

AMERICAN FIDELITY
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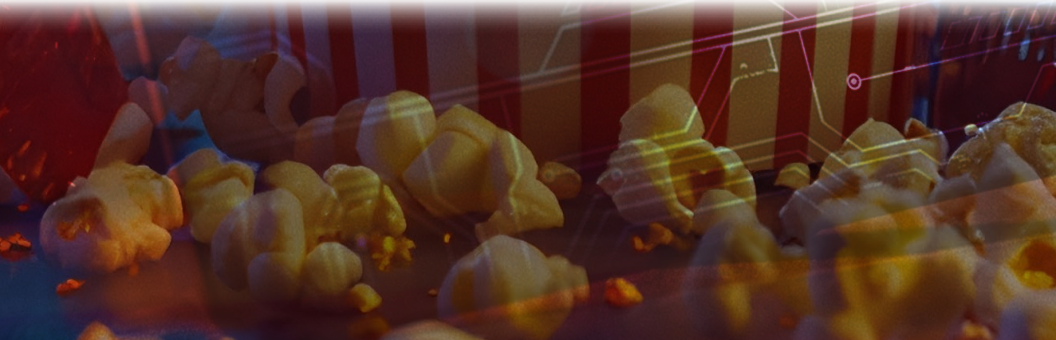
spark

CODING WITH ARDUINO

OEF Software Engineering Competition

lights, camera, action!



FOREWORD

This contest is limited to four entries per school. Working in teams is encouraged but individual participants are allowed. The maximum team size is four participants.

Each school **MUST** complete a Fair Registration/Competition Entry Form and return it to the Oklahoma Engineering Foundation (OEF) office by Jan. 15, 2027. Prizes will be awarded to winning entries from registered schools (entries from unregistered schools will **NOT** be eligible for prizes).

Participants are highly encouraged to register as soon as possible to allow for the shipping of the Arduino kit and to learn the basics of how to program it.

DESIGN STATEMENT & OBJECTIVE

Before the competition, use the provided Arduino kit to create a **MOVIE THEMED**, unique, automated display using visual and audio components triggered via a physical input. The overall objective is to create an entertaining automated show. For example, a Star Wars themed light and sound show that starts by pressing a button. You may use any programming language allowed by the controller. Code should be well documented, readable and bug free.

MATERIALS AND RESTRICTIONS

American Fidelity will provide an Arduino starter kit to be used for this competition. A materials allowance of $50 will also be provided. The total project budget (excluding the materials provided) cannot exceed $200.

REQUIREMENTS

- Max dimensions of the completed display are 2.5ft x 2.5ft x 2.5ft.
- There needs to be an interactive trigger to start the display.
- There needs to be the ability to pause the display. Pause will stop the show and pushing start will continue from where the display was paused.

- There needs to be the ability to stop the display. Stop will end the show and pushing start will re-start the show from the beginning.
- There needs to be a minimum of one motion component, one light component and one sound component in the display. All motion, sound and light must be automated by the controller.
- The show must run a minimum of one minute and a maximum of five minutes.
- The model creation and the programming must be completed by members of the team.
- **Each team is required to list their school name, teacher name, team name and team members at the top of their source code.**
- To be eligible for prizes each team MUST upload their code and supporting documentation to the following DropBox repository by end of day Monday, Feb. 22. Please create a new folder in DropBox for your code and documentation. Name the folder with your SchoolName and TeamName. For example: 'Acme Middle School – Our Original Project Team'
  Competition DropBox URL: https://bit.ly/4cF9Wd
  After clicking this link, click the button 'Join Folder'. You will then be prompted to create a DropBox account. Once you login, you will be able to create a folder to upload your code and documentation.
- Supporting documentation should include but is not limited to:
  - » A design document explaining the logical operation and physical construction of your display
  - » Parts list including source and cost of materials used

JUDGING AND SCORING

1. Prior to the competition, each display will be inspected by the judges to determine compliance with the contest requirements and specifications.
2. Any project that does not meet the above requirements will be ineligible for prizes.
3. Each team is responsible for the security of its entry. No time will be spent looking for or waiting for teams that are not present when it is their turn. Teams not present will go to the end of the queue if time permits.
4. Decisions of the judges are FINAL.
5. Each team is responsible for providing batteries, supplies and tools as required. This competition will be judged on the following criteria:

SCORING RUBRIC	Weight	Score (1-10)
CREATIVITY		
General Creativity	10%	
Complexity of Show	10%	
QUALITY OF FINISHED PRODUCT		
Quality (stability, hidden electronics, finishes)	10%	
Uploaded Documentation	10%	
CODE QUALITY		
Well Documented (code comments)	10%	
Code Quality – Readability (well named variables and functions, organized), Compiles, Edge case consideration (what happens if user hits stop and pause at same time?)	50%	

PRIZES AND DISTRIBUTION

Contest winners will be announced on the Engineering Fair web page at **https://www.oef.org**. Participants who win prizes will be notified through their teacher of record via email. First, second and third place winners will receive awards. In the event of a tie, prizes will be equally distributed between winning entries.

INSTRUCTIONAL MATERIAL

Arduino Tutorial: **https://download.elegoo.com/?t=UNO_R3_Project_Super_Starter_Kit**

GitHub Tutorial: **https://docs.github.com/en/pull-requests/collaborating-with-pull-requests/proposing-changes-to-your-work-with-pull-requests/creating-and-deleting-branches-within-your-repository**