

# Computer Science Competitive Events



## MIDDLE SCHOOL LEVEL

Below are summaries of the middle school level national Technology Student Association (TSA) competitive events. Detailed specifications regarding each event can be found in the competitive events guide (available online after TSA affiliation is complete).

### Coding

Participants will demonstrate their knowledge of computer science and coding by taking a written test. Semifinalists will further demonstrate their programming knowledge by participating in a programming challenge. Specific detail about the on-site challenge and be found in the Competitions & Programs section of the TSA website, on the [Themes and Problems](#) page.

### Cybersecurity Foundations

Participants complete a Cybersecurity exam covering general cybersecurity vocabulary and knowledge needed to execute tasks commonly performed by all levels of cybersecurity professionals. Using digital presentation software, participants prepare a presentation, addressing a specific cybersecurity issue, to a group of hypothetical corporate board members (i.e., judges). Participants must explain the importance of cybersecurity and why it is essential that the organization invest in cybersecurity measures. The problem statement is posted in the Competitions & Programs section of the TSA website, on the [Themes and Problems](#) page. Semifinalists exhibit proficiency by recommending security measures to address various scenarios based on factors such as efficiency, feasibility, and ethical impacts.

### Data Science and Analytics

Participants conduct research on an annual theme or topic, collect data, and document their research in a supporting portfolio and a display. Participants implement a variety of methods to find connections between data and gain insightful knowledge about a particular issue. Using analytics, participants assess collected data to make predictions and informed decisions. Semifinalist teams report for a timed, on-site challenge in which they must review specific data sets, provide insights, make predictions, and present their findings.

### Foundations of Information Technology

Participants complete an examination covering essential IT skills and knowledge needed to perform tasks commonly performed by all levels of IT professionals. Semifinalists exhibit proficiency and demonstrate creative problem solving by applying techniques to troubleshoot a timed, industry-related challenge on-site.

### Microcontroller Design

Participants develop a working digital device (product) with real-world applications. Through a product demonstration and documentation, the team demonstrates knowledge of microcontroller programming, simple circuitry, and product design and marketing. The project should have educational and social value, and conform to the theme for the year, which is posted in the Competitions & Programs section of the TSA website, on the [Themes and Problems](#) page. Semifinalists demonstrate and promote their work in a presentation.

### System Control Technology

Participants compete in a timed, on-site challenge to develop a computer-controlled model-solution to a problem, typically one from an industrial setting. Teams analyze the problem, build a computer-controlled mechanical model, program the model, explain the program and mechanical features of the model-solution, and leave instructions for evaluators to operate the device.

### Video Game Design

Participants develop, build, and launch an E-rated, online game that focuses on the subject of their choice. The game should be interesting, exciting, visually appealing, and intellectually challenging. Semifinalists are announced on-site at the annual conference. Semifinalist teams participate in an on-site interview to demonstrate the knowledge and expertise they gained during the development of the game.

### Website Design

Participants design, build, and launch a website that features the team's ability to incorporate the elements of website design, graphic layout, and proper coding techniques. Semifinalists are announced on-site at the annual conference. Semifinalists participate in an on-site interview, with an emphasis on web design as it pertains to their solution, to demonstrate the knowledge and expertise gained during the development stages. The design brief can be found in the Competitions & Programs section of the TSA website, on the [Themes and Problems](#) page.