CODING

OVERVIEW

Participants respond to an annual coding-related design challenge by developing a software program that will accurately address an onsite problem in a specified, limited amount of time. Specific elements to be used, such as the programming language, operating system, or application programming interface (API), will be released onsite. Every effort will be made to support a wide variety of programming languages, and the specific languages that will be allowed each year will be posted on the TSA website under Competitions/Themes and Problems. Completed solutions will be objectively measured to determine the best and most effective solution for the stated problem.

ELIGIBILITY

One (1) individual, or one (1) team of two (2) members per chapter may participate; one (1) entry per individual or team.

TIME LIMITS

1. The allotted time for the design and construction of the solution is two (2) hours.
2. Semifinalists will participate in a LEAP interview that will last a maximum of five (5) minutes.

LEAP

An individual or team LEAP Report is required for this event and must be submitted at event check-in (see LEAP Program).

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

PRELIMINARY ROUND

1. Participants report to the event area at the time and place stated in the conference program. Participants must submit a LEAP Report prior to receiving the onsite problem.
2. The problem, evaluation criteria, and materials are distributed.

3. Participants design and present a solution to the problem.
4. Each solution is tested and presented to the judges as soon as possible after the coding phase is completed.
5. Judges independently assess the entries.
6. A list of twelve (12) semifinalists (in random order) will be posted.

SEMIFINAL ROUND

1. Semifinalists will report at the time and place stated in the conference program to sign up for, and participate in, a semifinalist LEAP interview.
2. The top ten (10) finalists will be announced at the awards ceremony.

REGULATIONS

PRELIMINARY ROUND

A. Participants in this event should concentrate their efforts prior to the competition on researching, understanding, and practicing all aspects of the coding process, software development, operating systems, programming languages, etc.
B. The specific languages permitted in the onsite competition will be posted each year on the TSA website under Competitions/Themes and Problems.
C. All work must be completed in the event area during the time specified for the event.
D. Individual participants, or each team, must bring
   1. one (1) laptop or other device (ex: Microsoft Surface Pro), capable of networking via Wi-Fi, and running solely on battery power for up to two (2) consecutive hours
   2. one (1) spare battery
   3. pencils and paper
E. External keyboards, monitors, and mice are not permitted.
F. Printed reference materials are not allowed.
G. Participants will NOT have access to the Internet during the event.

H. Participants do NOT have access to electrical power/outlets during the event.

I. Participants must have all software development tools needed for the competition downloaded and accessible on their laptop or other device.

J. Participants may only use the permissible programming language's standard library during the onsite competition. No third-party libraries may be used.

K. Participants will be presented with a series of coding problems that must be completed onsite at the conference.

L. All solutions must be tested, demonstrated, and presented by participants in front of the judges exclusively through electronic submission and evaluation.

SEMIFINAL ROUND

A. The LEAP Report

1. Participants document the leadership skills they have developed and demonstrated while working on this event, and on a non-competitive event leadership experience.

2. Participants will respond to questions about the content of the LEAP Report as part of the LEAP interview.

3. Specific LEAP Report regulations can be found in the LEAP Program section of this guide and on the TSA website.

EVALUATION

PRELIMINARY ROUND

1. The successful completion of the problems and the time in which it takes individuals or teams to complete all the challenges.

2. A finite measure will be defined in the problem and will be used to determine the best solution.

   a. Second-best attempts or other objective criteria are used to break ties when possible.

   b. Only as a last resort will subjective criteria, such as originality, be used to evaluate solutions.

SEMIFINAL ROUND

The content and quality of the LEAP Report and interview will be evaluated.

Refer to the official rating form for more information.

RESOURCES

The USA Computing Olympiad website and the ACM-ICPC International website are helpful resources for the Coding event. Additional resources that can be used to prepare for the event are listed below:

icpc.baylor.edu/compete/preparation

www.codechef.com

www.usaco.org/index.php?page=contests

blog.hackerearth.com/2013/09/competitive-programming-getting-started_11.html

www.quora.com/What-is-the-best-strategy-to-improve-my-skills-in-competitive-programming-in-2-3-months

STEM INTEGRATION

Depending upon the subject of the problem, this event may align to one or more STEM areas.

CAREERS RELATED TO THIS EVENT

• Computer software engineer
• Mathematician

CODING
2019 & 2020 OFFICIAL RATING FORM
HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, record the scores earned for the event criteria in the column spaces to the right. The X1 or X2 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points; an "adequate" score of 7 for an X2 criterion = 14 points.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

_____

- ☐ Battery powered computer/device is present.
- ☐ Completed LEAP Report is present.
- ☐ ENTRY NOT EVALUATED

SOLUTION DEVELOPMENT (30 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Code Quality (X2)	The logic of the code cannot be followed or is difficult to follow; no comments or very few comments are present in the code.	The logic of the code is sometimes easy to follow by reading through submitted source files; some comments are present, but comments are not always present where necessary	The logic of the code is easy to follow by reading through the submitted source files; sections where logic may be unavoidably difficult to follow are commented appropriately.	
Use of Standard Libraries (X1)	The solutions do not appropriately use standard libraries for the language in which they are written; solutions attempt to use or import third party libraries	The solutions attempt to use standard libraries available or sometimes use standard libraries available for the language in which they are written.	The solutions make appropriate use of the standard libraries available for the language in which they are written; no attempt is made to use or import a third-party library.	
SOLUTION DEVELOPMENT SUBTOTAL (30 points)				

TESTING OF SOLUTION (60 points)						
Evaluation: A finite unit of measure, such as elapsed time, linear distance, and/or strength, etc., is used to determine ranking.						
1st: 60 Points	**2nd:** 55 Points	**3rd:** 50 Points	**4th**: 45 Points	**5th:** 40 Points	**6th:** 35 Points	
7th: 30 Points	**8th:** 25 Points	**9th:** 20 Points	**10th:** 15 Points	**11th:** 10 Points	**12th:** 5 Points	
TESTING OF SOLUTION SUBTOTAL (60 points)						

Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right. Indicate the rule violated: _____	

PRELIMINARY SUBTOTAL (90 points)	

SEMIFINAL LEAP INTERVIEW (9 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
LEAP Report/ Interview (10% of the total event points)	The individual's or team's efforts are not clearly communicated, lack detail, and/or are unconvincing; few, if any, attempts are made to identify and/or incorporate the SLC Practices and Behaviors.	The individual's or team's efforts are adequately communicated, include some detail, are clear, and/or are generally convincing; identification and/or incorporation of the SLC Practices and Behaviors is adequate.	The individual's or team's efforts are clearly communicated, fully-detailed, and convincing; identification and/or incorporation of the SLC Practices and Behaviors is excellent.	
SEMIFINAL LEAP INTERVIEW SUBTOTAL (9 points)				

Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: _____

SEMIFINAL SUBTOTAL (9 points)

To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.   **TOTAL (99 points)**

Comments:

_____

I certify these results to be true and accurate to the best of my knowledge.

JUDGE

Printed name: _____   Signature: _____

CODING EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

A. Event coordinator

B. Judges:

    a. Preliminary round, two (2) or more

    b. Semifinal round, two (2) or more

    c. Assistants for set-up, monitoring, and clean-up of onsite activity, two (2) or more

MATERIALS

A. Coordinator's packet, containing:

1. Event guidelines, one (1) copy for the coordinator and each judge

2. TSA Event Coordinator Report

3. List of judges/assistants

4. Pre-populated flash drives for judges

5. Stick-on labels for entries, as needed

6. Results envelope with coordinator forms

7. Envelopes for LEAP Reports

8. LEAP Interview Judging Protocol

B. Tables and chairs for participants

C. Tables and chairs for judges, to be used for information distribution and evaluation

D. A copy of a well-written, technologically appropriate problem for each participant/team that can be objectively measured

E. Adequate conditions, tools, materials, monitoring, and testing devices for the problem

F. Stopwatch or clock for timekeeper

RESPONSIBILITIES

AT THE CONFERENCE

1. Attend the mandatory coordinator's meeting at the designated time and location.

2. Report to the CRC room and obtain the coordinator's packet; check the contents.

3. Review the event guidelines and check to see that enough judges/assistants have been scheduled.

4. Inspect the area(s) in which the event is to be held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.

5. At least one (1) hour before the event is to begin, meet with judges to review time limits, procedures, and regulations. If questions arise that cannot be answered, speak to the event manager before the event begins.

PRELIMINARY ROUND

1. Begin the event at the scheduled time by closing the doors and checking the entry list.

2. Collect LEAP Reports.

3. All participants and judges should be in the room at this time.

4. Participants registered but not present may be disqualified.

5. Anyone reporting who is not on the entry list may check in only after official notification is received from the CRC.

6. Late entries are considered on a case-by-case basis and only when the delay is caused by events beyond participant control.

7. Check tools, materials, and monitoring and testing devices.

8. Once participants/teams are seated and general announcements have been given, distribute and review the problem and start the time.

9. Judges and monitors observe the entire development phase, with judges measuring solutions as soon as appropriate.

10. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:

    a. To deduct twenty percent (20%) of the total possible points in this round or

    b. To disqualify the entry

    c. The event coordinator, judges and CRC manager must all initial either of these actions on the rating form.

11. Judges determine the twelve (12) semifinalists and discuss and break any ties. (Determine the procedure for breaking ties before the onsite competition begins.)

12. Submit semifinalist results and all related forms in the results envelope to the CRC room.

SEMIFINAL ROUND

1. Meet with semifinalists at the time and place stated in the conference program to allow them to sign up for a LEAP interview time.

2. Inspect the area in which the LEAP interviews will take place. Ensure that there is a table and seating for participants and judges.

3. Meet with semifinalist judges to review the LEAP Judging Protocol. If questions arise that cannot be answered, speak to the event manager before the semifinalist interviews begin.

4. Conduct semifinalist LEAP interviews. Interviews should be a maximum of five (5) minutes in length.

5. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:

   a. To deduct twenty percent (20%) of the total possible points in this round or

   b. To disqualify the entry

   c. The event coordinator, judges and CRC manager must all initial either of these actions on the rating form.

6. Judges determine the ranking of the ten (10) finalists and discuss and break any ties. (Determine the procedure for breaking ties before the onsite competition begins.)

7. Review and submit the finalist results and all related items/forms in the results envelope to the CRC room.

8. If necessary, manage security and the removal of materials from the area.