discussed. At the end of this unit, you will be able to:

- Describe qualities of generative AI models as compared to other models.
- Define key vocabulary of AI language models.
- Describe capabilities of generative AI that use language models.

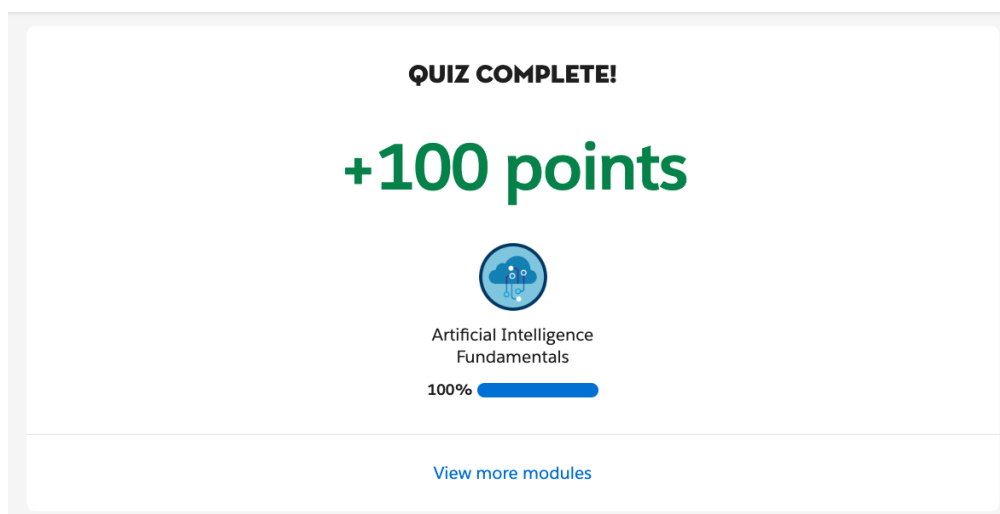
## Complete the Trailhead Unit

Complete the Trailhead unit on [Explore the Capabilities of Generative AI](#)

## Completion Assignment

At the end of the Trailhead unit, complete the challenge quiz. After completing the quiz, take a screenshot of your results and send it with your teacher. They will provide the method of sharing. Include a link to your Trailhead profile when you share. *Note - each module will be checked for point accuracy compared to the screenshot submitted.*

Screenshot example



## Additional Resources

Optional Reading: [What is Generative AI?](#)

## Class Discussion

This unit introduced the concept of generative AI and provides examples of Large Language Models (LLM). Discussing in class, share your answers to the following questions.

### *Discussion Questions*

1. Look at the different LLMs that are described in the [Trailhead unit](#). What is a product you use/have used that uses these types of LLM?
2. **Along with your share, respond to another classmate. Have you also used that product?**



# Understand the Technology Ecosystem of Generative AI - Unit Objectives

## Objectives

In this unit the technology and computing power behind generative AI is discussed. Along with discussing the technology behind the AI, common concerns of generative AI are brought up. At the end of this unit, you will be able to:

- Identify key components contributing to rapid generative AI development.
- Describe types of technology that comprise the generative AI tech stack.
- Describe common concerns businesses have about generative AI.

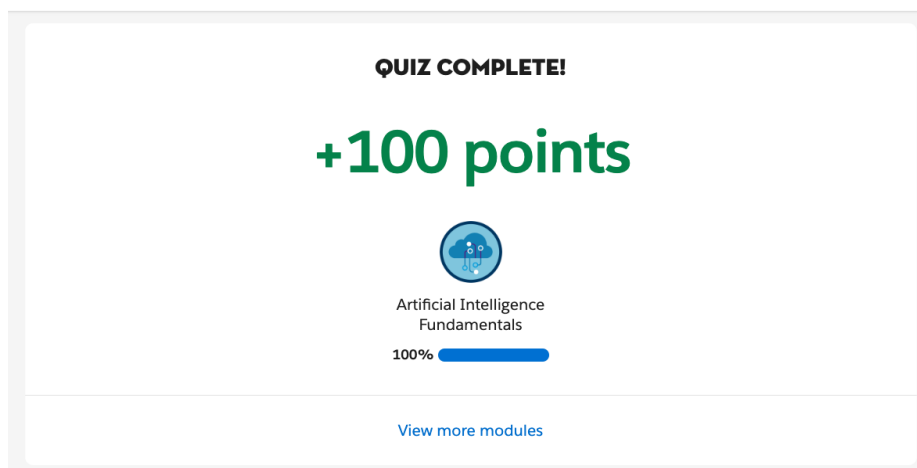
## Complete the Trailhead Unit

Complete the Trailhead unit on [Explore the Capabilities of Generative AI](#)

## Completion Assignment

At the end of the Trailhead unit, complete the challenge quiz. After completing the quiz, take a screenshot of your results and send it with your teacher. They will provide the method of sharing. Include a link to your Trailhead profile when you share. *Note - each module will be checked for point accuracy compared to the screenshot submitted.*

Screenshot example



## Additional Resources

Optional Reading: [Transformer: A Novel Neural Network Architecture for Language Understanding](#)

## Class Discussion

This unit introduces the technology and concerns behind generative AI. Discussing in class, share your answers to the following questions.

### *Discussion Questions*

1. This [unit](#) discusses common concerns of generative AI. Among those concerns, which one stood out to you the most?
2. Have you seen any of these concerns in the media recently? If so, where did you see it? If possible, include the link to the post.
3. **Along with your share, respond to another classmate. Are you familiar with the media that was pointed out?**



# Get to Know Natural Language Processing - Unit Objectives

## Objectives

This unit discusses natural language processing (NLP), its history, its evolution and how it is used today. At the end of this unit, you will be able to:

- Describe natural language processing.
- Discuss everyday uses of natural language processing.
- Explain how it has evolved since the 1950s.
- Differentiate between natural language processing, natural language understanding, and natural language generation.

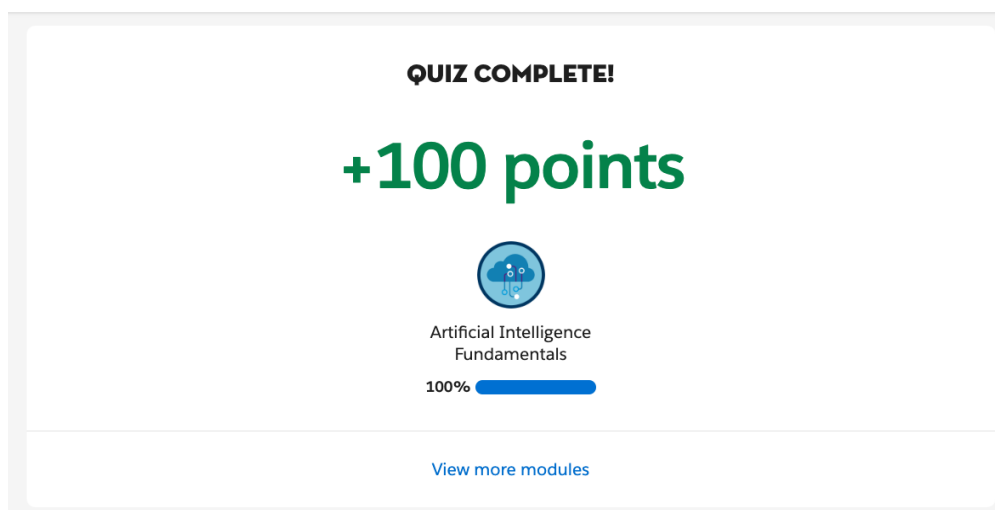
## Complete the Trailhead Unit

Complete the Trailhead unit on [Get to Know Natural Language Processing](#)

## Completion Assignment

At the end of the Trailhead unit, complete the challenge quiz. After completing the quiz, take a screenshot of your results and send it with your teacher. They will provide the method of sharing. Include a link to your Trailhead profile when you share. *Note - each module will be checked for point accuracy compared to the screenshot submitted.*

Screenshot example



## Class Discussion

This unit discussed NLP and how unstructured text becomes structured text. Discussing in class, share your answers to the following questions.

### *Discussion Questions*

1. Pick a favorite quote or phrase like the one in this unit. Post the phrase and then convert the phrase to a structured text format. How would you break the text down into key:value pairs?
2. **Along with your share, respond to another classmate. Would you structure the text in a different way? If so, why?**



# Learn About Natural Language Parsing - Unit Objectives

## Objectives

This unit discusses how natural language parsing works and how semantic analysis helps determine the context of the text. At the end of this unit, you will be able to:

- Discuss the basic elements of natural language.
- Describe several important techniques used when parsing natural language.
- Explain how sentiment, intent, and context analysis contribute to NLP.

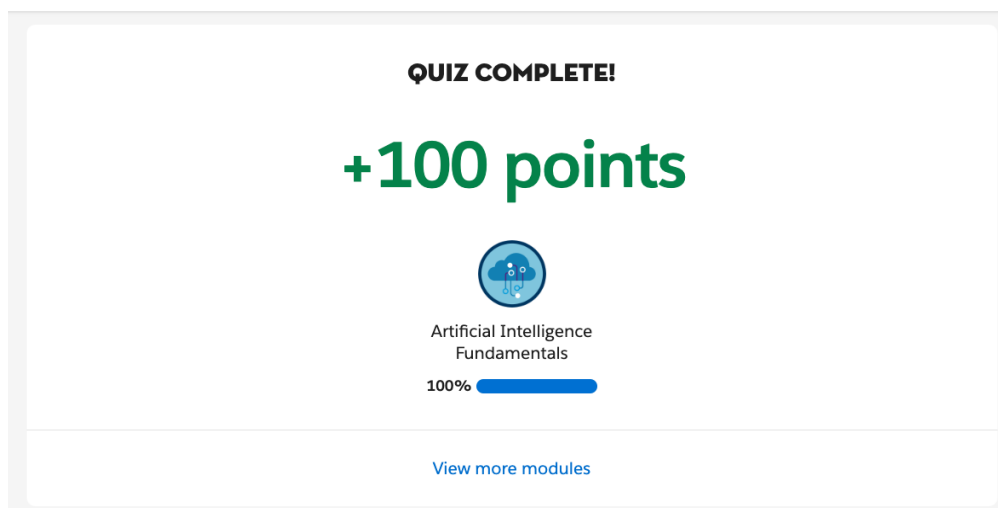
## Complete the Trailhead Unit

Complete the Trailhead unit on [Learn About Natural Language Parsing](#)

## Completion Assignment

At the end of the Trailhead unit, complete the challenge quiz. After completing the quiz, take a screenshot of your results and send it with your teacher. They will provide the method of sharing. Include a link to your Trailhead profile when you share. *Note - each module will be checked for point accuracy compared to the screenshot submitted.*

Screenshot example





## Additional Resources

Optional Reading: TechTarget - [Natural Language Processing](#)

Optional Video: [Natural Language Processing in 5 Minutes](#)

## Class Discussion

This [unit](#) discussed NLP parsing and how Syntactic and Semantic parsing provides structure and meaning. Discussing in class, share your answers to the following questions.

### *Discussion Questions*

1. This unit discussed how syntactic parsing helps identify the underlying grammatical structure of the text. Pick a favorite quote and break it down using one of the syntactic parsing techniques (Segmentation, Tokenization, Stemming, Lemmatization, Part of Speech Tagging, and Named Entry Recognition)
2. **Along with your share, respond to another classmate. What other technique besides the one they choose could be used to parse their quote.**



# Explore Data Analytics Types - Unit Objectives

## Objectives

This [unit](#) defines data analytics and the types of data analysis. At the end of this unit, you will be able to:

- Explain how data analytics improves decision making.
- Define the different analytics types.
- Explain descriptive analytics.

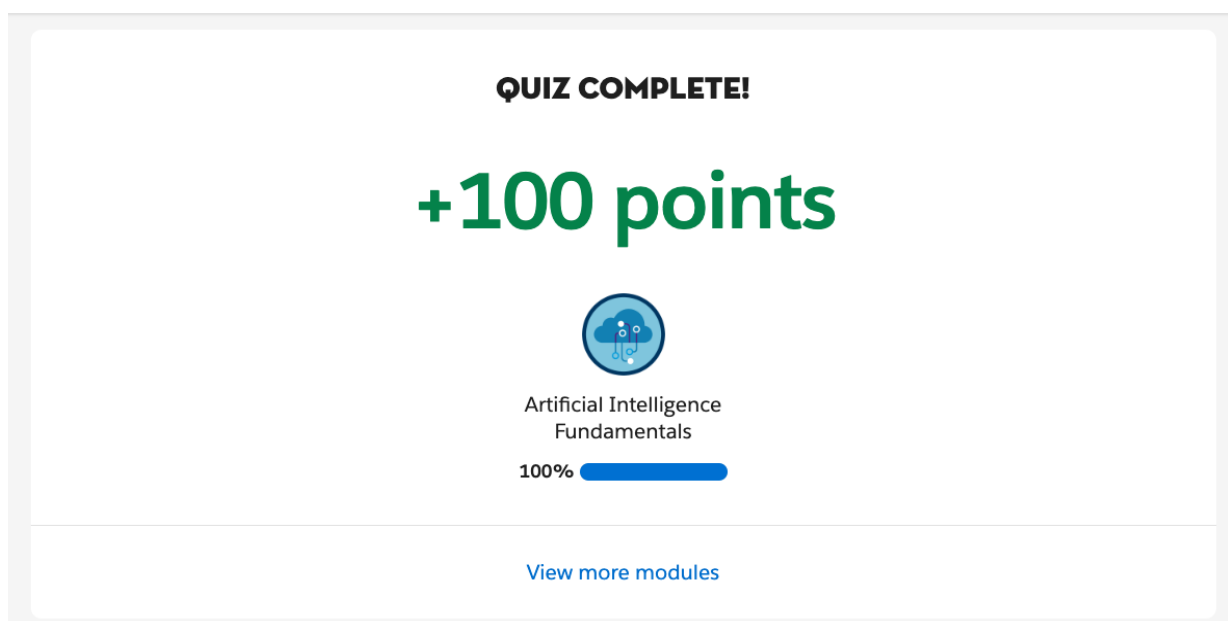
## Complete the Trailhead Unit

Complete the Trailhead unit on [Explore Data Analytics Types](#)

## Completion Assignment

At the end of the Trailhead unit, complete the challenge quiz. After completing the quiz, take a screenshot of your results and send it with your teacher. They will provide the method of sharing. Include a link to your Trailhead profile when you share. *Note - each module will be checked for point accuracy compared to the screenshot submitted.*

Screenshot example



## Additional Resources

Optional Reading: [Unlocking the value of data for improved performance](#)

## Class Discussion

This unit discusses the importance of data analytics and the different ways data can be analyzed. Discussing in class, share your answers to the following questions.

1. In the video, Raf discussed the different types of data analytics and how they are used. Can you think of a time in your life you have encountered one of these types of data analytics? What was the type and how was it presented?
2. **Along with your share, respond to another classmate. Do you have a similar data analytical experience?**



# Understand Common Data Analysis Use Cases - Unit Objectives

## Objectives

This [unit](#) discusses how data analytics is all around us. At the end of this unit, you will be able to:

- Explain why data analytics is relevant in modern business.
- Explain how data analytics tools are used in common scenarios.

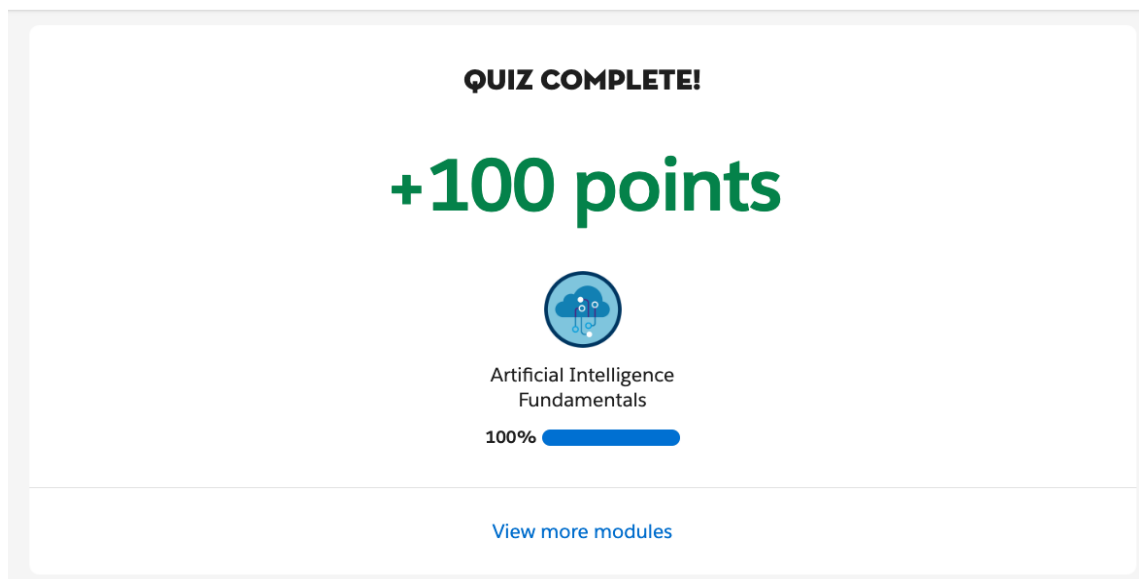
## Complete the Trailhead Unit

Complete the Trailhead unit on [Understand Common Data Analysis Use Cases](#)

## Completion Assignment

At the end of the Trailhead unit, complete the challenge quiz. After completing the quiz, take a screenshot of your results and send it with your teacher. They will provide the method of sharing. Include a link to your Trailhead profile when you share. *Note - each module will be checked for point accuracy compared to the screenshot submitted.*

Screenshot example



## Class Discussion

This unit discusses how data analytics is present in everything that we do. Discussing in class, share your answers to the following questions.

### *Discussion Questions*

1. In the video, Raf mentions different types of verticals where data can live. Look at that list and determine which vertical you have experience working with. Provide an example of that vertical. (Include a screenshot of the data if possible.)
2. **Along with your share, respond to another classmate. Do you have experience with a similar vertical?**



# Take Data Analytics to the Cloud - Unit Objectives

## Objectives

This unit explores the history of on-premises data collection and the benefits of cloud-based architectures. At the end of this unit, you will be able to:

- Explain the challenges of on-premises data collection and analytics tools.
- List the advantages of cloud-based data analytics.

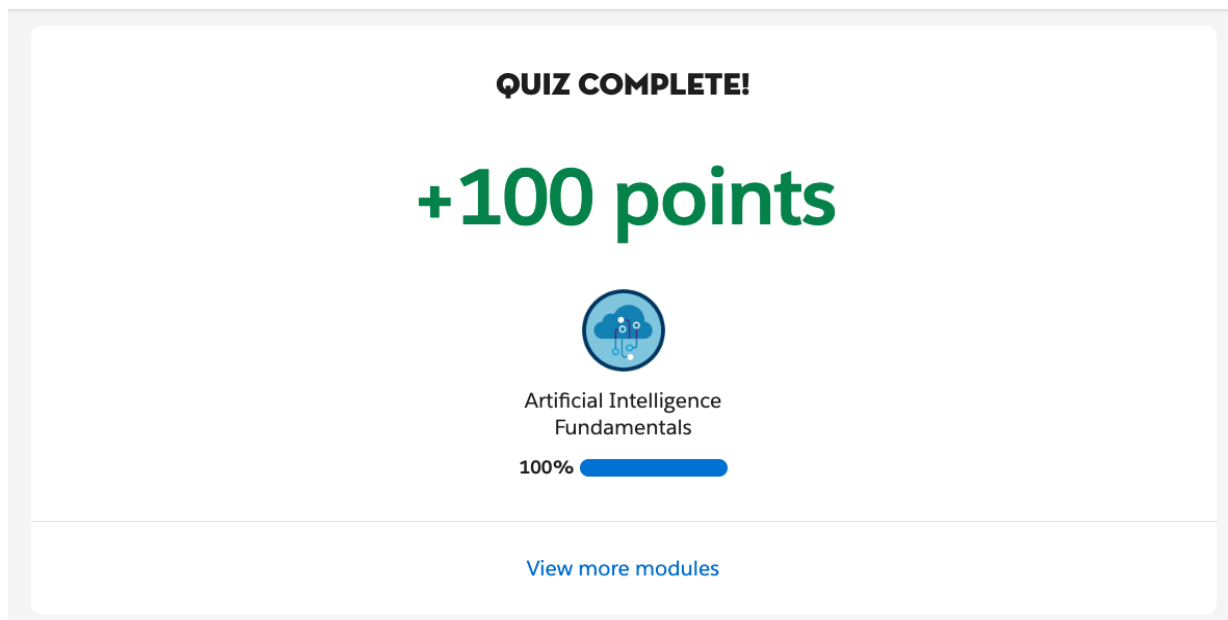
## Complete the Trailhead Unit

Complete the Trailhead unit on [Take Data Analytics to the Cloud](#)

## Completion Assignment

At the end of the Trailhead unit, complete the challenge quiz. After completing the quiz, take a screenshot of your results and send it with your teacher. They will provide the method of sharing. Include a link to your Trailhead profile when you share. *Note - that each module will be checked for point accuracy compared to the screenshot submitted.*

Screenshot example



## Class Discussion

This unit discusses the importance of cloud analytics and its benefits over on-premise data collection. Discussing in class, share your answers to the following questions.

### *Discussion Questions*

1. Based on the video, what are some issues with on-premise data collection?  
Personally, do you have any experience with on-premise or cloud data collections?



# Examine Correlation in Data - Unit Objectives

## Objectives

This unit discusses correlation and examines how closely two variables move in relation to each other. At the end of this unit, you will be able to:

- Define correlation.
- Distinguish between strong and weak correlations.

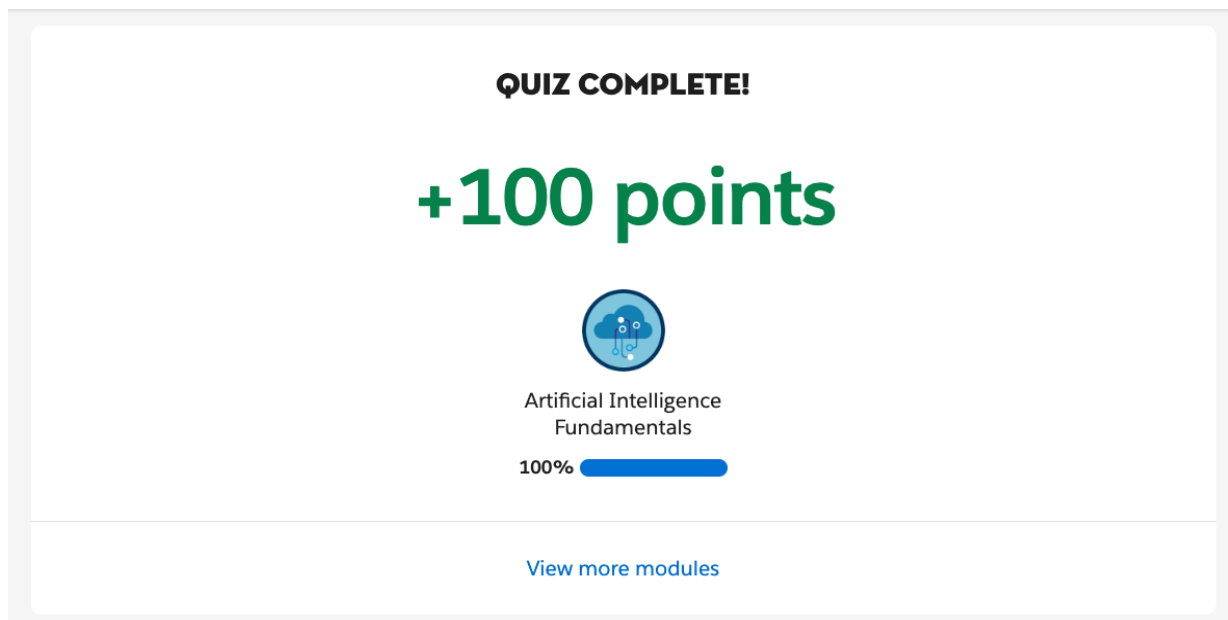
## Complete the Trailhead Unit

Complete the Trailhead unit on [Examine Correlation in Data](#)

## Completion Assignment

At the end of the Trailhead unit, complete the challenge quiz. After completing the quiz, take a screenshot of your results and send it with your teacher. They will provide the method of sharing. Include a link to your Trailhead profile when you share. *Note - each module will be checked for point accuracy compared to the screenshot submitted.*

Screenshot example





## Additional Resources

Optional Reading: [Online Stats Education Book - Regression](#)

Optional Video: [Linear Regression in Tableau](#)

## Class Discussion

This unit discussed regression and how to determine how closely two numerical variables move in relation to each other. Discussing in class, share your answers to the following questions.

### *Discussion Questions*

1. This unit discussed the Pearson correlation and how it measures the strength and direction of a linear relationship between two qualitative variables. Using your favorite search engine, find an article ([article example](#)) that includes an example of correlation. What type of correlation did the article show? What did you learn from the article? Include a link to the article and screen shots of the correlation.
2. **Along with your answer, review another classmate's answer. What did you learn from their article?**



# Discover Relationships Using Linear Regression - Unit

## Objectives

### Objectives

This unit discusses regression and examines how closely two numeric variables move in relation to each other. It also discusses how regression uses the best-fitting straight line through the points on a scatter plot to predict Y values from X values. At the end of this unit, you will be able to:

- Define linear regression.
- Differentiate between characteristics of correlation and linear regression.

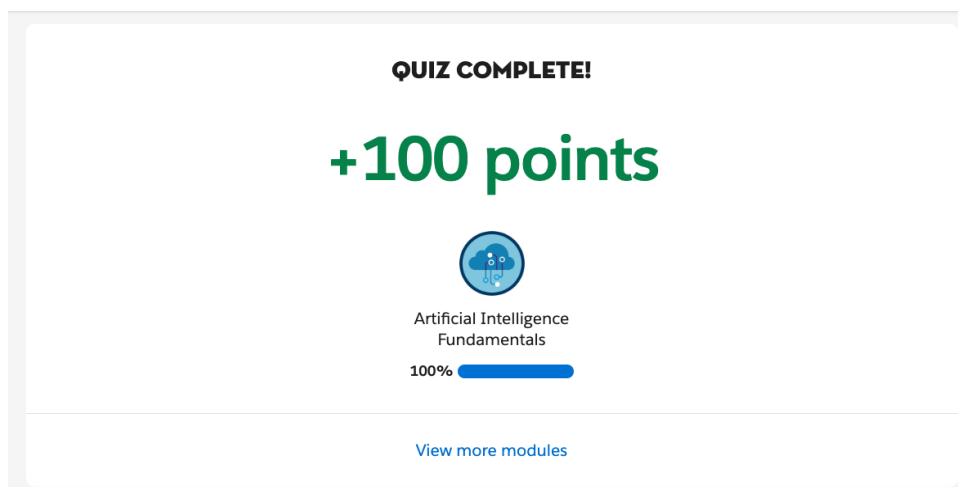
### Complete the Trailhead Unit

Complete the Trailhead unit on [Discover Relationships Using Linear Regression](#)

### Completion Assignment

At the end of the Trailhead unit, complete the challenge quiz. After completing the quiz, take a screenshot of your results and send it with your teacher. They will provide the method of sharing. Include a link to your Trailhead profile when you share. *Note - each module will be checked for point accuracy compared to the screenshot submitted.*

Screenshot example



## Additional Resources

Optional Reading: [Online Stats Education Book - Regression](#)

Optional Video: [Linear Regression in Tableau](#)



# Understand the Ethical Use of Technology - Unit Objectives

## Objectives

This unit discusses the ethical use of Technology. At the end of this unit, you will be able to:

- Define bias and fairness.
- Build a diverse team to avoid bias and gaps.
- Translate company values into processes.
- Describe the importance of understanding your customers for ethically aligned design.

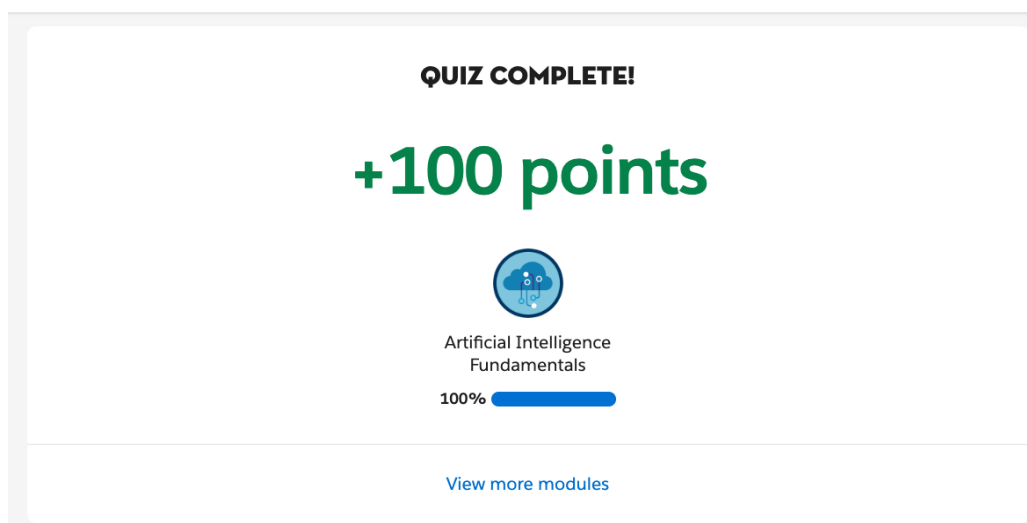
## Complete the Trailhead Unit

Complete the Trailhead unit on [Understand the Ethical Use of Technology](#)

## Completion Assignment

At the end of the Trailhead unit, complete the challenge quiz. After completing the quiz, take a screenshot of your results and send it with your teacher. They will provide the method of sharing. Include a link to your Trailhead profile when you share. *Note - each module will be checked for point accuracy compared to the screenshot submitted.*

Screenshot example



## Additional Resources

Optional Reading: [How to Build Ethics into AI](#)

Optional Video: [Infusing Ethics into Artificial Intelligence](#)

## Class Discussion

This unit talked about the ethical use of technology, understanding bias and fairness, and tips to address these issues. Discussing in class, share your answers to the following questions.

### *Discussion Questions*

1. What is the biggest takeaway from the unit? Is there an area or practice that stood out to you? If so, what was it?
2. **Along with your answer, review another classmate's answer. Provide your thoughts.**



# Recognize Bias in Artificial Intelligence - Unit Objectives

## Objectives

This unit discusses bias that can occur in our technology. It explains how bias occurs, the way it can enter, and how it can be prevented. At the end of this unit, you will be able to:

- Describe the role of data in developing an AI system.
- Understand the difference between what is ethical and what is legal.
- Identify types of bias that can enter an AI system.
- Find entry points for bias to enter an AI system.

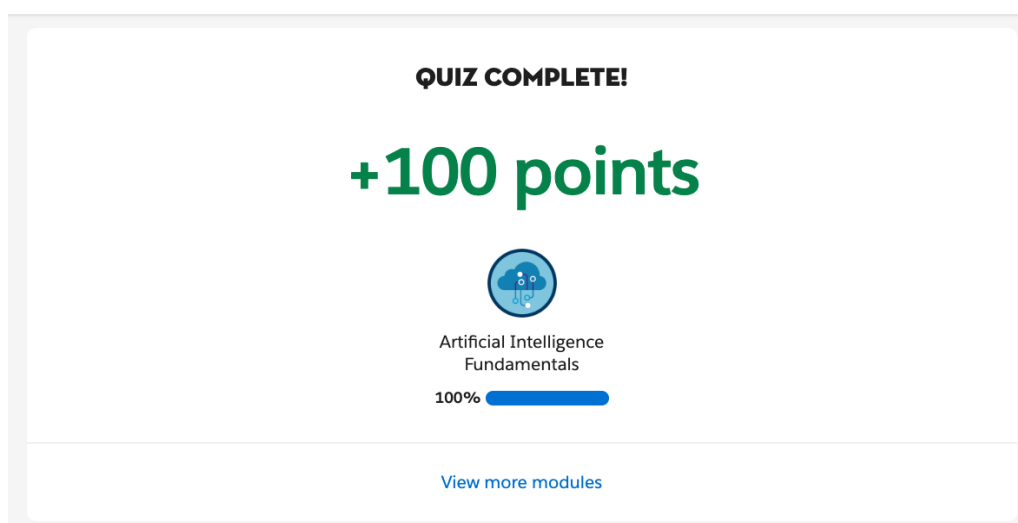
## Complete the Trailhead Unit

Complete the Trailhead unit on [Recognize Bias in Artificial Intelligence](#)

## Completion Assignment

At the end of the Trailhead unit, complete the challenge quiz. After completing the quiz, take a screenshot of your results and send it with your teacher. They will provide the method of sharing. Include a link to your Trailhead profile when you share. *Note - each module will be checked for point accuracy compared to the screenshot submitted.*

Screenshot example



## Additional Resources

Optional Reading: [AI is not just learning our biases; it is amplifying them](#)

Optional Video: [Human Centered AI](#)

## Class Discussion

This unit discusses how to recognize and prevent bias in the technology that we use. Discussing in class, share your answers to the following questions.

### *Discussion Questions*

1. This section discussed different types of bias that can occur in our technology. Using a search engine, identify an example of a company that is either addressing this bias or not. Include the type of bias that you identified.
2. **Along with your answer, review another classmate's answer. Do you agree or disagree with their findings?**



# Remove Bias from Your Data and Algorithms - Unit Objectives

## Objectives

This unit discusses tips on how to remove bias from your data. At the end of this unit, you will be able to:

- Identify factors that are excluded from or overrepresented in your dataset.
- Explain the benefit of holding premortems to reduce interaction bias.
- Set a plan to ensure new bias has not been introduced into your results.

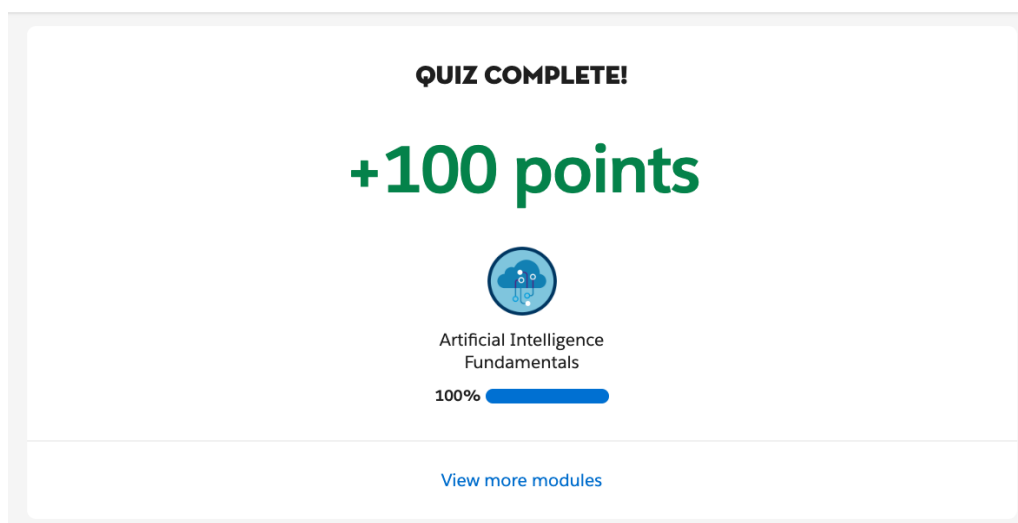
## Complete the Trailhead Unit

Complete the Trailhead unit on [Remove Bias from Your Data and Algorithms](#)

## Completion Assignment

At the end of the Trailhead unit, complete the challenge quiz. After completing the quiz, take a screenshot of your results and send it with your teacher. They will provide the method of sharing. Include a link to your Trailhead profile when you share. *Note - each module will be checked for point accuracy compared to the screenshot submitted.*

Screenshot example





## Additional Resources

Optional Reading: [How to Build Ethics in AI - Part Two](#)

Optional Podcast: [Build Ethics in to AI with Kathy Baker](#)

## Class Discussion

This unit discusses tips on how to remove bias from your data. Using the discussion below, share your answers in class to the following questions.

### *Discussion Questions*

1. This unit discussed how to identify excluded or overrepresented factors in your dataset. Using a search engine, locate a publicly available dataset. Looking at the data, can you identify any excluded or overrepresented factors? Share your findings in a post.
2. **Along with your answer, review another classmate's answer. Do you agree or disagree with their findings?**

