

Assistive Device Student Guide

Scenario and Criteria for the Assistive Device

Your neighbor has recently had an accident and experienced significant hearing loss. In the event of a fire, he or she may not be able to hear the alarm system in the building. Use your Sphero robot and create a program that will provide a visual signal (e.g., using color) or a movement-based signal (e.g., rolling or jumping) to your neighbor that there is a problem in the building.

Your design will need to communicate information about how serious the problem is, and what kind of action he or she should take.



Stage 1

Smoke has been detected on a lower level of the building, but the level of risk is low. Your neighbor should use the stairs to calmly exit the building, just to be safe. He or she should not use the elevator.



Stage 2

Smoke and heat have been detected in the building. Your neighbor should show extra caution (e.g., check the handle on his or her door to see if it is hot) before exiting the building using the stairs.



Stage 3

Smoke and heat have been detected in the building and the sprinklers have been activated in the hallways. (Don't worry...the Sphero is waterproof!) Your neighbor should move very quickly and use the external fire escape to exit the building.

Design Criteria:

Your design will need to:

1. Alert your neighbor that there is an emergency.
2. Indicate the stage of the emergency using visual or motion-based signals or robot behavior.
3. The robot's signal or behavior should move from one stage of alarm to the next after a fixed period of time (e.g., after 30 seconds).
4. Your neighbor should easily understand what he or she needs to do at each stage.

