

Lesson 11: Natural Language Processing Project – Day 1

45 minutes

Overview

How will I use natural language processing techniques to analyze, manipulate, or generate text in a program?

For this project, students use the skills they have developed throughout this unit to create a program that uses natural language processing techniques to analyze, manipulate, and/or generate text. After brainstorming and planning, students develop their programs.

Agenda

Project Setup

Warm Up (10 minutes)

Natural Language Processing

Activity (30 minutes)

Brainstorm and Planning Development

Wrap Up (5 minutes)

Project Reflection Assessment (Optional)

Objectives

Students will be able to:

- Identify the preconditions and postconditions of methods
- Plan a program that uses natural language processing techniques to analyze, manipulate, or generate text
- Use decomposition strategies to identify the classes and methods needed for a project

Preparation

- Print copies of the Natural Language Processing Project Planning Guide (one for each student)
- Check the **Teacher's Lounge** for verified teachers on the CSA Forum to find additional strategies or resources shared by fellow teachers

Links

Heads Up! Please make a copy of any documents you plan to share with students.

For the students

- **Natural Language Processing Project Planning Guide** - Handout

Teaching Guide

Project Setup

The unit assessment project assesses proficiency in the knowledge and skills developed in this unit. It is completed in three class periods to plan and create the program, including choosing a topic or goal and implementing an algorithm. Students participate in planning and feedback activities to solve problems, reinforce software development practices and self-image as software engineers, and improve their programs. Lessons 11, 12, and 13 collectively include instructions for the three-day project.


If there is not enough time for the three-day project, a one-day option achieves the targeted learning objectives and goals. If using this option, refer to the **Natural Language Processing Project 1 Day Lesson Plan**, which includes a one-day version of the **Natural Language Processing Project Planning Guide**. Direct students to develop their program on Lesson 13 to submit their project. While the one-day option covers the learning objectives and goals, it shortens planning and reflection time. Consider this tradeoff when deciding which version to use.


Warm Up (10 minutes)

Natural Language Processing

Remarks

We have seen some examples of programs that use natural language processing techniques throughout the unit. Programs and devices often use natural language processing to interact with a user to answer questions, find information, or execute commands.

 **Do This:** Show examples of different types of programs and devices that use natural language processing.

 **Discuss:** *What does this make you wonder about how you could create a program that uses natural language processing to analyze, manipulate, or generate text?*

Discussion Goal: Students share ideas about programs they might make using natural language processing, such as chatbots, story generators, or social media analyzers.


Activity (30 minutes)


Brainstorm and Planning (15 minutes)

Remarks

Over the next few days, you will be developing a program that uses natural language processing techniques to analyze, manipulate, or generate text.

 **Distribute:** Give each student a copy of the Natural Language Processing Project Planning Guide.

 **Do This:** As a class, read through the Project Description on the first page of the Natural Language Processing Project Planning Guide and review the rubric on the last page.


 **Discuss:** Click through the animated slide to display the prompts. Use the Hold That Thought strategy to discuss the prompts.

- *What do you notice about the project requirements and rubric?*
- *What does success look like for this project?*
- *What barriers do you anticipate to achieving success on this project?*


Discussion Goal: Students share what they notice about the project requirements and rubric and identify the components to implement in their program. Students share any questions they have about the project.

Remarks

Before you begin writing your program, you first need to decide how you will use natural language processing techniques in your program. You will need to plan how you will organize your program and interact with a user, and identify the algorithms you need to develop to analyze text.

 **Do This:** Direct students to brainstorm the program they will create, create UML diagrams for their classes, and identify the algorithms they need to develop on the Natural Language Processing Project Planning Guide.

Development (15 minutes)

 **Do This:** Direct students to Level 1 on Code Studio to develop their Natural Language Processing Good Project.

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Natural Language Processing Project


 **Do This:** Play the music clip to cue committing their code and saving their classes to the Backpack.

Wrap Up (5 minutes)

Project Reflection

Remarks

You made a lot of progress on your project today! Let's take a moment to reflect on what you have accomplished so far and what you need to focus on next.

 **Do This:** Direct students to respond to the Day 1 Reflection prompt on the Natural Language Processing Project Planning Guide.

Assessment (Optional)

Natural Language Processing Project Planning Guide: You can use the Day 1 Reflection as an optional completion assessment.



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