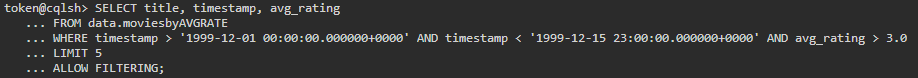
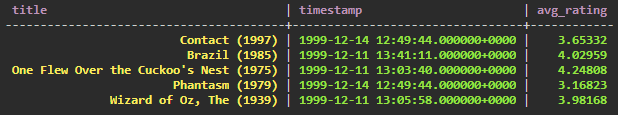
**ΣΥΣΤΗΜΑΤΑ ΔΙΑΧΕΙΡΙΣΗΣ ΜΕΓΑΛΩΝ ΔΕΔΟΜΕΝΩΝ**

Q1





Q2



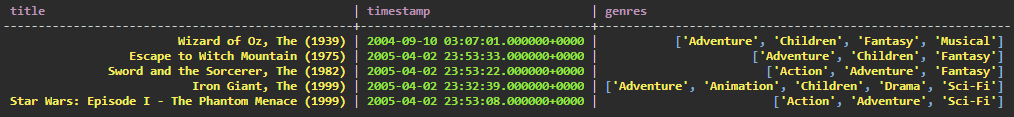
Εικόνα που περιέχει κείμενο

Περιγραφή που δημιουργήθηκε αυτόματα

Q3 **+timestamp**

Εικόνα που περιέχει κείμενο

Περιγραφή που δημιουργήθηκε αυτόματα



Q4

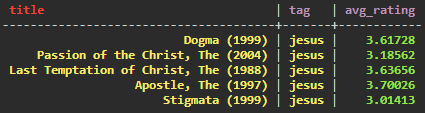




Q5

Εικόνα που περιέχει κείμενο

Περιγραφή που δημιουργήθηκε αυτόματα



Write Consistency Levels

|  |  |  |
| --- | --- | --- |
| **ALL** | Πρέπει να γραφτεί μια εγγραφή στο commit log και στο memtable **σε όλους τους κόμβους** αντιγραφής στο σύμπλεγμα για αυτό το διαμέρισμα. | Παρέχει την **υψηλότερη συνέπεια** και τη **χαμηλότερη διαθεσιμότητα** από οποιοδήποτε άλλο επίπεδο. |
| **QUORUM** | Πρέπει να γραφτεί μια εγγραφή στο commit log και στο memtable σε **απαρτία κόμβων** αντιγράφων σε όλα τα κέντρα δεδομένων. | Χρησιμοποιείται είτε σε μεμονωμένα είτε σε πολλαπλά συμπλέγματα κέντρων δεδομένων για τη **διατήρηση ισχυρής συνέπειας** σε όλο το σύμπλεγμα. Χρησιμοποιήστε το εάν μπορείτε να ανεχτείτε κάποιο επίπεδο αποτυχίας. |
| **ONE** | Πρέπει να γραφτεί μια εγγραφή στο commit log και στο memtable **τουλάχιστον ενός κόμβου** αντίγραφο. | Ικανοποιεί τις ανάγκες των περισσότερων χρηστών επειδή **οι απαιτήσεις συνέπειας δεν είναι αυστηρές.** |

Read Consistency Levels

|  |  |  |
| --- | --- | --- |
| **ALL** | Επιστρέφει την εγγραφή αφού ανταποκριθούν όλα τα αντίγραφα. Η λειτουργία ανάγνωσης θα αποτύχει εάν ένα αντίγραφο δεν ανταποκριθεί. | Παρέχει την υψηλότερη συνέπεια όλων των επιπέδων και τη χαμηλότερη διαθεσιμότητα όλων των επιπέδων. |
| **QUORUM** | Επιστρέφει την εγγραφή αφού ανταποκριθεί μια απαρτία αντιγράφων από όλα τα κέντρα δεδομένων. | Χρησιμοποιείται είτε σε μεμονωμένα είτε σε πολλαπλά συμπλέγματα κέντρων δεδομένων για τη διατήρηση ισχυρής συνέπειας σε όλο το σύμπλεγμα. Εξασφαλίζει ισχυρή συνέπεια εάν μπορείτε να ανεχτείτε κάποιο επίπεδο αποτυχίας. |
| **ONE** | Επιστρέφει μια απόκριση από το πλησιέστερο αντίγραφο, όπως προσδιορίζεται από τον snitch. Από προεπιλογή, μια επιδιόρθωση ανάγνωσης εκτελείται στο παρασκήνιο για να κάνει τα άλλα αντίγραφα συνεπή. | Παρέχει την υψηλότερη διαθεσιμότητα όλων των επιπέδων, εάν μπορείτε να ανεχτείτε μια σχετικά υψηλή πιθανότητα ανάγνωσης παλιών δεδομένων. Τα αντίγραφα με τα οποία επικοινωνήσαμε για αναγνώσεις ενδέχεται να μην έχουν πάντα την πιο πρόσφατη εγγραφή. |

<https://docs.datastax.com/en/cql-oss/3.3/cql/cql_using/useTracingTrace.html>

Write Consistency Levels

|  |  |  |  |
| --- | --- | --- | --- |
|  | **CONSISTENCY all;** | **CONSISTENCY quorum;** | **CONSISTENCY one;** |
| **Q1** | 106.79164242744446 | 98.44685482978821 | 83.14854454994202 |
| **Q2** | 79.37265586853027 | 80.53845858573914 | 93.25138568878174 |
| **Q3** | 73.78670167922974 | 75.47007822990417 | 73.65470814704895 |
| **Q4** | 88.7026093006134 | 78.8523690700531 | 78.35315918922424 |
| **Q5** | 73.74670672416687 | 70.43832421302795 | 66.2778046131134 |

Read Consistency Levels

**Q1 CONSISTENCY all:**

1. SELECT \* FROM data.moviesbyAVGRATE WHERE timestamp > '1999-01-01 00:00:00.000000+0000' AND timestamp < '1999-12-15 23:00:00.000000+0000' AND avg\_rating > 3.0 ALLOW FILTERING;

17:35:41.012000 - 17:35:43.958099 = 2.946099

1. SELECT \* FROM data.moviesbyAVGRATE WHERE timestamp > '1996-01-01 00:00:00.000000+0000' AND timestamp < '1996-12-15 23:00:00.000000+0000' AND avg\_rating > 3.0 ALLOW FILTERING;

17:39:17.116000 - 17:39:17.160782 = 0,044782

1. SELECT \* FROM data.moviesbyAVGRATE WHERE timestamp > '1997-01-01 00:00:00.000000+0000' AND timestamp < '1997-12-15 23:00:00.000000+0000' AND avg\_rating > 3.0 ALLOW FILTERING;

17:43:38.305000 - 17:43:38.311151 = 0,006151

1. SELECT \* FROM data.moviesbyAVGRATE WHERE timestamp > '2000-01-01 00:00:00.000000+0000' AND timestamp < '2000-12-15 23:00:00.000000+0000' AND avg\_rating > 3.0 ALLOW FILTERING;

17:44:59.362000 - 17:44:59.416057= 0,054057

1. SELECT \* FROM data.moviesbyAVGRATE WHERE timestamp > '2002-01-01 00:00:00.000000+0000' AND timestamp < '2002-12-15 23:00:00.000000+0000' AND avg\_rating > 3.0 ALLOW FILTERING;

7:46:31.531000 - 7:46:31.678469 = 0,147469

1. SELECT \* FROM data.moviesbyAVGRATE WHERE timestamp > '2005-01-01 00:00:00.000000+0000' AND timestamp < '2005-12-15 23:00:00.000000+0000' AND avg\_rating > 3.0 ALLOW FILTERING;

7:47:38.408000 - 7:47:38.412263 = 0,004263

1. SELECT \* FROM data.moviesbyAVGRATE WHERE timestamp > '2007-01-01 00:00:00.000000+0000' AND timestamp < '2007-12-15 23:00:00.000000+0000' AND avg\_rating > 3.0 ALLOW FILTERING;

7:48:52.820000 - 7:48:52.825210 = 0,00521

1. SELECT \* FROM data.moviesbyAVGRATE WHERE timestamp > '2000-05-01 00:00:00.000000+0000' AND timestamp < '2000-12-10 23:00:00.000000+0000' AND avg\_rating > 3.0 ALLOW FILTERING;

17:51:58.197000 - 17:51:58.203335 = 0,006335

1. SELECT \* FROM data.moviesbyAVGRATE WHERE timestamp > '1999-05-01 00:00:00.000000+0000' AND timestamp < '1999-12-10 23:00:00.000000+0000' AND avg\_rating > 3.0 ALLOW FILTERING;

17:53:44.430000 - 17:53:44.524262 = 0,094262

1. SELECT \* FROM data.moviesbyAVGRATE WHERE timestamp > '2002-05-0100:00:00.000000+0000' AND timestamp < '2002-12-10 23:00:00.000000+0000' AND avg\_rating > 3.0 ALLOW FILTERING;

17:55:50.110000 - 17:55:50.327419 = 0,217419

**Μ.Ο = 0,3526047**

**Q1 CONSISTENCY quorum;**

1. SELECT \* FROM data.moviesbyAVGRATE WHERE timestamp > '1999-01-01 00:00:00.000000+0000' AND timestamp < '1999-12-15 23:00:00.000000+0000' AND avg\_rating > 3.0 ALLOW FILTERING;

8:08:59.398000 - 8:08:59.458939 = 0,060939

1. SELECT \* FROM data.moviesbyAVGRATE WHERE timestamp > '1996-01-01 00:00:00.000000+0000' AND timestamp < '1996-12-15 23:00:00.000000+0000' AND avg\_rating > 3.0 ALLOW FILTERING;

8:11:29.735000 - 8:11:29.823930 = 0,08893

1. SELECT \* FROM data.moviesbyAVGRATE WHERE timestamp > '1997-01-01 00:00:00.000000+0000' AND timestamp < '1997-12-15 23:00:00.000000+0000' AND avg\_rating > 3.0 ALLOW FILTERING;

8:12:15.938000 - 8:12:16.348484 = 0.410484

1. SELECT \* FROM data.moviesbyAVGRATE WHERE timestamp > '2000-01-01 00:00:00.000000+0000' AND timestamp < '2000-12-15 23:00:00.000000+0000' AND avg\_rating > 3.0 ALLOW FILTERING;

8:12:51.235000 - 8:12:51.252225 = 0.17225

1. SELECT \* FROM data.moviesbyAVGRATE WHERE timestamp > '2002-01-01 00:00:00.000000+0000' AND timestamp < '2002-12-15 23:00:00.000000+0000' AND avg\_rating > 3.0 ALLOW FILTERING;

8:13:25.213000 - 8:13:25.230734 = 0.17734

1. SELECT \* FROM data.moviesbyAVGRATE WHERE timestamp > '2005-01-01 00:00:00.000000+0000' AND timestamp < '2005-12-15 23:00:00.000000+0000' AND avg\_rating > 3.0 ALLOW FILTERING;

8:13:54.258000 - 8:13:54.268333 = 0,010333

1. SELECT \* FROM data.moviesbyAVGRATE WHERE timestamp > '2007-01-01 00:00:00.000000+0000' AND timestamp < '2007-12-15 23:00:00.000000+0000' AND avg\_rating > 3.0 ALLOW FILTERING;

8:14:21.514000 - 8:14:21.518436 = 0,004436

1. SELECT \* FROM data.moviesbyAVGRATE WHERE timestamp > '2000-05-01 00:00:00.000000+0000' AND timestamp < '2000-12-10 23:00:00.000000+0000' AND avg\_rating > 3.0 ALLOW FILTERING;

8:14:54.238000 - 8:14:54.253110 = 0,01511

1. SELECT \* FROM data.moviesbyAVGRATE WHERE timestamp > '1999-05-01 00:00:00.000000+0000' AND timestamp < '1999-12-10 23:00:00.000000+0000' AND avg\_rating > 3.0 ALLOW FILTERING;

8:32:48.287000 - 8:32:48.397156 = 0,110156

1. SELECT \* FROM data.moviesbyAVGRATE WHERE timestamp > '2002-05-01 00:00:00.000000+0000' AND timestamp < '2002-12-10 23:00:00.000000+0000' AND avg\_rating > 3.0 ALLOW FILTERING;

8:33:44.714000 - 8:33:44.718901 = 0,004901

**Μ.Ο = 0,00740248**

Q1 CONSISTENCY one;

1. SELECT \* FROM data.moviesbyAVGRATE WHERE timestamp > '1999-01-01 00:00:00.000000+0000' AND timestamp < '1999-12-15 23:00:00.000000+0000' AND avg\_rating > 3.0 ALLOW FILTERING;

18:38:38.545000 - 18:38:38.552669 = 0,007669

1. SELECT \* FROM data.moviesbyAVGRATE WHERE timestamp > '1996-01-01 00:00:00.000000+0000' AND timestamp < '1996-12-15 23:00:00.000000+0000' AND avg\_rating > 3.0 ALLOW FILTERING;

8:39:09.085000 - 8:39:09.090387 = 0,005387

1. SELECT \* FROM data.moviesbyAVGRATE WHERE timestamp > '1997-01-01 00:00:00.000000+0000' AND timestamp < '1997-12-15 23:00:00.000000+0000' AND avg\_rating > 3.0 ALLOW FILTERING;

8:39:46.119000 - 8:39:46.166320 = 0,04732

1. SELECT \* FROM data.moviesbyAVGRATE WHERE timestamp > '2000-01-01 00:00:00.000000+0000' AND timestamp < '2000-12-15 23:00:00.000000+0000' AND avg\_rating > 3.0 ALLOW FILTERING;

8:40:16.270000 - 8:40:16.369505 = 0,099505

1. SELECT \* FROM data.moviesbyAVGRATE WHERE timestamp > '2002-01-01 00:00:00.000000+0000' AND timestamp < '2002-12-15 23:00:00.000000+0000' AND avg\_rating > 3.0 ALLOW FILTERING;

8:40:42.534000 - 8:40:42.726985 = 0,192985

1. SELECT \* FROM data.moviesbyAVGRATE WHERE timestamp > '2005-01-01 00:00:00.000000+0000' AND timestamp < '2005-12-15 23:00:00.000000+0000' AND avg\_rating > 3.0 ALLOW FILTERING;

8:41:10.058000 - 8:41:10.060756 = 0,002756

1. SELECT \* FROM data.moviesbyAVGRATE WHERE timestamp > '2007-01-01 00:00:00.000000+0000' AND timestamp < '2007-12-15 23:00:00.000000+0000' AND avg\_rating > 3.0 ALLOW FILTERING;

18:41:43.495000 - 18:41:43.498958 = 0,003958

1. SELECT \* FROM data.moviesbyAVGRATE WHERE timestamp > '2000-05-01 00:00:00.000000+0000' AND timestamp < '2000-12-10 23:00:00.000000+0000' AND avg\_rating > 3.0 ALLOW FILTERING;

8:42:26.422000 - 8:42:26.427009 = 0,005009

1. SELECT \* FROM data.moviesbyAVGRATE WHERE timestamp > '1999-05-01 00:00:00.000000+0000' AND timestamp < '1999-12-10 23:00:00.000000+0000' AND avg\_rating > 3.0 ALLOW FILTERING;

8:42:55.483000 - 8:42:55.552744 = 0,069744

1. SELECT \* FROM data.moviesbyAVGRATE WHERE timestamp > '2002-05-01 00:00:00.000000+0000' AND timestamp < '2002-12-10 23:00:00.000000+0000' AND avg\_rating > 3.0 ALLOW FILTERING;

8:43:23.944000 - 8:43:24.009416 = 0.65416

**ΜΟ = 0,0499749**

**Q2**

**CONSISTENCY all:**

1. SELECT title FROM data.moviesbyT WHERE new CONTAINS 'Star' ALLOW FILTERING;

19:29:47.888000 - 19:29:47.926179 = 0,038179

1. SELECT title FROM data.moviesbyT WHERE new CONTAINS 'Woman' ALLOW FILTERING;

19:30:20.622000 - 19:30:20.628762 = 0,006762

1. SELECT title FROM data.moviesbyT WHERE new CONTAINS 'the' ALLOW FILTERING;

19:31:02.228000 - 19:31:02.255326 = 0,027326

1. SELECT title FROM data.moviesbyT WHERE new CONTAINS 'Killer' ALLOW FILTERING;

19:31:29.989000 - 19:31:30.146411 = 0,157411

1. SELECT title FROM data.moviesbyT WHERE new CONTAINS 'Man' ALLOW FILTERING;

19:32:07.619000 - 19:32:07.710301 = 0,091301

1. SELECT title FROM data.moviesbyT WHERE new CONTAINS 'to' ALLOW FILTERING;

19:32:36.191000 - 19:32:36.197316 = 0,006316

1. SELECT title FROM data.moviesbyT WHERE new CONTAINS 'Final' ALLOW FILTERING;

19:33:05.452000 - 19:33:05.457315 = 0,005315

1. SELECT title FROM data.moviesbyT WHERE new CONTAINS 'Lost' ALLOW FILTERING;

19:33:47.851000 - 19:33:47.923683 = 0,072683

1. SELECT title FROM data.moviesbyT WHERE new CONTAINS 'Dead' ALLOW FILTERING;

19:34:22.190000 - 19:34:22.296956 = 0,106956

1. SELECT title FROM data.moviesbyT WHERE new CONTAINS 'Legend' ALLOW FILTERING;

19:34:50.354000 - 19:34:50.480576 = 0,126576

**ΜΟ = 0,0638825**

**Q2**

**CONSISTENCY quorum;**

1. SELECT title FROM data.moviesbyT WHERE new CONTAINS 'Star' ALLOW FILTERING;

19:52:55.552000 - 19:52:55.566123 = 0,014123

1. SELECT title FROM data.moviesbyT WHERE new CONTAINS 'Woman' ALLOW FILTERING;

19:53:47.608000 - 19:53:47.613791 = 0,005791

1. SELECT title FROM data.moviesbyT WHERE new CONTAINS 'the' ALLOW FILTERING;

19:54:21.373000 - 19:54:21.380271 = 0,007271

1. SELECT title FROM data.moviesbyT WHERE new CONTAINS 'Killer' ALLOW FILTERING;

19:54:50.537000 - 19:54:50.550259 = 0,013259

1. SELECT title FROM data.moviesbyT WHERE new CONTAINS 'Man' ALLOW FILTERING;

19:55:19.452000 - 19:55:19.464348 = 0,012348

1. SELECT title FROM data.moviesbyT WHERE new CONTAINS 'to' ALLOW FILTERING;

20:09:58.195000 - 20:09:58.271586 = 0,076586

1. SELECT title FROM data.moviesbyT WHERE new CONTAINS 'Final' ALLOW FILTERING;

20:10:32.679000 - 20:10:32.798430 = 0,11943

1. SELECT title FROM data.moviesbyT WHERE new CONTAINS 'Lost' ALLOW FILTERING;

20:11:09.212000 - 20:11:09.217990 = 0,00599

1. SELECT title FROM data.moviesbyT WHERE new CONTAINS 'Dead' ALLOW FILTERING;

20:11:38.134000 - 20:11:38.164327 = 0,030327

1. SELECT title FROM data.moviesbyT WHERE new CONTAINS 'Legend' ALLOW FILTERING;

20:12:08.612000 - 20:12:08.617514 = 0,005514

**ΜΟ= 0,0290639**

**Q2**

**CONSISTENCY one;**

1. SELECT title FROM data.moviesbyT WHERE new CONTAINS 'Star' ALLOW FILTERING;

20:13:36.850000 - 20:13:37.019507 = 0,169507

1. SELECT title FROM data.moviesbyT WHERE new CONTAINS 'Woman' ALLOW FILTERING;

20:14:06.942000 - 20:14:07.206779 = 0,264779

1. SELECT title FROM data.moviesbyT WHERE new CONTAINS 'the' ALLOW FILTERING;

20:14:40.749000 - 20:14:40.974858 = 0,225858

1. SELECT title FROM data.moviesbyT WHERE new CONTAINS 'Killer' ALLOW FILTERING;

20:15:06.231000 - 20:15:06.252840 = 0,02184

1. SELECT title FROM data.moviesbyT WHERE new CONTAINS 'Man' ALLOW FILTERING;

20:15:35.435000 - 20:15:35.448105 = 0,013105

1. SELECT title FROM data.moviesbyT WHERE new CONTAINS 'to' ALLOW FILTERING;

20:16:03.446000 - 20:16:03.599051 = 0,153051

1. SELECT title FROM data.moviesbyT WHERE new CONTAINS 'Final' ALLOW FILTERING;

20:16:30.020000 - 20:16:30.025590 = 0,00559

1. SELECT title FROM data.moviesbyT WHERE new CONTAINS 'Lost' ALLOW FILTERING;

20:16:56.861000 - 20:16:56.906184 = 0,045184

1. SELECT title FROM data.moviesbyT WHERE new CONTAINS 'Dead' ALLOW FILTERING;

20:17:22.777000 - 20:17:22.781947 = 0,004947

1. SELECT title FROM data.moviesbyT WHERE new CONTAINS 'Legend' ALLOW FILTERING;

20:17:46.159000 - 20:17:46.296469 = 0,137469

**ΜΟ = 0,0903861**

**!!! Q3 !!! CONSISTENCY all;**

1. SELECT title, genres FROM data.moviesbyG WHERE genres CONTAINS 'Adventure' ALLOW FILTERING;

20:39:33.564000 - 20:39:34.557822 = 0,993822

1. SELECT title, genres FROM data.moviesbyG WHERE genres CONTAINS 'Comedy' ALLOW FILTERING;

20:40:01.102000 - 20:40:02.010809 = 0,908809

1. SELECT title, genres FROM data.moviesbyG WHERE genres CONTAINS 'Drama' ALLOW FILTERING;

20:41:05.014000 - 20:41:05.919938 = 0,905938

1. SELECT title, genres FROM data.moviesbyG WHERE genres CONTAINS 'Crime' ALLOW FILTERING;

20:29:49.893000 - 20:29:49.900351 = 0,007351

1. SELECT title, genres FROM data.moviesbyG WHERE genres CONTAINS 'Romance' ALLOW FILTERING;

20:30:15.713000 - 20:30:15.723215 = 0,010215

1. SELECT title, genres FROM data.moviesbyG WHERE genres CONTAINS 'Musical' ALLOW FILTERING;

20:30:44.286000 - 20:30:44.292769 = 0,006769

1. SELECT title, genres FROM data.moviesbyG WHERE genres CONTAINS 'Mystery' ALLOW FILTERING;

20:31:10.215000 - 20:31:10.224499 = 0,009499

1. SELECT title, genres FROM data.moviesbyG WHERE genres CONTAINS 'Sci-Fi' ALLOW FILTERING;

20:31:34.119000 - 20:31:35.689041 = 1,570041

1. SELECT title, genres FROM data.moviesbyG WHERE genres CONTAINS 'Horror' ALLOW FILTERING;

20:32:26.758000 - 20:32:26.785100 = 0,0271

1. SELECT title, genres FROM data.moviesbyG WHERE genres CONTAINS 'Action' ALLOW FILTERING;

20:32:51.995000 - 20:32:53.398726 = 1,403726

**ΜΟ = 0,4934461**

**!!! Q3 !!! CONSISTENCY quorum;**

1. SELECT title, genres FROM data.moviesbyG WHERE genres CONTAINS 'Adventure' ALLOW FILTERING;

20:34:11.873000 - 20:34:13.622928 = 1,749928

1. SELECT title, genres FROM data.moviesbyG WHERE genres CONTAINS 'Comedy' ALLOW FILTERING;

20:35:03.600000 - 20:35:05.194850 = 1,59485

1. SELECT title, genres FROM data.moviesbyG WHERE genres CONTAINS 'Drama' ALLOW FILTERING;

20:35:29.147000 - 20:35:30.792988 = 1,645988

1. SELECT title, genres FROM data.moviesbyG WHERE genres CONTAINS 'Crime' ALLOW FILTERING;

20:35:59.774000 - 20:35:59.869627 = 0,095627

1. SELECT title, genres FROM data.moviesbyG WHERE genres CONTAINS 'Romance' ALLOW FILTERING;

20:36:23.779000 - 20:36:23.822104 = 0,043104

1. SELECT title, genres FROM data.moviesbyG WHERE genres CONTAINS 'Musical' ALLOW FILTERING;

20:36:47.179000 - 20:36:47.252770 = 0,07377

1. SELECT title, genres FROM data.moviesbyG WHERE genres CONTAINS 'Mystery' ALLOW FILTERING;

20:37:17.778000 - 20:37:18.051196 = 0,273196

1. SELECT title, genres FROM data.moviesbyG WHERE genres CONTAINS 'Sci-Fi' ALLOW FILTERING;

20:37:42.327000 - 20:37:43.923756 = 1,596756

1. SELECT title, genres FROM data.moviesbyG WHERE genres CONTAINS 'Horror' ALLOW FILTERING;

20:38:11.247000 - 20:38:11.268639 = 0,021639

1. SELECT title, genres FROM data.moviesbyG WHERE genres CONTAINS 'Action' ALLOW FILTERING;

20:38:36.141000 - 20:38:37.777719 = 1,636719

**ΜΟ= 0,8731577**

**!!! Q3 !!! CONSISTENCY one;**

1. SELECT title, genres FROM data.moviesbyG WHERE genres CONTAINS 'Adventure' ALLOW FILTERING;

20:44:36.613000 - 20:44:38.249637 = 1,636637

1. SELECT title, genres FROM data.moviesbyG WHERE genres CONTAINS 'Comedy' ALLOW FILTERING;

20:45:03.286000 - 20:45:04.428985 =1,142985

1. SELECT title, genres FROM data.moviesbyG WHERE genres CONTAINS 'Drama' ALLOW FILTERING;

20:45:29.366000 - 20:45:31.133939 = 1,767939

1. SELECT title, genres FROM data.moviesbyG WHERE genres CONTAINS 'Crime' ALLOW FILTERING;

20:46:05.942000 - 20:46:05.973008 = 0,031008

1. SELECT title, genres FROM data.moviesbyG WHERE genres CONTAINS 'Romance' ALLOW FILTERING;

20:46:48.336000 - 20:46:48.488573 = 0,152573

1. SELECT title, genres FROM data.moviesbyG WHERE genres CONTAINS 'Musical' ALLOW FILTERING;

20:47:12.685000 - 20:47:12.773445 = 0,088445

1. SELECT title, genres FROM data.moviesbyG WHERE genres CONTAINS 'Mystery' ALLOW FILTERING;

20:47:37.235000 - 20:47:37.249643 = 0,014643

1. SELECT title, genres FROM data.moviesbyG WHERE genres CONTAINS 'Sci-Fi' ALLOW FILTERING;

20:48:12.335000 - 20:48:13.666719 = 1,331719

1. SELECT title, genres FROM data.moviesbyG WHERE genres CONTAINS 'Horror' ALLOW FILTERING;

20:48:38.591000 - 20:48:38.596729 = 0,005729

1. SELECT title, genres FROM data.moviesbyG WHERE genres CONTAINS 'Action' ALLOW FILTERING;

20:49:04.289000 - 20:49:04.814147 = 0,525147

**MO = 0,6696825**

**!!! Q4 !!! CONSISTENCY all;**

1. SELECT title, genres, avg\_rating, movieId FROM data.movieinfo WHERE title = 'Jumanji (1995)' ALLOW FILTERING;

21:03:10.213000 - 21:03:10.248000 = 0,035

1. SELECT title, genres, avg\_rating, movieId FROM data.movieinfo WHERE title = 'Something to Talk About (1995)' ALLOW FILTERING;

21:03:39.613000 - 21:03:39.667432 = 0,054432

1. SELECT title, genres, avg\_rating, movieId FROM data.movieinfo WHERE title = 'Bhaji on the Beach (1993)' ALLOW FILTERING;

21:05:39.090000 - 21:05:39.095712 = 0,005712

1. SELECT title, genres, avg\_rating, movieId FROM data.movieinfo WHERE title = 'Clerks (1994)' ALLOW FILTERING;

21:06:16.104000 - 21:06:16.117156 = 0,013156

1. SELECT title, genres, avg\_rating, movieId FROM data.movieinfo WHERE title = '8 Seconds (1994)' ALLOW FILTERING;

21:06:49.744000 - 21:06:50.002916 = 0,258916

1. SELECT title, genres, avg\_rating, movieId FROM data.movieinfo WHERE title = 'Nell (1994)' ALLOW FILTERING;

21:07:19.510000 - 21:07:19.570678 = 0,060678

1. SELECT title, genres, avg\_rating, movieId FROM data.movieinfo WHERE title = 'Tom and Huck (1995)' ALLOW FILTERING;

21:08:12.484000 - 21:08:12.559179 = 0,075179

1. SELECT title, genres, avg\_rating, movieId FROM data.movieinfo WHERE title = 'Congo (1995)' ALLOW FILTERING;

21:08:36.469000 - 21:08:36.475064 = 0,006064

1. SELECT title, genres, avg\_rating, movieId FROM data.movieinfo WHERE title = 'It Could Happen to You (1994)' ALLOW FILTERING;

21:09:01.376000 - 21:09:01.471203 = 0,095203

1. SELECT title, genres, avg\_rating, movieId FROM data.movieinfo WHERE title = 'Kika (1993)' ALLOW FILTERING;

21:09:27.408000 - 21:09:27.588423 = 0,180423

**MO= 0.0784763**

**!!! Q4 !!! CONSISTENCY quorum;**

1. SELECT title, genres, avg\_rating, movieId FROM data.movieinfo WHERE title = 'Jumanji (1995)' ALLOW FILTERING;

21:11:22.266000 - 21:11:22.284250 = 0,01825

1. SELECT title, genres, avg\_rating, movieId FROM data.movieinfo WHERE title = 'Something to Talk About (1995)' ALLOW FILTERING;

21:11:47.670000 - 21:11:47.770432 = 0,100432

1. SELECT title, genres, avg\_rating, movieId FROM data.movieinfo WHERE title = 'Bhaji on the Beach (1993)' ALLOW FILTERING;

21:12:13.026000 - 21:12:13.044558 = 0,018558

1. SELECT title, genres, avg\_rating, movieId FROM data.movieinfo WHERE title = 'Clerks (1994)' ALLOW FILTERING;

21:12:37.896000 - 21:12:37.902307 = 0,006307

1. SELECT title, genres, avg\_rating, movieId FROM data.movieinfo WHERE title = '8 Seconds (1994)' ALLOW FILTERING;

21:13:06.634000 - 21:13:06.649762 = 0,015762

1. SELECT title, genres, avg\_rating, movieId FROM data.movieinfo WHERE title = 'Nell (1994)' ALLOW FILTERING;

21:13:29.034000 - 21:13:29.369839 = 0,335839

1. SELECT title, genres, avg\_rating, movieId FROM data.movieinfo WHERE title = 'Tom and Huck (1995)' ALLOW FILTERING;

21:13:52.087000 - 21:13:52.091550 = 0,00455

1. SELECT title, genres, avg\_rating, movieId FROM data.movieinfo WHERE title = 'Congo (1995)' ALLOW FILTERING;

21:14:18.780000 - 21:14:18.861394 = 0,081394

1. SELECT title, genres, avg\_rating, movieId FROM data.movieinfo WHERE title = 'It Could Happen to You (1994)' ALLOW FILTERING;

21:14:46.771000 - 21:14:46.848255 = 0,077255

1. SELECT title, genres, avg\_rating, movieId FROM data.movieinfo WHERE title = 'Kika (1993)' ALLOW FILTERING;

21:15:11.197000 - 21:15:11.202238 = 0,005238

**MO = 0.0663585**

**!!! Q4 !!! CONSISTENCY one;**

1. SELECT title, genres, avg\_rating, movieId FROM data.movieinfo WHERE title = 'Jumanji (1995)' ALLOW FILTERING;

18:58:40.304000 - 18:58:40.323391 = 0,019391

1. SELECT title, genres, avg\_rating, movieId FROM data.movieinfo WHERE title = 'Something to Talk About (1995)' ALLOW FILTERING;

18:59:25.337000 - 18:59:25.357125 = 0,020125

1. SELECT title, genres, avg\_rating, movieId FROM data.movieinfo WHERE title = 'Bhaji on the Beach (1993)' ALLOW FILTERING;

18:59:56.466000 - 18:59:56.486992 = 0,020992

1. SELECT title, genres, avg\_rating, movieId FROM data.movieinfo WHERE title = 'Clerks (1994)' ALLOW FILTERING;

19:00:23.386000 - 19:00:23.476426 = 0,090426

1. SELECT title, genres, avg\_rating, movieId FROM data.movieinfo WHERE title = '8 Seconds (1994)' ALLOW FILTERING;

19:00:57.213000 - 19:00:57.217303 = 0,004303

1. SELECT title, genres, avg\_rating, movieId FROM data.movieinfo WHERE title = 'Nell (1994)' ALLOW FILTERING;

19:01:20.843000 - 19:01:20.907805 = 0,064805

1. SELECT title, genres, avg\_rating, movieId FROM data.movieinfo WHERE title = 'Tom and Huck (1995)' ALLOW FILTERING;

19:01:47.749000 - 19:01:47.758817 = 0,009817

1. SELECT title, genres, avg\_rating, movieId FROM data.movieinfo WHERE title = 'Congo (1995)' ALLOW FILTERING;

19:02:14.276000 - 19:02:14.281001 = 0,005001

1. SELECT title, genres, avg\_rating, movieId FROM data.movieinfo WHERE title = 'It Could Happen to You (1994)' ALLOW FILTERING;

19:02:39.033000 - 19:02:39.059476 = 0,026476

1. SELECT title, genres, avg\_rating, movieId FROM data.movieinfo WHERE title = 'Kika (1993)' ALLOW FILTERING;

19:03:06.962000 - 19:03:07.010143 = 0,048143

**MO= 0.0309479**

**!!! Q5 !!! CONSISTENCY all;**

1. SELECT title, tag, avg\_rating FROM data.topnmovies WHERE tag = 'jesus' AND avg\_rating > 3.0 ALLOW FILTERING;

19:14:45.150000 - 19:14:45.211310 = 0,06131

1. SELECT title, tag, avg\_rating FROM data.topnmovies WHERE tag = 'dark hero' AND avg\_rating > 3.0 ALLOW FILTERING;

19:15:14.098000 - 19:15:14.102817 = 0,004817

1. SELECT title, tag, avg\_rating FROM data.topnmovies WHERE tag = 'romantic comedy' AND avg\_rating > 3.0 ALLOW FILTERING;

19:16:09.508000 - 19:16:09.648228 = 0,140228

1. SELECT title, tag, avg\_rating FROM data.topnmovies WHERE tag = 'bollywood' AND avg\_rating > 3.0 ALLOW FILTERING;

19:16:35.069000 - 19:16:35.231000 = 0,162

1. SELECT title, tag, avg\_rating FROM data.topnmovies WHERE tag = 'visually appealing' AND avg\_rating > 3.0 ALLOW FILTERING;

19:17:01.012000 - 19:17:01.016114 = 0,004114

1. SELECT title, tag, avg\_rating FROM data.topnmovies WHERE tag = 'plot twist' AND avg\_rating > 3.0 ALLOW FILTERING;

19:17:25.704000 - 19:17:25.707917 = 0,003917

1. SELECT title, tag, avg\_rating FROM data.topnmovies WHERE tag = 'sports' AND avg\_rating > 3.0 ALLOW FILTERING;

19:17:50.617000 - 19:17:50.620937 = 0,003937

1. SELECT title, tag, avg\_rating FROM data.topnmovies WHERE tag = 'western' AND avg\_rating > 3.0 ALLOW FILTERING;

19:18:16.800000 - 19:18:16.895385 = 0,095385

1. SELECT title, tag, avg\_rating FROM data.topnmovies WHERE tag = 'sci-fi' AND avg\_rating > 3.0 ALLOW FILTERING;

19:18:43.505000 - 19:18:43.873000 = 0,368

1. SELECT title, tag, avg\_rating FROM data.topnmovies WHERE tag = 'writing' AND avg\_rating > 3.0 ALLOW FILTERING;

19:19:09.736000 - 19:19:09.761000 = 0,025

**MO= 0.0838708**

**!!! Q5 !!! CONSISTENCY quorum;**

1. SELECT title, tag, avg\_rating FROM data.topnmovies WHERE tag = 'jesus' AND avg\_rating > 3.0 ALLOW FILTERING;

19:23:11.642000 - 19:23:11.652434 = 0,010434

1. SELECT title, tag, avg\_rating FROM data.topnmovies WHERE tag = 'dark hero' AND avg\_rating > 3.0 ALLOW FILTERING;

19:23:39.783000 - 19:23:39.847689 = 0,064689

1. SELECT title, tag, avg\_rating FROM data.topnmovies WHERE tag = 'romantic comedy' AND avg\_rating > 3.0 ALLOW FILTERING;

19:26:49.793000 - 19:26:49.878990 = 0,08599

1. SELECT title, tag, avg\_rating FROM data.topnmovies WHERE tag = 'bollywood' AND avg\_rating > 3.0 ALLOW FILTERING;

19:27:16.660000 - 19:27:16.804745 = 0,144745

1. SELECT title, tag, avg\_rating FROM data.topnmovies WHERE tag = 'visually appealing' AND avg\_rating > 3.0 ALLOW FILTERING;

19:27:44.544000 - 19:27:44.549092 = 0,005092

1. SELECT title, tag, avg\_rating FROM data.topnmovies WHERE tag = 'plot twist' AND avg\_rating > 3.0 ALLOW FILTERING;

19:28:12.683000 - 19:28:12.706532 = 0,023532

1. SELECT title, tag, avg\_rating FROM data.topnmovies WHERE tag = 'sports' AND avg\_rating > 3.0 ALLOW FILTERING;

19:28:45.593000 - 19:28:45.753491 = 0,160491

1. SELECT title, tag, avg\_rating FROM data.topnmovies WHERE tag = 'western' AND avg\_rating > 3.0 ALLOW FILTERING;

19:29:13.730000 - 19:29:13.764851 = 0,034851

1. SELECT title, tag, avg\_rating FROM data.topnmovies WHERE tag = 'sci-fi' AND avg\_rating > 3.0 ALLOW FILTERING;

19:29:40.825000 - 19:29:40.829529 = 0,004529

1. SELECT title, tag, avg\_rating FROM data.topnmovies WHERE tag = 'writing' AND avg\_rating > 3.0 ALLOW FILTERING;

19:30:04.045000 - 19:30:04.061519 = 0,016519

**MO= 0,0550872**

**!!! Q5 !!! CONSISTENCY one;**

1. SELECT title, tag, avg\_rating FROM data.topnmovies WHERE tag = 'jesus' AND avg\_rating > 3.0 ALLOW FILTERING;

19:31:59.533000 - 19:31:59.726038 = 0,193038

1. SELECT title, tag, avg\_rating FROM data.topnmovies WHERE tag = 'dark hero' AND avg\_rating > 3.0 ALLOW FILTERING;

19:32:23.646000 - 19:32:23.707507 = 0,061507

1. SELECT title, tag, avg\_rating FROM data.topnmovies WHERE tag = 'romantic comedy' AND avg\_rating > 3.0 ALLOW FILTERING;

19:32:52.046000 - 19:32:52.052889 = 0,006889

1. SELECT title, tag, avg\_rating FROM data.topnmovies WHERE tag = 'bollywood' AND avg\_rating > 3.0 ALLOW FILTERING;

19:33:19.077000 - 19:33:19.080184 = 0,003184

1. SELECT title, tag, avg\_rating FROM data.topnmovies WHERE tag = 'visually appealing' AND avg\_rating > 3.0 ALLOW FILTERING;

19:33:42.550000 - 19:33:42.803001 = 0,253001

1. SELECT title, tag, avg\_rating FROM data.topnmovies WHERE tag = 'plot twist' AND avg\_rating > 3.0 ALLOW FILTERING;

19:34:09.945000 - 19:34:10.110949 = 0,165949

1. SELECT title, tag, avg\_rating FROM data.topnmovies WHERE tag = 'sports' AND avg\_rating > 3.0 ALLOW FILTERING;

19:34:34.383000 - 19:34:34.386025 = 0,003025

1. SELECT title, tag, avg\_rating FROM data.topnmovies WHERE tag = 'western' AND avg\_rating > 3.0 ALLOW FILTERING;

19:34:59.436000 - 19:34:59.575913 = 0,139913

1. SELECT title, tag, avg\_rating FROM data.topnmovies WHERE tag = 'sci-fi' AND avg\_rating > 3.0 ALLOW FILTERING;

19:35:21.324000 - 19:35:21.327753 = 0,003753

1. SELECT title, tag, avg\_rating FROM data.topnmovies WHERE tag = 'writing' AND avg\_rating > 3.0 ALLOW FILTERING;

19:35:45.685000 - 19:35:45.755999 = 0,070999

**MO = 0,0901258**