2023-24 Competitive Events Guidelines

Foundations of Computer Science

Foundations of Computer Science provides members with the opportunity to demonstrate knowledge around introductory competencies in computer science and programming. This competitive event consists of an objective test.

Event Overview

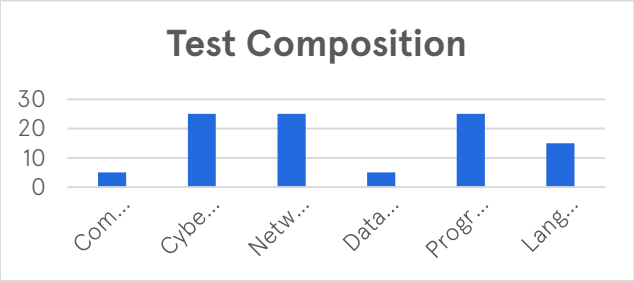
Division: Collegiate
Event Type: Individual
Event Category: Objective Test, 100-multiple choice questions (breakdown of question by competencies below)
Objective Test Time: *50 minutes*
NACE Connections: Career & Self-Development, Technology

Equipment Competitor Must Provide: Pencil, Computer
Equipment FBLA Provides: One piece of scratch paper per competitor

Only for members who have had no more than six credit hours on a semester schedule, or the equivalent of quarter hours, of computer science instruction at the collegiate level by May 1 of the current year.

Competencies

A. Computer Literacy
B. Cyber Security
C. Networking Concepts
D. Databases
E. Programming Concepts
F. Language



State

Check with your State Leader for state-specific competition information.

National

Policy and Procedures Manual

- Competitors should be familiar with the Competitive Events Policy & Procedures Manual, found on the Competitive Events page on www.fbla.org.

Eligibility

- FBLA membership dues are paid by 11:59 pm Eastern Time on April 15th of the current program year.
- Members must be registered for the NLC and pay the national conference registration fee in order to participate in competitive events.
- Members must stay in an official FBLA hotel to be eligible to compete.
- Each state may submit four entries per event.
- Each member can compete in up to two individual/team events and one chapter event (Community Service Project or State of Chapter Presentation).

- If competitors are late for an objective test, they will be allowed to compete until such time that results are finalized, or the accommodation would impact the fairness and integrity of the event. Competitive event schedules cannot be changed. Competitive events start in the morning before the Opening Session of the NLC.
- Picture identification (physical or digital driver's license, passport, state-issued identification, or school-issued identification) is required when checking in for competitive events.

Recognition

- The number of competitors will determine the number of winners. The maximum number of winners for each competitive event is 10.

Event Administration

- This event is an objective test administered online at the NLC.
- No reference or study materials may be brought to the testing site.
- No calculators may be brought into the testing site; online calculators will be provided through the testing software.

Tie Breaker

- Ties are broken by comparing the correct number of answers to 10 pre-determined questions on the test. If a tie remains, answers to 20 pre-determined questions on the test will be reviewed to determine the winner. If a tie remains, the competitor who completed the test in a shorter amount of time will place higher.

Americans with Disabilities Act (ADA)

- FBLA meets the criteria specified in the Americans with Disabilities Act for all competitors with accommodations submitted through the conference registration system by the registration deadline.

Penalty Points

- Competitors may be disqualified if they violate the Competitive Event Guidelines or the Honor Code.
- Five points are deducted if competitors do not follow the Dress Code or are late to the testing site.

Electronic Devices

- All electronic devices such as cell phones and smart watches must be turned off before competition begins.

Study Guide: Competencies and Tasks

A. Computer Literacy
   1. Identify ways in which technology and computers impact individuals and society
   2. Compare and contrast PC hardware and software systems as an informed consumer
   3. Use and define common technology terminology

4. Identify computer hardware components and briefly explain their function
5. Knowledge of computer software/hardware installations and configurations
6. Use a computer operating system to manage files, folders and drives
7. Search the internet for personal, academic and business use
8. Use various communication tools for personal, academic and business purposes
9. Use writing, financial/statistical, presentation and data collecting/organization tools for academic research and communication

B. Cyber Security
   1. Explain concepts such as denial of service, hacking/cracking, intrusion, and intellectual property.
   2. Assess security threats and develop plans to address.
   3. Assess system and file integrity.
   4. Identify types of intrusion detection and recommend tools to protect against each type.
   5. Define public key infrastructure.
   6. Describe authentication process to network devices for users.
   7. Describe risk-mitigation techniques.
   8. Establish and implement controls for physical site access and security.

C. Networking Concepts
   1. Describe the principles of data transmission.
   2. Explain and convert number systems (e.g., binary, decimal, and hexadecimal).
   3. Identify types of networks and their features and applications.
   4. Interpret basic networking terminology and concepts.
   5. Identify various network operating systems.

D. Databases
   1. Develop a relational database with tables, records, fields, primary and foreign keys.
   2. Create queries, forms, reports, and modules for a relational database.

E. Programming Concepts
   1. Understand and utilize maps, sets, stacks, queues, arrays, trees/heaps.
   2. Identify basic sorting algorithms.
   3. Explain how basic sorting algorithms function.
   4. Understanding the principles and usages of recursion.
   5. Understand the principles that underlie breadth and depth first searches.
   6. Be able to optimize algorithms for speed and memory performance.
   7. Develop the use of programming tools such as flowcharts, pseudocode, decision (truth) tables, and desk-checking.
   8. Differentiate between a variable, a constant and a complier macro.
   9. Demonstrate knowledge of the conventions/restrictions for naming variables.
   10. Understand the difference between statically and dynamically typed languages.
   11. Differentiate passing variable values by reference from by value.

F. Language
   1. Demonstrate an understanding of the program development process and algorithm development.

2. Implement programs utilizing analysis and design, testing, coding standards and documentation.
3. Write programs with correct syntax.
4. Write programs with input/output using a variety of data types.
5. Demonstrate the use of different data types.
6. Show how operators work with different data types.
7. Identify how data is represented in the system.
8. Use logical expressions in a program.
9. Show how scope/lifetime rules affect code.
10. Write programs with multiple decisions and loops.
11. Explain program flow.
12. Use both system-defined and programmer-defined functions/methods with value and reference parameters in a program.
13. Group different data types together in a structure, class or equivalent.
14. User pointers/references in a program.
15. Write a program with arrays.
16. Demonstrate understanding and use of recursion in a program.
17. Demonstrate an understanding of object-oriented methodology in program design.
18. Create classes to be used as an abstract data type for a program.
19. Implement inheritance and polymorphism in a program.
20. Demonstrate understanding and use of the process of data abstraction/encapsulation.
21. Construct programs to utilize class templates/generics.
22. Apply function/method overloading, recursion and operator overloading in a program.
23. Use multiple data structures in code.
24. Use appropriate searches and sorting algorithms for multiple data structures.
25. Design and develop large-scale programs using classes and data structures.
26. Write properly documented programs following a set of coding standards.