Best-known clique and chromatic numbers for DIMACS instances

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November 5, 2021

Instance	n	m	$\underline{\omega}$	ref.	$\bar{\omega}$	ref.	$\underline{\chi}$	ref.	$\bar{\chi}$	ref.
1-FullIns_3	30	100	3	[11]	3	[11]	4	[11]	4	[11]
1-FullIns_4	93	593	3	[17]	—	—	5	[20]	5	[20, 17, 11, 3, 27, 26]
1-FullIns_5	282	3247	3	[17]	—	—	6	[18]	6	[18, 20, 17, 11, 3, 27, 26]
1-Insertions_4	67	232	2	[17, 11]	2	[11]	5	[20, 17, 11]	5	[20, 17, 11, 3, 27, 26]
1-Insertions_5	202	1227	2	[17]	—	—	6	[18]	6	[20, 17, 11, 3, 27, 26]
1-Insertions_6	607	6337	2	[17, 13]	—	—	7	[18]	7	[20, 17, 11]
2-FullIns_3	52	201	4	[17, 11]	4	[11]	5	[20, 17, 11]	5	[20, 17, 11, 3, 27, 26]
2-FullIns_4	212	1621	4	[35]	—	—	6	[18]	6	[18, 20, 17, 11, 3, 27, 26]
2-FullIns_5	852	12201	4	[35]	—	—	7	[18, 20]	7	[18, 20, 11, 3, 27, 26]
2-Insertions_3	37	72	2	[17]	2	[11]	4	[5, 11]	4	[5, 11]
2-Insertions_4	149	541	2	[17]	—	—	5	[18]	5	[18]
2-Insertions_5	597	3936	2	[17]	—	—	6	[18]	6	[18]
3-FullIns_3	80	346	5	[17]	—	—	6	[20, 21, 17, 11]	6	[20, 17, 11, 20, 3, 27, 26]
3-FullIns_4	405	3524	5	[35]	—	—	7	[20]	7	[20, 17, 11, 20, 3, 27, 26]
3-FullIns_5	2030	33751	5	[35]	—	—	8	[18]	8	[20, 18, 17, 3, 27, 26]
3-Insertions_3	56	110	2	[17]	2	[11]	4	[20, 5, 11]	4	[20, 5, 17, 11, 3, 27, 26]
3-Insertions_4	281	1046	2	[17]	—	—	5	[18]	5	[18, 20, 17, 11, 3, 27, 26]
3-Insertions_5	1406	9695	2	[17, 13]	—	—	6	[18]	6	[20, 17, 11, 3, 27, 26]
4-FullIns_3	114	541	6	[35]	—	—	7	[20, 17, 11]	7	[20, 17, 11, 3, 27, 26]
4-FullIns_4	690	6650	6	[35]	—	—	8	[18]	8	[20, 18, 17, 11, 3, 27, 26]
4-FullIns_5	4146	77305	6	[35]	—	—	9	[9]	9	[20, 17, 3, 27, 26]
4-Insertions_3	79	156	2	[17]	—	—	4	[18]	4	[18, 20, 17, 11, 3, 27, 26]
4-Insertions_4	475	1795	2	[17]	—	—	5	[18]	5	[18, 20, 17, 11, 3, 27, 26]
5-FullIns_3	154	792	7	[17]	—	—	8	[20, 17, 11]	8	[20, 17, 11, 3, 27, 26]
5-FullIns_4	1085	11395	7	[35]	—	—	9	[18]	9	[20, 17, 11, 20, 3, 27, 26]
abb313GPIA	1557	46546	8	[13]	—	—	9	[9]	9	[17]
anna	138	493	11	[11]	11	[11]	11	[19, 17, 11, 20]	11	[19, 17, 32, 11, 20, 3, 27, 26]
ash331GPIA	662	4185	3	[17]	3	[11]	4	[20, 17, 11]	4	[20, 17, 11, 3, 27, 26]
ash608GPIA	1216	7844	3	[17]	—	—	4	[20, 17]	4	[20, 17, 3, 27, 26]
ash958GPIA	1916	12506	3	[17]	—	—	4	[20, 21]	4	[17, 26]

C2000.5	2000	999836	16	[13]	16	[13]	99	[13]	145	[12, 29]
C2000.9	2000	—	—	—	—	—	—	—	400	[29]
C4000.5	4000	4000268	18	[35]	—	—	107	[13]	259	[12, 29]
david	87	406	11	[17]	11	[11]	11	[19, 17, 11, 20]	11	[19, 17, 32, 11, 20, 3, 27, 26]
DSJC1000.1	1000	49629	6	[13]	—	—	9	[13]	20	[8, 1, 14, 16, 25, 17, 36, 8, 15, 25, 15, 30, 22, 32, 34, 33]
DSJC1000.5	1000	249826	15	[31]	15	[31]	73	[13]	82	[22]
DSJC1000.9	1000	449449	68	[35]	—	—	216	[13]	222	[22, 30, 34]
DSJC125.1	125	736	4	[11]	4	[11]	5	[20, 21, 17, 11]	5	[37, 20, 24, 7, 17, 36, 32, 11, 3, 27, 26]
DSJC125.5	125	3891	10	[35]	—	—	17	[17]	17	[37, 24, 7, 16, 17, 36, 32, 11]
DSJC125.9	125	6961	34	[35]	—	—	44	[17]	44	[37, 24, 7, 16, 17, 36, 32, 11]
DSJC250.1	250	3218	4	[17]	—	—	6	[17]	8	[37, 24, 7, 16, 17, 36, 32]
DSJC250.5	250	15669	12	[13]	—	—	26	[13, 11]	28	[24, 8, 7, 16, 17, 32]
DSJC250.9	250	27897	43	[35]	—	—	72	[13]	72	[11, 24, 7, 16, 17, 36, 32, 11]
DSJC500.1	500	12458	5	[13]	—	—	9	[13]	12	[24, 1, 14, 7, 16, 25, 17, 32, 33]
DSJC500.5	500	62624	13	[13, 31]	13	[31]	43	[13]	47	[22]
DSJC500.9	500	112367	56	[35]	—	—	123	[13, 11, 17]	126	[14, 25, 36, 8, 15, 25, 15, 30, 22, 11, 33]
DSJR500.1	500	3555	12	[35]	12	[35]	12	[20, 17, 11]	12	[37, 20, 24, 7, 16, 17, 36, 11, 3, 27, 26]
DSJR500.1c	500	121275	83	[35]	—	—	85	[17, 11]	85	[37, 24, 1, 14, 7, 16, 17, 36, 4, 2, 25, 15, 30, 22, 11, 26, 33]
DSJR500.5	500	58862	122	[35]	—	—	122	[18, 17, 11]	122	[7, 16, 17, 25, 15, 30, 11]
flat1000_50_0	1000	245000	15	[35]	14	[13]	50	[18, 13]	50	[24, 1, 14, 7, 16, 11, 32, 33]
flat1000_60_0	1000	245830	15	[35]	14	[13]	60	[18, 13]	60	[24, 1, 14, 7, 16, 11, 32, 33]
flat1000_76_0	1000	246708	15	[35]	14	[13]	76	[6]	76	[6]
flat300_20_0	300	21375	8	[35]	—	—	20	[18, 11]	20	[37, 24, 1, 7, 16, 36, 32, 11]
flat300_26_0	300	21633	11	[35]	—	—	26	[18, 11]	26	[37, 24, 1, 7, 16, 36, 15, 15, 32, 11]
flat300_28_0	300	21695	12	[35]	—	—	28	[18, 11]	28	[24, 1, 14, 2, 32, 11]
fpsol2.i.2	451	8691	30	[11]	30	[11]	30	[19, 17, 11, 20]	30	[19, 17, 11, 20, 3, 27, 26]
fpsol2.i.3	425	8688	30	[11]	30	[11]	30	[19, 17, 11, 20]	30	[19, 17, 11, 20, 3, 27, 26]
fpsol2.i.1	496	11654	65	[11]	65	[11]	65	[19, 17, 11, 20]	65	[19, 17, 32, 11, 20, 3, 27, 26]
games120	120	638	9	[17, 11]	9	[11]	9	[19, 17, 11, 20]	9	[19, 17, 32, 11, 20, 3, 27, 26]
homer	561	1629	13	[11]	13	[11]	13	[19, 17, 11]	13	[19, 17, 11]
huck	74	301	11	[17, 11]	11	[11]	11	[19, 11, 17, 20]	11	[19, 11, 17, 32, 20, 3, 27, 26]
inithx.i.1	864	18707	54	[11]	54	[11]	54	[19, 11, 17, 20]	54	[19, 17, 32, 11, 20, 3, 27, 26]
inithx.i.2	645	13979	31	[11]	31	[11]	31	[19, 17, 11, 20]	31	[19, 17, 11, 20, 3, 27, 26]
inithx.i.3	621	13969	31	[11]	31	[11]	31	[19, 17, 11, 20]	31	[19, 17, 11, 20, 3, 27, 26]
jean	80	254	10	[17, 11]	10	[11]	10	[19, 17, 20]	10	[19, 17, 32, 20, 3, 27, 26]
latin_square_10	900	307350	90	[13, 17]	—	—	90	[20, 13, 17]	97	[28]
le450_15a	450	8168	15	[17]	—	—	15	[20, 17]	15	[37, 24, 7, 16, 17, 36, 32]
le450_15b	450	8169	15	[17]	—	—	15	[20, 17, 20]	15	[37, 24, 7, 16, 17, 36, 32, 20]
le450_15c	450	16680	15	[17]	—	—	15	[20, 17]	15	[37, 24, 8, 1, 14, 7, 16, 17, 36, 2, 8, 15, 15, 30, 32, 33]
le450_15d	450	16750	15	[17]	—	—	15	[20, 17]	15	[37, 24, 8, 1, 14, 7, 16, 17, 36, 2, 8, 15, 15, 30, 32, 33]
le450_25a	450	8260	25	[17, 11]	25	[11]	25	[20, 17, 11, 20]	25	[18, 17, 36, 32, 11, 20, 3, 27, 26]
le450_25b	450	8263	25	[17, 11]	25	[11]	25	[20, 17, 11, 20]	25	[37, 18, 17, 36, 32, 11, 20, 3, 27, 26]
le450_25c	450	17343	25	[17]	—	—	25	[20, 17]	25	[24, 1, 14, 16, 17, 36, 25, 15, 30, 32, 33]

le450_25d	450	17425	25	[17]	—	—	25	[20, 17]	25	[24, 1, 14, 16, 17, 36, 25, 15, 30, 32, 33]
le450_5a	450	5714	5	[17, 11]	5	[11]	5	[20, 17, 11]	5	[18, 17, 11]
le450_5b	450	5734	5	[17, 11]	5	[11]	5	[20, 17, 11]	5	[18, 17, 11]
le450_5c	450	9803	5	[17]	—	—	5	[20, 17]	5	[18, 17, 20, 3, 27, 26]
le450_5d	450	9757	5	[17]	—	—	5	[20, 17]	5	[18, 17, 3, 26]
miles1000	128	3216	42	[17, 11]	42	[11]	42	[19, 17, 11, 20]	42	[19, 17, 11, 20, 3, 27, 26, 37]
miles1500	128	5198	73	[17, 11]	73	[11]	73	[19, 17, 11, 20]	73	[19, 17, 11, 20, 3, 27, 26, 37]
miles250	128	387	8	[11]	8	[11]	8	[19, 17, 11, 20]	8	[37, 19, 11, 17, 32, 20, 3, 27, 26]
miles500	128	1170	20	[11]	20	[11]	20	[19, 17, 11, 20]	20	[19, 17, 32, 11, 20, 3, 27, 26, 37]
miles750	128	2113	31	[17, 11]	31	[11]	31	[19, 17, 11, 20]	31	[19, 17, 11, 20, 3, 27, 26, 37]
mug100_1	100	166	3	[17]	—	—	4	[20, 17]	4	[17, 20, 3, 27, 26]
mug100_25	100	166	3	[17]	—	—	4	[20, 17]	4	[17, 20, 3, 27, 26]
mug88_1	88	146	3	[17, 11]	3	[11]	4	[20, 17, 11]	4	[17, 11, 20, 3, 27, 26]
mug88_25	88	146	3	[17, 11]	3	[11]	4	[20, 17, 11]	4	[20, 17, 11, 20, 3, 27, 26]
mulsol.i.1	197	3925	49	[17, 11]	49	[11]	49	[19, 17, 11, 20]	49	[19, 17, 11, 20, 3, 27, 26]
mulsol.i.2	188	3885	31	[11]	31	[11]	31	[19, 11, 17, 20]	31	[19, 11, 17, 20, 3, 27, 26]
mulsol.i.3	184	3916	31	[17, 11]	31	[11]	31	[19, 17, 11, 20]	31	[19, 17, 11, 20, 3, 27, 26]
mulsol.i.4	185	3946	31	[17, 11]	31	[11]	31	[19, 17, 11, 20]	31	[19, 17, 11, 20, 3, 27, 26]
mulsol.i.5	185	3973	31	[11]	31	[11]	31	[19, 17, 11, 20]	31	[19, 17, 11, 20, 3, 27, 26]
myciel2	5	5	2	[17]	—	—	3	[19]	3	[19]
myciel3	11	23	2	[17, 11]	2	[11]	4	[19, 11]	4	[19, 32, 11, 37]
myciel4	20	71	2	[17]	2	[11]	5	[19, 11]	5	[19, 32, 11, 37]
myciel5	47	236	2	[17]	2	[11]	6	[19, 11]	6	[19, 32, 11, 37]
myciel6	95	755	2	[17]	—	—	7	[18, 17]	7	[18, 17, 32, 11, 20, 3, 27, 26, 37]
myciel7	191	2360	2	[17]	—	—	8	[18, 17]	8	[18, 17, 32, 11, 20, 3, 27, 26, 37]
qg.order100	10000	990000	100	[35]	—	—	100	[10]	100	[10]
qg.order30	900	26100	30	[17, 11]	30	[11]	30	[20, 17, 11]	30	[20, 17, 32, 11, 3, 26, 27]
qg.order40	1600	62400	40	[17]	—	—	40	[18, 20, 17]	40	[18, 17, 32, 26, 27]
qg.order60	3600	212400	60	[17]	—	—	60	[18, 20, 17]	60	[18, 17, 32, 27]
queen10_10	100	2940	10	[17]	—	—	11	[18, 17]	11	[18, 17, 11, 37]
queen11_11	121	3960	11	[17]	—	—	11	[18, 17, 11, 20]	11	[18, 17, 11]
queen12_12	144	5192	12	[17]	—	—	12	[18, 17, 20]	12	[18, 17]
queen13_13	169	6656	13	[17]	—	—	13	[18, 17, 20, 3, 27, 26]	13	[18, 17]
queen14_14	196	8372	14	[17]	—	—	14	[18, 17, 20, 3, 27, 26]	14	[18, 17]
queen15_15	225	10360	15	[17]	—	—	15	[18, 17, 20, 3, 27, 26]	15	[18, 17]
queen16_16	256	12640	16	[17]	—	—	16	[18, 17, 20, 3, 27, 26]	16	[18, 17]
queen5_5	25	160	5	[17, 11]	5	[11]	5	[19, 11]	5	[19, 32, 11, 37]
queen6_6	36	290	6	[17, 11]	6	[11]	7	[19, 11]	7	[19, 32, 11, 37]
queen7_7	49	476	7	[17, 11]	7	[11]	7	[19, 11]	7	[19, 32, 11, 37]
queen8_12	96	1368	12	[17, 11]	12	[11]	12	[19, 11, 20, 17, 3, 27, 26]	12	[19, 17, 11, 20, 3, 27, 26, 37]
queen8_8	64	728	8	[17, 11]	8	[11]	9	[19, 11, 17, 20]	9	[19, 17, 32, 11, 3, 27, 26, 37]
queen9_9	81	1056	9	[17, 11]	9	[11]	10	[19, 17, 11]	10	[19, 17, 11, 3, 27, 26, 37]
r1000.1	1000	14378	20	[11]	20	[11]	20	[18, 11]	20	[24, 7, 16, 36, 11]

r1000.1c	1000	485090	92	[35]	89	[13]	96	[13, 11]	98	[24, 7, 16, 11, 25, 15, 30, 22]
r1000.5	1000	238267	234	[35]	234	[35]	234	[18, 11]	234	[16, 11]
r125.1	125	209	5	[11]	5	[11]	5	[11]	5	[37, 11, 36]
r125.1c	125	7501	46	[11]	46	[11]	46	[11]	46	[37, 11, 36]
r125.5	125	3838	36	[11]	36	[11]	36	[11]	36	[11]
r250.1	250	867	8	[35]	7	[11]	8	[18, 11]	8	[37, 24, 7, 16, 36, 11]
r250.1c	250	30227	64	[35]	64	[35]	64	[18, 11]	64	[37, 24, 1, 7, 16, 36, 11]
r250.5	250	14849	65	[35]	—	—	65	[18, 11]	65	[24, 7, 16, 25, 15, 30, 22, 11]
school1	385	19085	14	[17, 11]	14	[11]	14	[20, 11, 17]	14	[37, 20, 17, 36, 11, 20, 3, 27, 26]
school1_nsh	352	14612	14	[35]	—	—	14	[20, 17]	14	[37, 20, 17, 36, 20, 3, 27, 26]
wap01a	2368	110871	41	[13]	—	—	41	[20, 13]	43	[17]
wap02a	2464	111742	40	[13, 17]	—	—	40	[20, 13]	42	[17]
wap03a	4730	286722	40	[13, 17]	—	—	40	[20]	47	[17]
wap04a	5231	294902	40	[13, 17]	—	—	40	[20]	42	[12]
wap05a	905	43081	50	[35]	—	—	50	[20, 17]	50	[17, 32, 3, 27, 26, 20]
wap06a	947	43571	40	[13, 17]	—	—	40	[20, 13]	40	[17]
wap07a	1809	103368	40	[13, 17]	—	—	40	[20, 13, 17]	41	[12]
wap08a	1870	104176	40	[13, 17]	—	—	40	[20, 13, 17]	42	[17]
will199GPIA	701	6772	6	[11]	6	[11]	7	[20, 17, 11]	7	[20, 17, 11, 3, 27, 26]
zeroin.i.1	211	4100	49	[11]	49	[11]	49	[19, 11, 17, 20]	49	[19, 17, 11, 3, 27, 26, 20]
zeroin.i.2	211	3541	30	[11]	30	[11]	30	[19, 17, 11, 20]	30	[19, 17, 32, 11, 3, 27, 26, 20]
zeroin.i.3	206	3540	30	[11]	30	[11]	30	[19, 11, 17, 20]	30	[19, 17, 32, 11, 3, 27, 26, 20]

Other useful resources

- More instances and several resources: https://mat.gsia.cmu.edu/COLOR02/
- Large instances from the DIMACS clique challenge could be also used for coloring: https://mat.tepper.cmu.edu/COLOR02/clq.html. Probably there are more interesting instances here.
- Joe Culberson's graph coloring page: https://webdocs.cs.ualberta.ca/joe/Coloring/
- Jin-Kao Hao's page: http://www.info.univ-angers.fr/hao/

To-do

- Better references for bounds on clique numbers; they were extracted only from articles on graph coloring.
- Moalic and Gondran [23]

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