IEEEXtreme 9.0 Competition Rules

Description

IEEEXtreme is a global challenge in which teams of student members, supported by an IEEE Student Branch, advised and proctored by an IEEE Member, compete in a 24-hour time span against each other to solve a set of programming problems.

The competition was created to:

- Provide IEEE Student Members with a new and interesting activity
- Give IEEE Student Members a challenge to embrace team work - an important skill to develop for career success
- Increase the number of IEEE Student activities with a focus on the computer, programming and information technology fields

Other benefits include providing Student Branches with ways to get IEEE Student Members involved in local activity in a fun and engaging way.

Sponsor

The IEEEXtreme Programming Competition is hosted by IEEE, 445 Hoes Lane, Piscataway, New Jersey, USA, 08854. It is organized and managed by the Student Activities Committee under the Member and Geographic Activities business unit of IEEE.

Eligibility

Participants must compete as part of a team. Teams are comprised of **up to** 3 IEEE student or graduate student members, but should only include a maximum of 2 graduate student members per team.   All team members must be IEEE student or graduate student members to register and compete in the competition. IEEE Membership numbers are required during the registration process.

Universities and Colleges can have multiple teams.

Each team must have a proctor who will supervise during the 24-hour programming competition.

Team members must solve and complete the problems without assistance from others. Please note that the intent and spirit of the competition is for the students, not others, to solve a problem. Persons acting as proctor must limit the level of support and must not contribute in any other form that might be considered original authorship, or in any way that may enable claims of rights or ownership to the submitted entries. In no case will work-on-behalf of teams or individuals be allowed.

Void where prohibited by Federal Law.

Registration

Registration will be open between 17 August 2015 and 12 October 2015 (00:00:00 UTC).
Teams can find registration information at http://www.ieee.org/xtreme

Proctors

Each team must have a proctor to supervise competition activities.

Proctors must be an IEEE Member of higher membership grade. Student or Graduate Student Members are not allowed to proctor IEEEXtreme but are encouraged to participate as a team member in the competition.

Proctor information (IEEE Member Number) is required during the registration process.

Student Branch Counselors or Department Chairs make great Proctors as they are all higher grade IEEE members. Many IEEE Young Professionals are also higher grade IEEE members and may be eligible to serve as proctors.

Teams may want to recruit two or more proctors so that one can take a break to rest during the 24 hour competition.

Proctor tasks include:

- Monitor the general flow of the activity
- Inform students when the competition begins, at the middle of it, when there are 6 hours left and when there is 1 hour left
- Ensure that no one external to the team members helps or assists the student participants in resolving the problems in any way
- Responsible for the receipt and distribution of prizes for student teams

If you need assistance in finding a proctor, please consult our Guide on Finding a Proctor (PDF).

Please note: A Proctor can support up to 8 student teams and all of the competition participants under an individual proctor's supervision must compete in the same venue. For more information on venue, see the following section.

Venue

As IEEEXtreme is a virtual online competition, a physical location, or venue, must be identified for participants to use during the 24-hour competition.

Venues can be in an IEEE Student Branch office or a college lab or another location on campus. It must be a place that participants can use for the entire 24 hours during the competition and should be equipped with at least one computer and some type of connection to the internet.
A proctor must be physically located within the venue at all times throughout the 24-hour competition.

Student Branch Activity

Student Branches, if able, should support and help to the participating teams, helping locate an appropriate venue for use during the competition, promoting the competition, assisting in identifying appropriate proctors, and increasing awareness of the student branch presence on campus.

Students attending universities who do not have an IEEE student branch on campus can still participate in the IEEEXtreme competition. This is an opportunity to bring students together to have fun with IEEE activities. Consider using this opportunity as a way to form a student branch. More information on how to form a student branch can be found here.

Problems

Problems are developed and judged by expert programmers. The panel of judges is made up of higher grade IEEE members from both Academia and Industry backgrounds.
Problems will be categorized as easy, moderate, difficult, advanced, and Xtreme to allow for students of all experience levels to participate.

All of the problems can be answered in any of the supported languages, which are indicated in the table below. The time and memory limits will apply to problems, unless otherwise specified in the problem definition.

Language	Version	Standard Challenges		
		Time limit in seconds	Memory limit in MB	Libraries provided
C	gcc 4.9.2, C99 standard	2	512	Math library -lm json library
C++	g++ 4.9.2, C++11 standard	2	512	Math library -lm json library
C#	Mono C# compiler 3.2.8.0.NET 4.0 CLR	3	512	newtonsoft json library
Python	Python 2.7.6	10	512	
Python 3	Python 3.4.0	10	512	
Java	Sun Java 1.7.0_55	4	512	Name your class Solution json-simple json library
Java 8	Sun Java 1.8.0_05	4	512	Name your class Solution json-simple json library
PHP	PHP 5.5.9	9	512	

Perl	Perl (v.5.18.2)	9	512	json library
Ruby	Ruby 2.0	10	512	
Objective-C	Objective-C 2.0: clang 3.4-1	2	512	Runtime(gnustep-libobjc2) Foundation Kit Blocks runtime libdispatch
Haskell	Ghc 7.8.4	5	512	logict lens pipes mwc-random hashtables regex-pcre hmatrix aeson and hashmap libraries are available.
Clojure	Clojure 1.6.0	8	512	
Scala	Scale 2.11.0	7	512	Have your entry point inside an objected name Solution
Common Lisp (SBCL)	SBCL 1.2.3	12	512	
Lua	Lua 5.2.3	12	512	
Erlang	Version 6.3	12	512	Have your main function in module solution
Javascript	Node v0.10.28	10	512	
Go	Go1.4	4	1024	
Groovy	1.8.6	5	512	JVM: 1.7.0_55
OCaml	Ocamlopt, version 4.01.0	3	512	Jane Street OCaml core libraries
F#	Fsharp 3.0.34, Mono 3.2.8	4	512	
VB.NET	Mono 3.2.8.NET 4.0 CLR	5	512	
LOLCODE	Version 1.2 with lci v0.10.5	5	512	
Smalltalk	GNU Smalltalk 3.2.4	5	512	
Tcl	Version 8.5 with tclsh	5	512	
R	Version 3.0.2	3	512	
RACKET	Version 6.1	10	512	
RUST	Version 1.0	5	512	
SWIFT	Version 1.2	2	512	Foundation
PASCAL	Version 2.6.2-8	2	512	
BASH	Version 4.3.11	1	512	
D	Version 2.067.0-b1	3	512	

Sample problems from previous competitions can be found at:
http://www.ieee.org/membership_services/membership/students/awards/xtremesamples.html.

A demo practice contest community can be found at:
https://www.hackerrank.com/contests/ieeextreme-challenges/challenges.

Problem Submission

Teams should submit their problem solutions electronically using the contest management tool. Instructions on access and utilization of the contest management tool will be provided to teams after registration closes.

The 2015 contest problems will be available the day of the contest.

Scoring Criteria

Simply put, if you solve a problem correctly, you get 20 points. You can gain 80 extra points depending on how difficult the problem is. The difficulty of any problem comes from how many other teams solved the same problem. If a lot of other teams solved the same problem that means the problem is easy and you will not get extra points on it. However, if you and few other teams solved a problem that means the problem is very hard and your team deserves more points on it.

This way, we advise you not to share your solution with other teams, because it will harm your score.

Note: Time is not directly included in the scoring formula. While it is used to break ties, you can take your time and solve the problem correctly. Moreover, you should also note that the number of unsuccessful attempts to solve a problem will not harm you score but it will indicate that the problem is hard and that will help improve other teams who solved the problem successfully. So try to be one of the smartest teams who solves the problem first and let all other teams improve your score ☺

$$\textbf{Problem Score} = 20 + max\left(0, 80\left(1 - 2\ \frac{Successful\ Attempts}{Total\ Attempts}\right)\right)$$

Partial scoring:

Sometimes, you write the perfect code that passes all test cases except the last one and you don't know why. Let's say you attempted to solve problem X, which has cases 1 to 5, and successfully solved cases 1, 3 and 4. The score you get will be a weighted factor of the three cases you were able to solve. If you cracked all 5 the fraction will be simply '1', in which case you decrease the score of all other teams who were able to solve the same problem. Otherwise, you will be just increasing them.

Each test case is assigned a weight. The sample test cases have a very small weight, while the hidden test cases have larger weights. Thus, submitting a solution that solves only the sample test cases will earn only a very small score.

$$Submission\ Score = problem\ score * \frac{Sum\ of\ correct\ test\ cases'\ weights}{Sum\ of\ all\ test\ cases'\ weights}$$

Rank is decided upon score. However, terms of draw time will be considered as a factor to rank teams. Ex: Team A and Team B can have same score, let's say X, but then have different ranks, say Rank 2 and Rank 3. This means the Team with higher rank was faster to solve problems compared to the other team.

Tie Breakers:

In the event that two teams are tied, the tie will be broken based on which team has the smaller total submission time. This time is equal to sum of the elapsed time for the best submission to each problem, ignoring the problem score. For example, let's say that a team makes submissions as shown in the table below.

Submission Number	Problem Number	Submission Time	$\dfrac{Sum\ of\ correct\ test\ cases'\ weights}{Sum\ of\ all\ test\ cases'\ weights}$
1	1	1 am, UTC	0.20
2	2	2 am, UTC	0.90
3	1	3 am, UTC	0.70
4	1	4 am, UTC	0.70
5	1	5 am, UTC	0.60

To calculate the total submission time for the example, we consider the best submissions for each problem. For problem 2, the best (and only) submission occurred 2 hours into the contest. For problem 1, the best submission occurred 3 hours into the contest. Note that if an identically scoring submission occurred later, we use the earliest of these identical submissions. Therefore, we ignore submission number 4 and 5 because neither of these were an improvement over submission number 3. In this case, then, the total submission time for the team would be 5 hours.

Reminders:

No language has any advantage over the others. (Ex: Java, C, Python, PHP, etc. are all the same). Only the problem submission will impact the score, compiling will not affect your score at all.

Your score can be different when you wake up. So, don't lose your hope and don't be so confident ☺. Most importantly, ENJOY IEEEXtreme!

Supported Browsers

The browsers that are supported to run IEEEXtreme 8.0 are as follows:
- Chrome v 44
- Firefox v 39
- IE 11

Please consult each browser's Web site for more information on updates.

Selection of Winners

Winners are determined strictly based on overall score as determined by the scoring outlined above. As noted above, in the case of a tie, time will be considered as a factor to rank teams.

Notification of Winners and Final Rankings

From the close of the competition through 31 October the IEEEXtreme Technical team will be evaluating code submissions. IEEE reserves the right to disqualify a team if it's found to have manipulated or cheated during the competition. The official results will be communicated on or about 2 November. Winners will be contacted by IEEE directly.

Requirements of Winners

IEEE may, within its sole discretion, require each prize winner to sign and return an affidavit of eligibility and liability and publicity release, in which each winner consents to the use of his or her name, age, hometown and photo by IEEE for advertising and promotional purposes, without any additional compensation, wherever lawful, as a precondition to award of a prize. If any prize winner fails to sign and return the requested affidavit of eligibility and liability/public release as requested by IEEE, that winner may be disqualified, and his or her prize will thereafter be awarded to an alternate winner from the remaining valid entries using the criteria specified above. IEEE may also require each winner to assign all rights in any submission that is chosen as a winner to IEEE as a precondition to award of a prize. If any prize winner fails to assign all rights in the selected submission to IEEE, the winner may be disqualified, and his or her prize will thereafter be awarded to an alternate winner from the remaining valid entries using the criteria specified above. All prizes, including the travel arrangements for first place winners, must be claimed within one calendar year of the competition.

Prizes

All active participants in the competition will receive a digital certificate and digital gift. "Active participant" is described as a team who makes a reasonable attempt at solving a problem.

Prizes for IEEEXtreme 9.0

1st place: The winning team members will receive an expenses-paid trip to an IEEE conference of their choice, anywhere around the world. Roundtrip coach airline tickets for each winner from winner's preferred major metropolitan airport to the conference destination, conference registration fees, and a three night hotel stay (confirmation pending) will be provided by IEEE for winning team members.

2nd place: Each member of the team that wins 2nd place in the IEEEXtreme 9.0 competition will receive an iPad Air.

3rd place: Each member of the team that wins 3rd place in the IEEEXtreme 9.0 competition will receive an iPad Mini.

4th-10th place: Each member of the 4th through 10th place teams in the IEEEXtreme 9.0 competition will receive a Raspberry Pi computer.

"Top 100: All members of teams that place in the top 100 at the end of the competition will receive a special edition IEEEXtreme 9.0 gift bundle, including a reserved IEEEXtreme "Top Coder" t-shirt and a valuable "Essential Studio Enterprise Edition" license for a comprehensive development suite

that includes 650+ components across multiple platforms. This gift is courtesy of our sponsorship partner Syncfusion."

Taxes, if any, are the sole responsibility of each winning team member.

Void where prohibited by Federal Law.

Use of Entries

No entries will be returned. All entries become the property of IEEE. By entering, all participants consent to the use by IEEE of all the information provided in the entries for marketing or sales promotion purposes without any attribution, identification, right of review or compensation. All entrants agree to release and hold harmless IEEE and its officers, directors, employees and agents from and against any claim or cause of action arising out of participation in the contest.

Disputes Concerning the Competition

These rules shall be construed and governed by the laws of the State of New Jersey. Participants hereby consent to the personal jurisdiction in and venue of the courts located in the State of New Jersey for the adjudication of any and all claims arising out of or relating to the subject matter of this contest, and the interpretation or enforcement of the official rules thereof.

Funding Sources

The IEEEXtreme 9.0 Competition is being underwritten by IEEE Membership and Geographic Activities Department.

Corporate Sponsorship opportunities are still available. Please contact ieeextreme@ieee.org for more information.

Agreement to the Official Rules

By participating in this contest, participants agree to abide by the terms and conditions as established by IEEE. IEEE reserves the right to qualify all submissions and to reject any submissions that do not meet the requirements for participation as established by IEEE.

Contest Results and Official Rules

To obtain the names of any winners and/or a copy of these Official Rules, send a self-addressed, stamped envelope to IEEEXtreme 9.0 Competition, Member and Geographic Activities, IEEE, 445 Hoes Lane, Piscataway, New Jersey 08854.