



The CENTRE for EDUCATION
in MATHEMATICS and COMPUTING

*2016
Canadian
Computing
Competition
Results*

Sponsors:

WATERLOO
MATHEMATICS

The 2016 CCC was the best of times and the worst of times.

The 2016 CCC Online Contest was bombarded by a Distributed Denial of Service (DDoS) attack early on the morning of the contest. This caused a variety of problems, including taking down internet access to/from the University of Waterloo for a one hour window, followed by the removal of the machine that was used for access to the CCC Online Grader. As such, the contest was in complete turmoil during the day with many schools unable to access the grader at all, to some schools having some sporadic access. The contest writing situations for competitors widely varied as teachers attempted to reschedule the contest, when possible, even though some, but perhaps not all competitors, had access to the questions on the contest day. Let's call that the "worst".

However, due to Herculean effort of Andy Kong, one of the CCC Committee members, we managed to provide an alternate server mechanism that offers enhanced protection at cccgrader.com.

As well, within a 2 week period, with extensive help from Jacob Jackson, Jacob Plachta, David Pritchard, Ben Zhang and Andy Kong, we managed to create a new contest, called the Canadian Computing Olympiad Qualifying Round (CCOQR), which provided additional information and a more "level" playing field to determine the invitees to the Canadian Computing Olympiad (CCO). We had previously discussed running such a contest in some future year, but the future became the present in 2016.

The last two paragraphs highlight the "best" of times. I am deeply thankful for the help I received to navigate through the difficult decisions and alternate plans.

Due to the varied writing conditions of the CCC, we have decided that will not publish a ranking of student scores. This decision is not easy, but after much thought, we believe it is fair decision.

Next year, 2017, we will be writing exclusively online. As such, students will need to learn one of the languages that the CCC Online Grader supports. If students do not have knowledge of one of those languages, they should consider learning Python (which the CCC On-line Grader can accept) through the CS Circles On-line Resource at:

cscircles.cemc.uwaterloo.ca

We continued the collaboration with Tsinghua University in Beijing and the University of Hong Kong to offer the contest to Beijing and Hong Kong high school students. This was the 12th year of collaboration with HKU, and it has been a rewarding experience for both UW and HKU. More information (including results) can be found at: <http://ccc.cs.tsinghua.edu.cn/> and <http://www.cs.hku.hk/ccc2016/>. As in previous years, the organizers from Tsinghua and HKU collaborated with UW to create a contest different than the Canadian CCC.

Below, a qualitative summary of both the Junior and Senior contest is presented.

I hope you found the contest this year interesting and educational, fun and intriguing. Thanks for being a part of it.

Troy Vasiga
Director of the Canadian Computing Competition
March 13, 2016

Problem Averages**Moyenne par problèmes**

Problem	All Contestants	Non-Zero Scores	Problem	All Contestants	Non-Zero Scores
Junior 1	12.58	14.14	Senior 1	11.03	13.09
Junior 2	10.32	14.40	Senior 2	10.44	13.59
Junior 3	5.72	11.67	Senior 3	1.39	8.40
Junior 4	5.35	10.30	Senior 4	0.83	4.65
Junior 5	3.76	12.54	Senior 5	0.94	2.26

The averages denoted as “All Contestants” in the above table indicate all students in the division. The averages denoted as “Non-Zero” scores in the above table include only students in the division who received a non-zero score on the problem. There were 1225 Senior contestants and 2008 Junior contestants.

Student Rankings**Classement des élèves**

<i>Junior Competitors</i>						<i>Senior Competitors</i>					
Score/ Note	Rank/ Position	Score/ Note	Rank/ Position	Score/ Note	Rank/ Position	Score/ Note	Rank/ Position	Score/ Note	Rank/ Position	Score/ Note	Rank/ Position
75	1	54	562	32	1056	75	1	43	90	21	783
74	247	53	577	31	1073	73	8	42	111	20	797
73	281	52	595	30	1102	71	9	41	113	19	812
72	298	51	606	29	1333	67	11	40	114	18	826
71	312	50	621	28	1341	65	24	39	141	17	841
70	324	49	637	27	1347	61	26	38	145	16	860
69	339	48	653	26	1385	60	30	37	146	15	879
68	351	47	668	25	1387	58	31	36	174	14	948
67	366	46	679	24	1396	57	32	35	185	13	954
66	379	45	693	23	1430	55	33	34	190	12	961
65	389	44	768	22	1436	54	39	33	232	11	965
64	399	43	790	21	1443	53	41	32	256	10	974
63	403	42	799	20	1460	52	45	31	284		
62	414	41	833	19	1472	51	47	30	478		
61	424	40	842	18	1481	50	52	29	639		
60	433	39	856	17	1520	49	54	28	644		
59	484	38	885	16	1526	48	60	27	649		
58	500	37	905	15	1536	47	66	26	655		
57	510	36	930	14	1710	46	70	25	679		
56	523	35	957	13	1711	45	81	24	717		
55	547	34	973	12	1715	44	86	23	735		

2016 Canadian Computing Competition Committee

Carmen Bruni University of Waterloo	Rich Clausi Elmira District S.S. (Retired)	Sandy Graham University of Waterloo	Scott Grondin Forest Heights C. I.
Andy Huang University of Waterloo	Jacob Jackson University of Waterloo	Prof. Graeme Kemkes University of Waterloo (Alumnus)	Prof. Vlado Keselj Dalhousie University
Andy Kong University of Michigan	Prof. Ondřej Lhoták University of Waterloo	Ron Ouwerkerk St. George's School	Jacob Plachta Facebook
J.-P. Pretti University of Waterloo	Dr. David Pritchard Google	Dr. Troy Vasiga (Director) University of Waterloo	Ben Zhang University of Waterloo