

The QBF Gallery 2014

A COMPETITIVE Evaluation of QBF Tools
FLoC Olympic Games

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QBFGallery 2014

- 2nd QBFGallery after QBFGallery 2013 in Helsinki
- **new:** competition mode (there are prizes and rankings)
- 3 tracks:
 - qbflib formulas
 - preprocessed formulas
 - application formulas

Purpose of the QBF Gallery 2014:

- Evaluate the state-of-the-art in QBF solving

- **new:** participation in the FLoC Olympic Games
aim: award the overall best solvers

Details: <http://qbf.satisfiability.org/gallery/>

Focus of QBFGallery 2014: Evaluation of CNF solvers

Participants:

- 8 contributors from 7 countries.
- 14 CNF-solvers, 2 Non-CNF-solvers.
- 1 preprocessor.
- 1 new benchmark set.

General Statistics:

- Experiments on
 - StarExec Cluster (<http://www.starexec.org>)
- > 1000 considered formulas (from QBFLIB and QBFGallery 2013)
- > 20.000 runs (without confirmation runs) in over 3.000 hours

- **eval2012r2:**

345 formulas sampled from the collection of formulas available from QBFLIB at <http://www.qbflib.org/>. This set was also used for QBFEVAL 2012-R2.

We used the 276 formulas not solved by preprocessor bloqper.

- **preprocessing:**

234 + 241 instances in two sets (A and B), respectively, resulting from the benchmark set eval2012r2 by incremental preprocessing.

Each formula was selected randomly from set A or B and maybe preprocessed with new preprocessor QProcessor.

Overall, we used 243 formulas.

- **applications:**

We used 735 formulas from last year's set not solved by bloqper.

Tool Name	Submitter(s)
<i>Preprocessor (1)</i>	
Qprocessor	Norbert Manthey
<i>Solvers (14)</i>	
squeezebf1.2-qube3.0	Massimo Narizzano
ghost	Will Klieber
ghost-CEGAR	Will Klieber
bGhost-CEGAR	Will Klieber
rareqs	Mikolás Janota
brareqs	Mikolás Janota
hiqqr1	Allen Van Gelder, Samuel Wood
hiqqr3	Allen Van Gelder, Samuel Wood
ooq13	Alexandra Goultiaeva
dual_ooq13	Alexandra Goultiaeva
sDual_ooq13	Alexandra Goultiaeva
Bloqqr+QProcessor+DepQBF	Florian Lonsing, Norbert Manthey
QxBF+Bloqqr+DepQBF	Florian Lonsing
DepQBF	Florian Lonsing

- **ranking:** number of solved formulas

- **tracks:**
 - preprocessing
 - applications
 - qbflib

- in each track we will award the best three solvers with QBFGallery medals

- **olympic games:** the overall best three solvers will be awarded

- in each track ranking/olympic games ranking a participating group is only considered once

- StarExec for providing us the resources to run the QBFGallery, in particular:
 - Aaron Stump
 - Cesare Tinelli

- the judges:
 - Daniel Leberre
 - Horst Samulowitz
 - Christoph Wintersteiger

- all participants and contributors!!!!!!





3. RAReQS: Mikolas Janota

2. DepQBF: Florian Lonsing

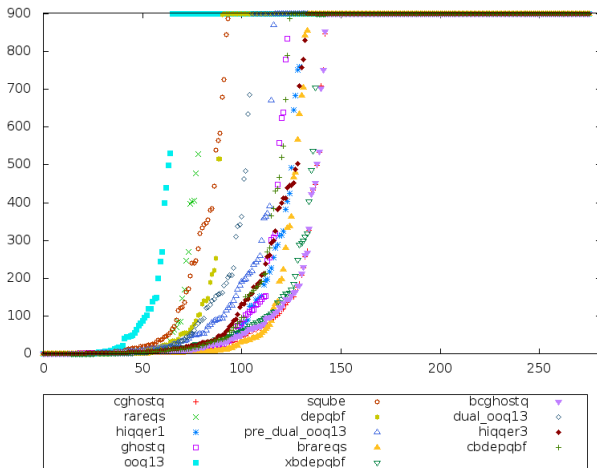
3. RAReQS: Mikolas Janota



1. ghostQ: Will Klieber
2. DepQBF: Florian Lonsing
3. RAReQS: Mikolas Janota



Track1: QBFLIB Formulas



SOLVER	SAT	UNSAT	TOTAL
cghostq	80	63	143
bcghostq	80	63	143
xbdepqbf	70	68	138
brareqs	66	68	134
hiqqr3	71	62	133
hiqqr1	66	64	130
cbdepqbf	63	62	125
ghostq	68	56	124
pre_dual_ooq13	64	53	117
dual_ooq13	60	45	105
sqube	50	44	94
depqbf	41	50	91
rareqs	32	47	79
ooq13	30	35	65

Track2: Applications - Winners





3. DepQBF: Florian Lonsing

2. hiqqr3: Allen Van Gelder, Samuel Wood

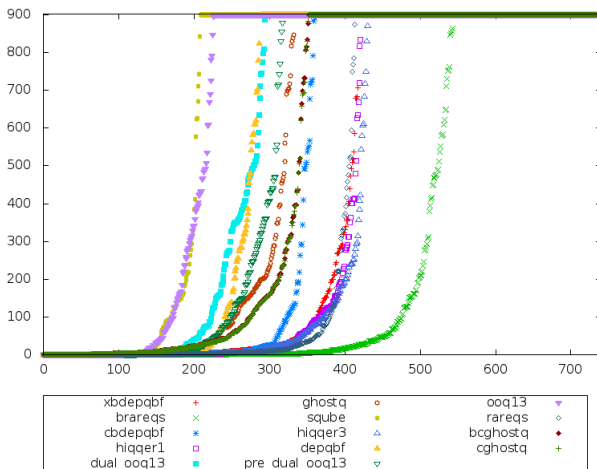
3. DepQBF: Florian Lonsing



1. RAReQS: Mikolas Janota
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3. DepQBF: Florian Lonsing



Track2: Applications



SOLVER	SAT	UNSAT	TOTAL
brareqs	232	312	544
hiqqr3	207	224	431
hiqqr1	197	225	422
xbdepqbf	199	219	418
rareqs	142	272	414
cbdepqbf	157	204	361
cghostq	184	168	352
bcghostq	184	168	352
ghostq	182	151	333
pre_dual_ooq13	151	167	318
dual_ooq13	87	209	296
depqbf	157	130	287
ooq13	92	135	227
sqube	84	125	209

Track3: Preprocessing - Winners





3. RAReQS: Mikolas Janota

2. DepQBF: Florian Lonsing

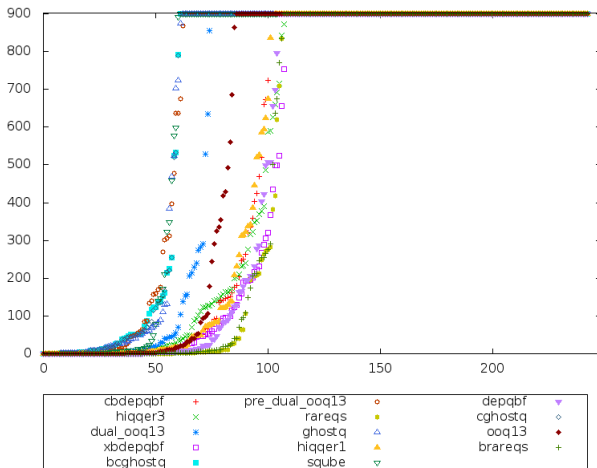
3. RAReQS: Mikolas Janota



1. hiqqr3: Allen Van Gelder, Samuel Wood
2. DepQBF: Florian Lonsing
3. RAReQS: Mikolas Janota



Track3: Preprocessing



SOLVER	SAT	UNSAT	TOTAL
hiqqr3	63	46	109
xbdepqbf	61	47	108
brareqs	64	43	107
rareqs	63	44	107
depqbf	59	46	105
hiqqr1	59	44	103
cbdepqbf	59	42	101
ooq13	50	36	86
dual_ooq13	49	26	75
pre_dual_ooq13	44	19	63
ghostq	46	16	62
cghostq	43	18	61
bcghostq	43	18	61
sqube	40	21	61





- DepQBF: Florian Lonsing

- hiqqr3: Allen Van Gelder, Samuel Wood
- DepQBF: Florian Lonsing



- RAReQS: Mikolas Janota
- hiqqr3: Allen Van Gelder, Samuel Wood
- DepQBF: Florian Lonsing



points	solver
1,6659	brareqs
1,5169	hiqqr3
1,5131	xbdepqbf
1,469	hiqqr1
1,3597	cbdepqbf
1,2898	rareqs
1,248	cghostq
1,248	bcghostq
1,1575	ghostq
1,1523	depqbf
1,1159	pre_dual_ooq13
1,0917	dual_ooq13
0,8982	ooq13
0,876	sqube

- Olympic Games Award Ceremony: 17th of July

- Collecting the results and describing the results

- Future of QBFGallery
 - Structural track

 - Certification