

OzoBlockly Editor—**LLM Bot with Camera Challenge**—Teacher’s Guide

Grades 6 – 12

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If you haven’t already done so, you should read the *LLM Bot with Camera Challenge Student Guide*. Doing so will familiarize you with the challenge details expected from the student. In this Teacher’s Guide, you will study an Ozobot Editor solution to the challenge as well as the CSTA (Computer Science Teachers Association) standards associated with the challenge.

Comment on the CAPTCHA “Real Person Check”

Have you ever been asked while online to respond to a collection of images by indicating how many of them contain a car? This is referred to as CAPTCHA. You may want to take a few minutes to discuss CAPTCHA with your students, as it relates to this lesson. CAPTCHA is a technology that has been used as an image-based real person check. It is a very widely used security measure that is in fact quite complex. When first introduced, it was effective at distinguishing humans from bots. It is now far less reliable because of recent advances in AI technology.

Ozobot Editor Challenge Solution

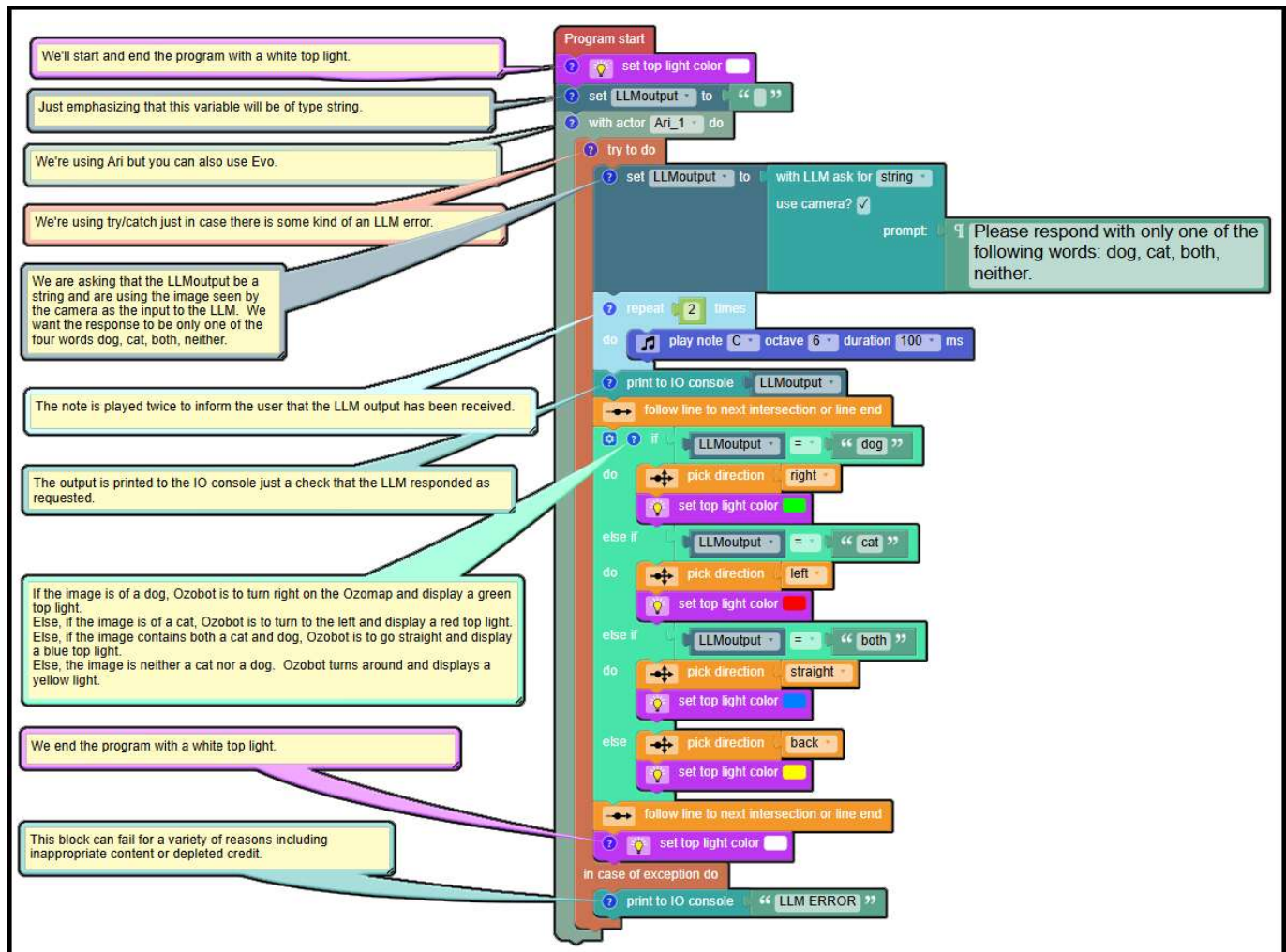
Deciding the best wording for the camera prompt required some trial and error. An initial thought for a prompt was something like “Do you see a dog or a cat?” Responses tended to be lengthy and detailed. The prompt that proved best is: “Please respond with only one of the following words: dog, cat, both, neither.” With this prompt, the response was consistently one of the four requested words. This prompt is captured in a string and then analyzed in the program solution to the challenge.

If you decide to turn your students loose on this challenge with just the contents of the *Student Guide* available to them, you might want to suggest that they experiment with a variety of possible prompts, investigating the responses produced by each of the prompts. Who knows—some of your students may come up with a better challenge solution than the one provided here. All the power to them!

On the following page of this *Teacher’s Guide*, the author’s solution to the challenge is presented along with comments highlighting many of the blocks in the program. You could use this and do a code review with your students. Then let them use printed copies of the Ozomap and animal images while working with the program. These are all found in an accompanying pdf files.

Program Blocks with Comments

The share code for the *LLM Bot with Camera Challenge* program is **kpkwmab**. The figure below shows the entire program with detailed comments appropriate for a code review with your students.



Programming Concepts Involved with Coding the Program

- The use of variables that support self-documentation
- The use of loops to handle tasks that must be repeated several times
- The use of conditionals, as needed, to control the flow of logic
- Nesting of structures
- The use of LLM (Large Language Models)

Applicable CSTA (Computer Science Teachers Association) Standards

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| 2-CS-02 | Design projects that combine hardware and software components to collect and exchange data. |
| 2-AP-11 | Create clearly named variables that represent different data types and perform operations on their values. |
| 2-AP-12 | Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals. |
| 2-AP-13 | Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs. |
| 2-AP-19 | Document programs in order to make them easier to follow, test, and debug. |
| 3A-DA-11 | Create interactive data visualizations using software tools to help others better understand real-world phenomena. |
| 3A-AP-17 | Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects. |
| 3B-CS-02 | Illustrate ways computing systems implement logic, input, and output through hardware components. |
| 3B-AP-08 | Describe how artificial intelligence drives many software and physical systems. |
| 3B-AP-14 | Construct solutions to problems using student-created components, such as procedures, modules and/or objects. |