2024 NJ TSA MIDDLE SCHOOL DESIGN PROBLEMS

Coding

NJ Tourist Promoter

New Jersey, The Garden State, has often received a bad reputation as a state with nothing to do, but that couldn't be further from the truth. With miles of beautiful shoreline, lush tree-filled parks, and some of the best dining around, New Jersey has a lot to offer.

To promote New Jersey as a state to visit, conduct research to determine New Jersey's most popular tourist destinations and design an app to entice prospective vacationers to come visit our beautiful "Garden State."

Brainstorm to identify ideas that will help future tourists gain knowledge about New Jersey and its many sites.

Create a model app that can be used to guide tourists to many popular sites as well as off the beaten path sites. Provide photos of 5 destinations. For each destination, include 2-4 sentences of additional information to describe the site. Also, as part of your app, include at least 3 links for activities that will assist tourists, such as but not limited to: local places to stay, dine, history, and landmarks.

Keep in mind that the goal is to market New Jersey as a premier tourist destination to visit for day trips or extended vacations.

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 clearly explains the following information:
- First name of each team member
- The name of the app
- The purpose of the app
- The tools and coding language used to create the app
- How the app works

DOCUMENTATION: 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
    <u>VIDEO</u> (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)

    <u>DOCUMENTATION</u> (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
The PDF of the documentation, and URL of the video, must be finished, submitted, and accessible via the Internet by 11:59pm on March 27, 2024. Submission procedures for NJ TSA's online system will be shared with advisors.

Computer-Aided Design (CAD) Foundations

Lego 2

Use CAD to produce an isometric and a 3-view (orthographic) drawing of the object (Legos) as illustrated below.
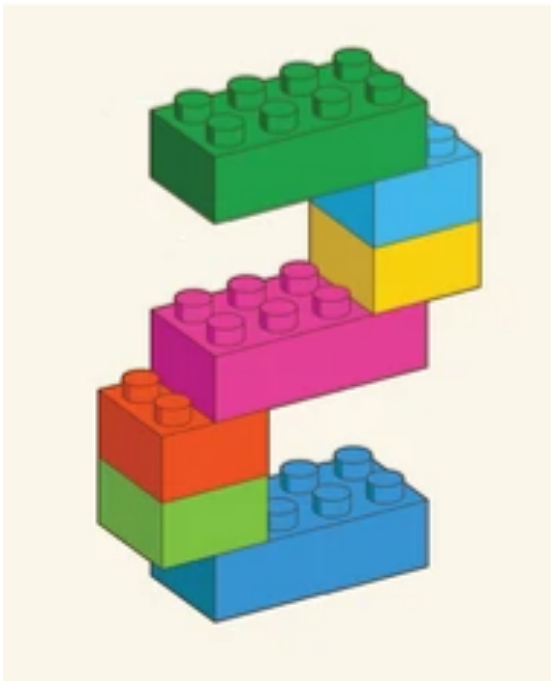
This image uses... 4- 2x2 Lego Bricks 3- 2x4 Lego Bricks

Choose an appropriate scale so that you can print the drawings on a single Arch A (8.5x11) sheet. Include a border and title block with the event name (CAD Foundations),Student ID number, and drawing scale.

Use shading and color to accurately reproduce the 3-view and isometric drawings. Include realistic dimensions true to size of the object being drawn.

Follow directions in the NJTSA Supplement to submit your drawing.

System Control Technology

Chicken organizer

A well-known fast food chicken restaurant is known for its delicious chicken strips and nuggets, and also it's long lines. Some potential customers are turned away from ordering because of having to wait in the long lines. The back up with the lines tends to be from a problem with getting chicken nuggets and strips orders out quickly and accurately. When the nuggets and strips are physically counted by the staff, there have been mistakes which makes for longer transactions to customers. There have been strips and nuggets mixed together in orders. The management would like to create a faster system of delivering an 8-piece nugget and a 4-piece strip order to their customers with efficiency and accuracy.

Task: Design and build a computer-controlled system that can separate chicken nuggets into at least two 8-piece containers

Your model system will need to demonstrate that it can separate 16 chicken nuggets and place them in two separate containers. Model the nuggets (3D print, wood, etc) to correct size. (Do not use actual chicken for the demonstration.)

Chicken Nugget size: 1"x 2" x 1⁄2"
Your model working system should be no larger than 2' x 2'.

Follow directions in the NJ TSA Supplement to submit your entry.