

Inventory Management with an LLM Bot and Camera

Ozobot Editor Challenge—Student Guide

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As is the case with a cut gem, there are many facets to inventory management. Camera-based AI can significantly enhance inventory management through a variety of techniques including, but not limited to:

- Assessing the condition of items through vision analysis
- Detection of suspicious activities including unauthorized removal of items from a shelf
- Real-time updating of inventory data, reducing stockouts or overstocking
- Continuous monitoring of inventory shelves, detecting and counting items.

The latter technique is the subject of this lesson. You will be taking pictures, using the Ozobot Editor LLM Bot and camera, of two different items on a warehouse shelf—item A and item B. Figure 1 shows an example of a typical shelf with these items. The horizontal gray bar represents the shelf, and the letters A and B represent the items. In the example of Figure 1, there are 3 items A and 4 items B.



Figure 1

The inventory manager of the warehouse wants the minimum inventory for each of these items to be 5. *He needs to know how many of each of these two items should be procured in order to meet this inventory requirement.*

You can clearly see that 2 items A and 1 item B are needed. However, the LLM Bot and camera need to determine this *from a picture of the shelf with its items*. And to make things more interesting, you are going to have Ozobot Ari or Evo move to a location on a grid that specifies how many items A and how many items B need to be procured to meet the minimum inventory requirement.

The grid will be provided by your teacher. Figure 2 shows Ari at the location in the grid that answers the question posed by the example shelf of Figure 1. You will note in Figure 2 that upon stopping at the location $x = 1$ item B and $y = 2$ items A, Ari displays an alert message that reads “Order 2 itemA

and 1 itemB.” If Evo had been used instead, that alert message would have appeared in the *Terminal* in the bottom-right side of the Ozobot Editor’s screen.

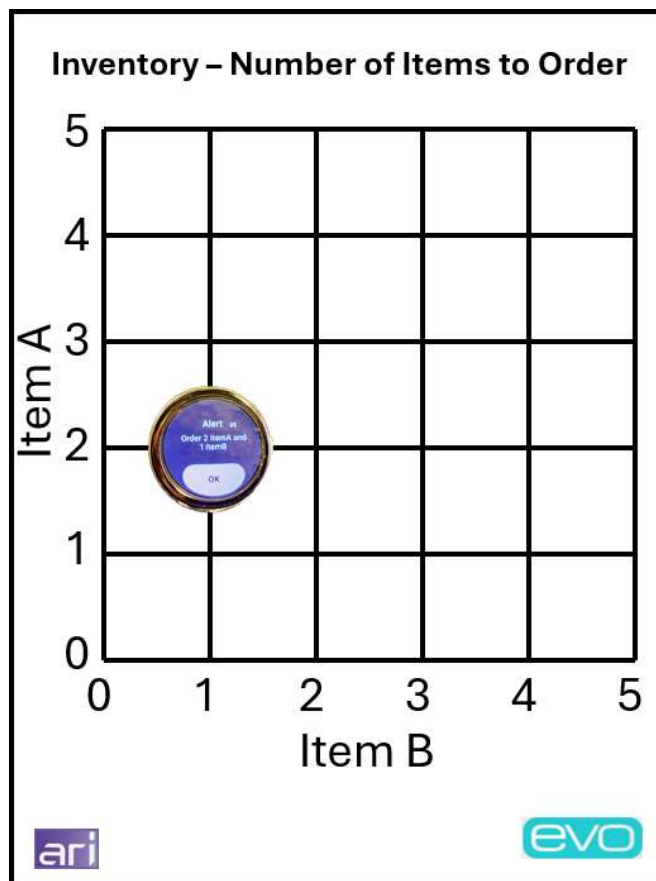


Figure 2

Be sure to use the Open AI (mini) LLM when working with this challenge. While this challenge was being prepared, this LLM out-performed the other LLMs in terms of accuracy of results. This LLM also uses up LLM credits much more slowly.

Your program should work well on the example shelf images provided by your teacher. The program should work without changing the prompt in any way from image to image.

You’re on your own now to design the program in the Ozobot Editor. Good luck and enjoy this challenge!