



2023 NJ TSA MIDDLE SCHOOL DESIGN PROBLEMS

Coding

Pet Rescue Startup

New Jersey residents love their pets but unfortunately there are many dogs and cats without good homes. New pet rescue organizations have many things to do, in addition to finding a facility and a volunteer staff.

Conduct research to determine how successful pet rescue organizations operate and brainstorm to identify ideas that will help a new pet rescue organization get off to a good start.

Create a model app that can be used to guide the work of a new pet rescue organization with photos of 6 pets. Note: the photos you include in your app should be of family pets that already have homes. For each pet include 1-2 sentences of additional information. Also, as part of your app, include at least 5 links for activities that will assist the organization, such as making a cash donation, donating food, fostering a pet, adopting a pet, or, volunteering to help.

Keep in mind, that the goal is to show the startup, a model app with examples of how they can promote their own organization.

- **PLATFORM:** The app can be on any platform.
- **PROGRAMMING LANGUAGE:** Use any programming language.
- **FUNCTIONALITY:** The app must have some degree of functionality.
- **CONTENT SUITABILITY:** All content must be in good taste and observe all school rules.
- **ORIGINALITY:** The app must be original in design and content.
- **VIDEO:** Create a 1-3 minute video that contains the following information:
 - First name of each team member
 - The name of the app
 - Clearly explain the purpose of the app
 - The tools and coding language used to create the app
 - Show how the app works
- **SUBMIT THE VIDEO** through YouTube
- **IN ADDITION** submit a document that includes the following information:
 - Your ID number(s)
 - Title of the app
 - Explain the app in ONE sentence.
 - What is your app trying to accomplish? (200 characters max.)
 - What technical /coding difficulty did you face in programming your app, and how did you address this technical challenge? (500 characters max.)
 - With what you've learned, what improvements would you make to version 2.0 of your app? (500 characters max.)

EVALUATION

- **VIDEO** (50 points)
 - The purpose of the app is explained (10 points)
 - Tools and coding language are explained (10 points)
 - At least 3 features of the app are demonstrated and explained (30 points)

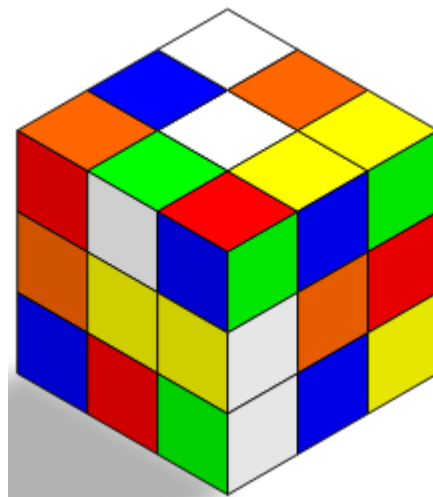
- **DOCUMENTATION** (50 points)
 - Written description of the app's purpose (10 points)
 - Technical difficulty and solution are explained (20 points)
 - Improvements that should be included in version 2.0 are explained (20 points)

SUBMISSION INSTRUCTIONS

- Follow directions in the NJTSA Supplement to submit your entry.

Computer-Aided Design (CAD) Foundations

Use CAD to produce isometric and 3-view (orthographic) drawings of the object (cube) illustrated below. Choose an appropriate scale so that you can print the drawings on a single page. Include a border, title block with the event name (CAD Foundations), ID number and drawing scale. Use shading and color to accurately reproduce the 3-view and isometric drawings. Include realistic dimensions. Follow directions in the NJTSA Supplement to submit your drawing.



System Control Technology

Design and build a computer-controlled system to demonstrate one task needed in a metal recycling facility. Your model should demonstrate the ability to separate ferrous and non-ferrous metals.

Your model working system should be no larger than 2' x 2'. Follow directions in the NJ Supplement to submit your entry.

Technical Design

The sale of Sports Logo merchandise is big business for teams, and for the online and retail locations of sporting goods stores. Each season, thousands of fans look for new items to add to their collections. New items with practical value are always in particular demand.

Your challenge is to design a gift box that includes a set of 3 desk accessories that will appeal to a fan of a pro or college team of your choice. Possible items include a desk lamp, pen/pencil holder, clock, tape dispenser, mail holder, etc. Think creatively about the design of each item and display of the logo.

Prepare a portfolio that includes each step of the technical design process loop. You do not have to build models of the accessories and gift box, but the design of the accessories and gift box must be explained through text and hand-drawn sketches, as explained in the Regulations for this event in the Middle School Competitive Events Guide.

Follow directions in the NJ Supplement to submit your entry.