



# Ontario Engineering Competition 2016

*Hosted by the University of Waterloo*

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Programming Competition

## Rulebook

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## 1.0 Category Description and Objective

The goal of the Programming category is to encourage students with software engineering skills to produce industry-quality software with all of the proper user and administrative documents. The teams will use their software development expertise, technical writing abilities, and project management skills to design a solution to a posed problem. This solution will then be presented to company executives (judging panel) for approval and evaluation.

## 2.0 Competition Logistics

### 2.1 Awards

- First Place: \$2000
- Second Place: \$1500
- Third Place: \$750

### 2.2 Eligibility

- Teams consisting of up to four (4) individuals are accepted into the Programming competition. Individuals who have software engineering skills are recommended, but not mandatory. Multi-disciplinary teams are accepted.
- All teams must meet all general entry requirements of OEC.
- All years of study are accepted.

### 2.3 Facilities Provided by Organizing Committee

- One (1) workspace per team with adequate facilities
- Each team's workspace is separated from other team's workspaces.
- Internet access
- Digital projector and computer for final presentations
- Access to written copies of the topic and problem

### 2.4 Competition Personnel

- One (1) Category Official
- One (1) timekeeper for the solution developmental phases
- One (1) or more timekeeper(s) for the final presentation stage.
- Three (3) judges
- One (1) or more volunteer(s) to carry out various support tasks including testing and software QA.

### 2.5 Computer requirements

- Student owned computer(s) or laptop(s) with legal copies of software and current anti- virus protection will be required to produce a digital

presentation to accompany the oral presentation. This presentation will be handed in to competition officials on a USB provided by the team.

- Access to internet is permitted.

### 3.0 Topic Selection

The programming competition topic is selected from a wide variety of real-world engineering problems. Some of the factors we have taken into consideration are practicability, difficulty, and amount of engineering skills required. The complexity of the problem will be suitable for a second-year undergraduate student. The estimated time allocated for the problem is 6 hours.

### 4.0 Competition Deliverables

Teams in Programming Competition are required to design, develop, test, document, and construct a presentation of their project during the limited time provided in the first phase of the competition. Each team is encouraged to use engineering practices and standards when they are designing and developing their project. Then each team presents an oral presentation and demonstrates their solution in the second phase of the competition.

The oral presentation should summarize the team's layout, the design process, the management process, and the development process. If there were required components that could not be constructed in the time given, teams need to highlight the mistakes made and provide an explanation on how the problem could be solved in the future. If the solution included any open source libraries, the presentation should highlight the components that contain the code and if there is an alternate library that should have been used. Teams should also showcase the solution for approval. The presentation should introduce the software, present the core functions of the software, and how the program's components work from a technical standpoint, its user documents, and any unique components of the solution that were not suggested in the problem. Finally, the presentation should include who the potential customers may be, what benefits the program would give this customer, and provide a short demo of the product and its components for the panel.

### 5.0 Judging

The evaluation of the Programming category consists of four categories: user experience, design and performance, presentation, and teamwork.

Judges deliberation will be conducted privately and the results will not be released until the final banquet. A feedback form from the judges will be compiled for each team and delivered to the teams individually by the head judge presiding at the respective team's

panel after all presentations are completed. The head judge will deliberate on the feedback by providing a short verbal summary of their assessment of the team's efforts.

The organizing committee should select judges that have appropriate experience in a range of disciplines. Multiple panels of judges may be used when required.

## 6.0 Scoring Criteria

<b>User Experience</b>	<b>30%</b>
Usability	15%
Is the software easy to use?	5%
Can the user perform desired tasks?	5%
Are instructions clear?	5%
Practicality & overall flow	10%
Is the software practical?	5%
How fluid is the overall flow of the execution?	5%
User interface	5%
Does the user interface contain necessary components?	5%
Any obvious bugs? (-1% for each bug)	
 <b>Design and Performance</b>	 <b>30%</b>
Design	15%
Does the design work?	6%
How well does the design meet the requirements?	5%
Is the design creative?	4%
Performance	15%
Did the solution come with user documents?	3%
Are the documents easy to follow and execute?	3%
Did the solution include an install package?	3%
Any bugs during the execution? (-1% for each bug)	6%
 <b>Presentation</b>	 <b>30%</b>
Oral presentation	12%
Did all the members speak during the presentation?	4%
Did the team describe their software in general?	3%
Did the team explain design decisions to the judges?	3%
Continuity of speaking?	2%
Visual presentation	12%
Is there a visual aid to present the design and product?	6%

Did the team appear professional?	3%
Is the presentation interesting?	3%
Organization	6%
Did all team members contribute to the presentation?	2%
Is time used appropriately?	2%
Is the overall flow clear and easy to follow?	2%
<b>Teamwork</b>	<b>10%</b>
Workload distribution	8%
Are the works evenly distributed to each member?	5%
Are the works distributed according to each member's skills?	3%
Team culture	2%
Does the team appear to be a whole?	2%

## 7.0 Competition Procedures

### 7.1 Releasing of the Statement of Theme

The statement of theme will be published to the competitors, judges and the public prior to the beginning of the competition. The competitors will also receive a list of materials that will be required at this time.

### 7.2 Judges' Briefing

Judges will get the problem statement and everything ahead of time and all changes will be made before the competition. During the competition, judges will have the opportunity to discuss and/or ask questions before deliberations take place in order to address any last minute questions. Judges are encouraged to take notes on each group and provide constructive criticism if asked to do so in order to contribute to the participants' development as engineers.

### 7.3 Phase 1: Releasing the Problem Statement

1. Problem Packages will be handed out to each group prior to the start of the development period.
2. Programming directors will summarize the problem and outline the basic rules.
3. Teams will be indicated as to the locations where they can work and who they can approach to address any issues they may have.

### 7.4 Phase 2: Question Period

1. Competitors may ask as many questions as they like in this 15-minute period.
2. After this period, questions WILL NOT be answered.

## 7.5 Phase 3: Design and Build

1. The solution can be prepared using whatever framework/language the team chooses.
2. Teams will have seven (7) hours to prepare their solution.
3. The solution must be submitted directly to the category official before the deadline (3AM, Saturday, January 30<sup>th</sup>) via USB to the OEC info booth at the Delta Waterloo. No late submissions will be accepted.

## 7.6 Phase 4: Rest Period

Competitors will be allowed a minimum of five (5) hours of rest period between the end of Phase 3 and the first of the Final Presentations.

## 7.7 Phase 5: Final Presentations

1. The order of the final presentations is pre-determined randomly
2. Each team must arrive five (5) minutes before their scheduled time
3. Each team is given at most five (5) minutes to set up their presentation
4. Each team is given fifteen (15) minutes to present
5. At the end of the presentation there will be a five (5) minutes Q&A section where judges will ask questions regarding the design and presentation.

## 8.0 Tips and Tricks

- Decide early on what MVP (Minimum Viable Product) is
- Teamwork is key - break down the problem into components and separate work
- Keep warm!
- Make sure to get some sleep before the presentation

## 9.0 Disqualification

Teams may be disqualified if:

- Plagiarizing code from the Internet without proper licensing
- Using licensed libraries illegally
- Discussing implementation details with other groups