The TTC 2014 Movie Database Case

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Abstract

Social networks and other web 2.0 platforms use huge amounts of data to offer new services to customers. Often this data can be expressed as huge graphs and thus could be seen as a potential new application field for model transformations. However, this application area requires that model transformation tools scale to models with millions of objects. This transformation case targets this application area by using the IMDb movie database as a model. The transformation deals with identifying all actor couples which perform together in a set of at least three movies.

1 Introduction

The driving force behind social networks and other new web 2.0 offerings is often a huge amount of data from which interesting information can be extracted. Consequently, concepts like MapReduce [4] and libraries like Hadoop [2] and Giraph [1] have been developed to efficiently process this huge amount of data. However, model transformation approaches have not adressed this field so far.

Automotive software is an already well-established application field for model-driven software engineering and its models also approach huge sizes. As a consequence from these two examples, model transformation approaches must be scalable to models with million objects to be applicable for these application areas.

In the following, we present a case which uses the IMDb movie database [6] as a data source. The IMDb movie database contains information about movies, actors performing in the movies, movie ratings, etc. The main task is to develop a model transformation which identifies all couples of two actors who perform in at least three common movies and calculate the average rating of those movies. This core task is then generalized to cliques of n actors. Furthermore, some queries calculating top-15

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¹This task together with a solution in Henshin is also described in [7].

lists of couples and cliques are to be written. Evaluation criteria are correctness/completeness and performance.

In the next section, we describe the case in more detail including the meta model as well as the different core and extension tasks. After that, Section 3 presents the evaluation criteria for submitted solutions to this case.

2 Detailed Case Description

We use the IMDb data about movies, actors, actresses, and movie ratings for this transformation case. The resulting metamodel is shown in Figure 1. The names of actors and actresses are always unique in the models. In addition to the obvious classes, the metamodel contains a common superclass for actors and actresses as well as classes for groups of actors which play in common movies. The class Group contains the attribute group which is intended to store the average rating of the common movies of the group of actors. The metamodel distinguishes between groups of two persons (a Grouple) or a Grouple of group persons to support the different tasks in this transformation case.

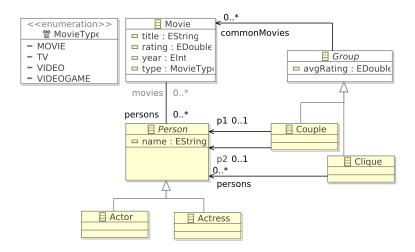


Figure 1: A metamodel for the relevant aspects of the movie database

The EMF model as well as a parser for the IMDb database files is available at [5]. The pre-parsed IMDb models are available on request². The transformation case will use synthetic data (as generated in Task 1) as well as real IMDb data for the evaluation of the correctness and performance of the submitted solutions.

Non-EMF Solutions

As stated above, the pre-parsed IMDb models are available as EMF models. However, we can also provide the models in some simple generic format (e.g., CSV) on request for solution authors that work with a different modeling framework. Please contact Tassilo Horn in that case.

2.1 Task 1: Generating Test Data

The goal of this task is to generate (synthetic) test data which will be used later to evaluate the correctness and the performance of the solution of the main task. The transformation to be implemented takes an empty model and a parameter $N \geq 0$, and generates movies, actresses, actors, and references between them. The number of objects to be generated is determined by the parameter N. Specifically,

²Contact Matthias Tichy for getting access.

the transformation is supposed to generate 5N actors, 5N actresses and 10N movies, totalling in 20N nodes. Additionally, the references between persons and movies are generated in a specified way.

The specific patterns to be generated are shown in the Henshin [3] rules in Figure 2. Each of the two used rules generates five persons and five movies. The five persons in the rule createPositive play together in three movies. In contrast, every possible pair of persons generated by the rule createNegative plays together in at most two movies. The movie ratings and the name of the persons are derived from the rule parameter n which takes the values from 0 to N-1. The entry point for the test data generator is the iterated unit createExample. The unit has the integer-valued parameter N which determines the number of loops to execute. Specifically, this unit executes the sequential unit createTest N times with parameter values $0 \dots N-1$ for n. The unit createTest invokes the rule createPositive and createNegative both with n as parameter.

For the following tasks, test data should be generated for different values of N which can be found in Table 1.

2.2 Task 2: Finding Couples

In this task, a transformation shall be implemented that takes a graph consisting of inter-connected movies, actors and actresses as input, and creates additional nodes and links in this graph.³ Specifically, the task is to find all pairs of persons (actors or actresses) which played together in at least three movies. For every such pair, the transformation is supposed to create an object of type Couple referencing both persons using the p1 and p2 references, and referencing all movies in which both persons played in using the commonMovies reference.

2.3 Task 3: Computing Average Rankings

The input model of this task is the one generated in Task 2, i.e., a graph consisting of movie, actor, actress and couple nodes. The goal of this task is to set the avgRating-attribute of all couple nodes to the average (i.e. the arithmetic mean) of the ratings of all movies that *both* persons played in.

2.4 Extension Task 1: Compute Top-15 Couples

The goal of this task is to produce top-15 lists of the couples created by Task 2. For this purpose, two model queries should be given.

- (a) Compute the top 15 couples according to the average rating of their common movies (requires Task 3 to be solved).
- (b) Compute the top 15 couples according to the number of common movies.

Each of the couples in the top-15 lists should be printed with the names of the two persons, the average rating (only if Task 3 has been solved), and the number of the couple's common movies. We don't require printing the common movies' titles because the couple with the most common movies in the complete IMDb model has more than 400 of them.

If two couples have the same value for the average rating/number of common movies, their order should be determined in some stable manner.

2.5 Extension Task 2: Finding Cliques

This extension task is a generalization of Task 2. A clique is a group of at least n persons (with $n \ge 3$) acting together in at least 3 movies. So a couple is essentially a clique of size n = 2.

³Both in-place and out-place transformation approaches are possible.

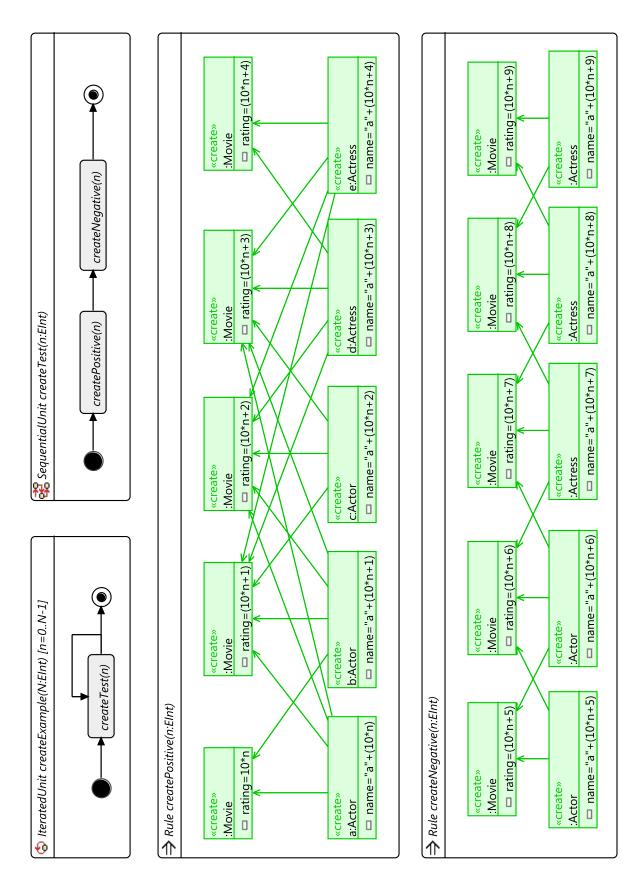


Figure 2: Henshin specification for generating synthetic movie test data.

The extension task is to find cliques of a given size n, and to create a Clique element for each of them referencing the clique's members using the persons reference and its common movies using the common Movies reference.

The task will be evaluated for $n \in \{3,4,5\}$, so it could be solved by writing three similar rules manually. However, to achieve a full completeness score for this task, a solution should work for any $n \geq 3$. Therefore, a transformation could have n as a parameter, or there could be a higher-order transformation that receives n and generates a rule creating cliques of exactly that size.

2.6 Extension Task 3: Compute Average Rankings for Cliques

Like it was done for couples in Task 3, the avgRating attribute of cliques should be set to the average rating of all its common movies.

2.7 Extension Task 4: Compute Top-15 Cliques

This is a variant of Extension Task 1 for cliques instead of couples. Again, two queries should be given.

- (a) Compute the top-15 cliques of a given size n according to the average rating of their common movies (requires Extension Task 3 to be solved).
- (b) Compute the top-15 cliques of a given size n according to the number of common movies.

Again, every clique should be printed with the names of its members, the average rating, and the number of common movies.

3 Evaluation Criteria

The evaluation of the submitted transformation will be done on synthetic data as well as real data from the IMDb database. The IMDb database is regularly updated. In order to provide a common set of data, we provide the models generated from the IMDb database in December 2013 to participants by request².

3.1 Correctness and Completeness

All tasks and extension tasks are scored evenly with zero to three points. Zero means the task has not been tackled at all, three points means the task has been completely solved and the implementation is correct. The performance of a solution is not relevant, here. If a solution works correctly for the smaller models but won't terminate or run out of memory for the larger models, it may still achieve three points.

The following list explains the evaluation criteria for the individual tasks.

- **Task 1** The test data generation will be evaluated for different values of N. The correct number of elements, their relationships, and the correctly set attribute values will be assessed.
- Task 2 The correct number of couples will be evaluated for both the synthetic and the IMDb models. The expected numbers for both kinds of models are shown in Table 1 and Table 2 in the appendix. Furthermore, the correct setting of the p1, p2, and commonMovies references will be spot-checked.
- Task 3 The correct average ranking of couples will be spot-checked for both the synthetic and the IMDb models. Refer to Section B for the expected values of the top-15 average ratings.

Extension Task 1 The Top-15 lists of couples will be evaluated for both the synthetic and the IMDb models. Section B lists the expected top-15 lists for each model. The couples are sorted by the (a) average rating or by (b) the number of common movies. If two couples have the same value for that criterion, the respective other metric is used to cut the tie. If that also doesn't suffice, the names of the actors are used for comparison. While this is a sensible approach, it is not strictly required. Sorting stably according criterion (a) and (b) is enough to achieve a full score.

Extension Task 2 The finding of cliques will be evaluated for the sizes $n \in \{3, 4, 5\}$ for the synthetic models and for n = 3 for the IMDb models. The main evaluation criterion, however, is that the value of n can be chosen freely, i.e., the rule for a given n is not written manually but it is a parameter to the transformation, or a parameter to a higher-order transformation generating a transformation for that value.

Extension Task 3 The correct average ranking of cliques will be spot-checked for both the synthetic and the IMDb models. Refer to Section B for the expected values of the top-15 average ratings.

Extension Task 4 The Top-15 lists of cliques will be evaluated for both the synthetic $(n \in \{3, 4, 5\})$ and the IMDb models (n = 3). Again, the expected top-15 lists are printed in Section B. Like for Extension Task 1, the a stable sorting according to (a) average rating, or (b) number of common movies is enough to achieve a full score.

3.2 Benchmarks

The goal of this task is to generate a performance benchmark of your solution to Task 2 (finding couples). This benchmark should be executed using two different sets of input data:

- (a) synthetic test data generated using the transformation for Task 1,
- (b) provided data from the IMDb movie database (available at [6]; parsable, e.g., using [5]).

For both cases, you should run the transformation for Task 2 and measure the time needed to complete the transformation (without loading and saving the model). If you solved also the extension task 2 (finding cliques), please also generate benchmarks for these cases using $n \in \{3, 4, 5\}$ for the synthetic test models and n = 3 for the IMDb models.

In order to evaluate the scalability of the solution and to compare it with other solutions, you should use specific input models / model sizes. For the synthetic test data, please use the values for N shown in Table 1. For the IMDb data version, please use the provided models listed in Table 2. The models are available on request².

Important:

- Please restrict your benchmarks to those input models that can be processed within **5 minutes** or less. Transformations that take longer than 5 minutes will not be considered in the evaluation.
- Please provide a solution that can run on an x86-based Linux system and that can be started on the command-line. This will be important to reproduce your results on a remote testing system⁴, in particular the benchmarks. Please document the setup of your solution and the requirements to the system environment.

The benchmark results are scored by comparing the run-times with the other solutions. The fastest solution gets 21 points (same amount as for correctness and completeness). The rest of the solutions get proportional scores.

⁴The system we will use for evaluating the performance is a 64bit Linux system with 8 cores and 16 GB RAM.

References

- [1] Apache Software Foundation. Apache Giraph. http://giraph.apache.org.
- [2] Apache Software Foundation. Apache Hadoop. http://hadoop.apache.org.
- [3] T. Arendt, E. Bierman, S. Jurack, C. Krause, and G. Taentzer. Henshin: Advanced concepts and tools for in-place EMF model transformations. In *Proc. MoDELS 2010*, LNCS 6394, pages 121–135. Springer, 2010.
- [4] Jeffrey Dean and Sanjay Ghemawat. MapReduce: simplified data processing on large clusters. Commun. ACM, 51(1):107–113, January 2008.
- [5] Tassilo Horn. IMDB2EMF: https://github.com/tsdh/imdb2emf.
- [6] Internet Movie Database (IMDB). Alternative interfaces: http://www.imdb.com/interfaces.
- [7] Christian Krause, Matthias Tichy, and Holger Giese. Implementing graph transformations in the bulk synchronous parallel model. In *Proc. FASE 2014*. Springer, 2014. Accepted for publication.

A Expected Number of Couples and Cliques

Model(N)	#Couples	#3-Cliques	#4-Cliques	#5-Cliques
1000	10000	10000	5000	1000
2000	20000	20000	10000	2000
3000	30000	30000	15000	3000
4000	40000	40000	20000	4000
5000	50000	50000	25000	5000
10000	100000	100000	50000	10000
50000	500000	500000	250000	50000
100000	1000000	1000000	500000	100000
200000	2000000	2000000	1000000	200000

Table 1: The synthetic models with the expected numbers of Couples and Cliques of various sizes

Model	#Couples	#3-Cliques
imdb-0005000-49930.movies	17352	127825
imdb-0010000-98168.movies	28211	188712
imdb-0030000-207420.movies	35198	200532
imdb-0045000-299504.movies	43294	210985
imdb-0065000-404920.movies	57889	220891
imdb-0085000-499995.movies	79470	243314
imdb-0130000-709551.movies	136956	307405
imdb-0200000-1004463.movies	244627	457833
imdb-0340000-1505143.movies	585689	1469156
imdb-0495000-2000900.movies	1017752	2173809
imdb-0660000-2501893.movies	1562317	3953798
imdb-all-3257145.movies	2709371	8227081

Table 2: The IMDb Models with the expected numbers of Couples and Cliques of size 3

B Expected Top-15 Lists

B.1 Synthetic Models

B.1.1 Couples

Top-15 couples for synthetic model with n = 1000:

There are 10000 groups.

Top-15 by Average Rating

```
1. Couple avgRating 9992.500,
                                4 movies (a9993; a9994)
2. Couple avgRating 9992.000,
                                3 movies (a9990; a9992)
3. Couple avgRating 9992.000,
                                3 movies (a9990; a9993)
4. Couple avgRating 9992.000, 3 movies (a9990; a9994)
5. Couple avgRating 9992.000,
                                3 movies (a9991; a9992)
6. Couple avgRating 9992.000,
                                3 movies (a9991; a9993)
7. Couple avgRating 9992.000,
                                3 movies (a9991; a9994)
8. Couple avgRating 9992.000,
                                3 movies (a9992; a9993)
9. Couple avgRating 9992.000,
                                3 movies (a9992; a9994)
10. Couple avgRating 9991.500,
                                4 movies (a9990; a9991)
11. Couple avgRating 9982.500,
                                4 movies (a9983; a9984)
12. Couple avgRating 9982.000,
                                3 movies (a9980; a9982)
13. Couple avgRating 9982.000,
                                3 movies (a9980; a9983)
14. Couple avgRating 9982.000,
                                3 movies (a9980; a9984)
15. Couple avgRating 9982.000,
                                3 movies (a9981; a9982)
```

Top-15 by Number of Common Movies

```
1. Couple avgRating 9992.500,
                               4 movies (a9993; a9994)
2. Couple avgRating 9991.500,
                                4 movies (a9990; a9991)
3. Couple avgRating 9982.500,
                                4 movies (a9983: a9984)
4. Couple avgRating 9981.500, 4 movies (a9980; a9981)
5. Couple avgRating 9972.500,
                                4 movies (a9973; a9974)
6. Couple avgRating 9971.500,
                                4 movies (a9970; a9971)
7. Couple avgRating 9962.500, 4 movies (a9963; a9964)
8. Couple avgRating 9961.500,
                               4 movies (a9960; a9961)
9. Couple avgRating 9952.500,
                                4 movies (a9953; a9954)
10. Couple avgRating 9951.500,
                                4 movies (a9950; a9951)
11. Couple avgRating 9942.500,
                                4 movies (a9943; a9944)
12. Couple avgRating 9941.500,
                                4 movies (a9940; a9941)
13. Couple avgRating 9932.500,
                                4 movies (a9933; a9934)
14. Couple avgRating 9931.500,
                                4 movies (a9930; a9931)
15. Couple avgRating 9922.500,
                                4 movies (a9923; a9924)
```

Top-15 couples for synthetic model with n = 2000:

There are 20000 groups.

```
1. Couple avgRating 19992.500,
                                4 movies (a19993; a19994)
2. Couple avgRating 19992.000, 3 movies (a19990; a19992)
3. Couple avgRating 19992.000,
                                 3 movies (a19990; a19993)
                                3 movies (a19990; a19994)
4. Couple avgRating 19992.000,
5. Couple avgRating 19992.000,
                                 3 movies (a19991; a19992)
6. Couple avgRating 19992.000,
                                 3 movies (a19991; a19993)
7. Couple avgRating 19992.000,
                                 3 movies (a19991; a19994)
8. Couple avgRating 19992.000,
                                 3 movies (a19992; a19993)
9. Couple avgRating 19992.000,
                                 3 movies (a19992; a19994)
10. Couple avgRating 19991.500,
                                 4 movies (a19990; a19991)
11. Couple avgRating 19982.500,
                                 4 movies (a19983; a19984)
12. Couple avgRating 19982.000,
                                 3 movies (a19980; a19982)
13. Couple avgRating 19982.000,
                                 3 movies (a19980; a19983)
14. Couple avgRating 19982.000,
                                 3 movies (a19980; a19984)
15. Couple avgRating 19982.000,
                                3 movies (a19981; a19982)
```

```
1. Couple avgRating 19992.500, 4 movies (a19993; a19994)
2. Couple avgRating 19991.500, 4 movies (a19990; a19991)
3. Couple avgRating 19982.500, 4 movies (a19983; a19984)
4. Couple avgRating 19981.500,
                                  4 movies (a19980; a19981)
5. Couple avgRating 19972.500, 4 movies (a19973; a19974)
6. Couple avgRating 19971.500, 4 movies (a19970; a19971)
7. Couple avgRating 19962.500, 4 movies (a19963; a19964)
8. Couple avgRating 19961.500, 4 movies (a19960; a19961)
9. Couple avgRating 19952.500,
                                  4 movies (a19953; a19954)
10. Couple avgRating 19951.500,
                                  4 movies (a19950; a19951)
11. Couple avgRating 19942.500,
                                  4 movies (a19943; a19944)
12. Couple avgRating 19941.500,
                                  4 movies (a19940; a19941)
13. Couple avgRating 19932.500,
                                  4 movies (a19933; a19934)
14. Couple avgRating 19931.500,
                                  4 movies (a19930; a19931)
15. Couple avgRating 19922.500, 4 movies (a19923; a19924)
```

Top-15 couples for synthetic model with n = 3000:

There are 30000 groups.

Top-15 by Average Rating

```
1. Couple avgRating 29992.500, 4 movies (a29993; a29994)
2. Couple avgRating 29992.000, 3 movies (a29990; a29992)
3. Couple avgRating 29992.000, 3 movies (a29990; a29993)
4. Couple avgRating 29992.000,
                                3 movies (a29990; a29994)
5. Couple avgRating 29992.000, 3 movies (a29991; a29992)
6. Couple avgRating 29992.000, 3 movies (a29991; a29993)
7. Couple avgRating 29992.000,
                                3 movies (a29991; a29994)
8. Couple avgRating 29992.000,
                                3 movies (a29992; a29993)
9. Couple avgRating 29992.000,
                                3 movies (a29992; a29994)
10. Couple avgRating 29991.500,
                                4 movies (a29990; a29991)
11. Couple avgRating 29982.500,
                                4 movies (a29983; a29984)
12. Couple avgRating 29982.000,
                                3 movies (a29980; a29982)
13. Couple avgRating 29982.000,
                                3 movies (a29980; a29983)
14. Couple avgRating 29982.000,
                                3 movies (a29980; a29984)
15. Couple avgRating 29982.000,
                                3 movies (a29981; a29982)
```

Top-15 by Number of Common Movies

```
1. Couple avgRating 29992.500, 4 movies (a29993; a29994)
2. Couple avgRating 29991.500, 4 movies (a29990; a29991)
3. Couple avgRating 29982.500, 4 movies (a29983; a29984)
4. Couple avgRating 29981.500, 4 movies (a29980; a29981) 5. Couple avgRating 29972.500, 4 movies (a29973; a29974)
6. Couple avgRating 29971.500, 4 movies (a29970; a29971)
7. Couple avgRating 29962.500,
8. Couple avgRating 29961.500,
                                    4 movies (a29963; a29964)
                                    4 movies (a29960; a29961)
9. Couple avgRating 29952.500, 4 movies (a29953; a29954)
10. Couple avgRating 29951.500,
                                    4 movies (a29950; a29951)
11. Couple avgRating 29942.500,
                                    4 movies (a29943; a29944)
12. Couple avgRating 29941.500,
                                    4 movies (a29940; a29941)
13. Couple avgRating 29932.500,
                                    4 movies (a29933; a29934)
14. Couple avgRating 29931.500,
                                    4 movies (a29930; a29931)
15. Couple avgRating 29922.500,
                                    4 movies (a29923; a29924)
```

Top-15 couples for synthetic model with n = 4000:

There are 40000 groups.

```
1. Couple avgRating 39992.500,
                                4 movies (a39993; a39994)
2. Couple avgRating 39992.000, 3 movies (a39990; a39992)
3. Couple avgRating 39992.000, 3 movies (a39990; a39993)
4. Couple avgRating 39992.000, 3 movies (a39990; a39994)
5. Couple avgRating 39992.000,
                                3 movies (a39991; a39992)
6. Couple avgRating 39992.000, 3 movies (a39991; a39993)
7. Couple avgRating 39992.000, 3 movies (a39991; a39994)
8. Couple avgRating 39992.000,
                                3 movies (a39992; a39993)
9. Couple avgRating 39992.000, 3 movies (a39992; a39994)
10. Couple avgRating 39991.500, 4 movies (a39990; a39991)
11. Couple avgRating 39982.500,
                                4 movies (a39983; a39984)
12. Couple avgRating 39982.000,
                                3 movies (a39980; a39982)
13. Couple avgRating 39982.000,
                                3 movies (a39980; a39983)
14. Couple avgRating 39982.000,
                                3 movies (a39980; a39984)
                                3 movies (a39981; a39982)
15. Couple avgRating 39982.000,
```

```
_____
```

```
    Couple avgRating 39992.500, 4 movies (a39993; a39994)
    Couple avgRating 39991.500, 4 movies (a39990; a39991)

 3. Couple avgRating 39982.500, 4 movies (a39983; a39984)
4. Couple avgRating 39981.500, 4 movies (a39980; a39981)
5. Couple avgRating 39972.500, 4 movies (a39973; a39974)
6. Couple avgRating 39971.500, 4 movies (a39970; a39971)
 7. Couple avgRating 39962.500, 4 movies (a39963; a39964)
 8. Couple avgRating 39961.500, 4 movies (a39960; a39961)
9. Couple avgRating 39952.500, 4 movies (a39953; a39954)
10. Couple avgRating 39951.500, 4 movies (a39950; a39951)
11. Couple avgRating 39942.500,
                                                4 movies (a39943; a39944)
12. Couple avgRating 39941.500,
                                                4 movies (a39940; a39941)
13. Couple avgRating 39932.500,
                                               4 movies (a39933; a39934)
14. Couple avgRating 39931.500, 4 movies (a39930; a39931)
15. Couple avgRating 39922.500, 4 movies (a39923; a39924)
                                                4 movies (a39930; a39931)
```

Top-15 couples for synthetic model with n = 5000:

There are 50000 groups.

Top-15 by Average Rating

```
1. Couple avgRating 49992.500, 4 movies (a49993; a49994)

    Couple avgRating 49992.000,
    Couple avgRating 49992.000,

                                       3 movies (a49990; a49992)
                                       3 movies (a49990; a49993)
 4. Couple avgRating 49992.000, 3 movies (a49990; a49994)
5. Couple avgRating 49992.000, 3 movies (a49991; a49992) 6. Couple avgRating 49992.000, 3 movies (a49991; a49993)
 7. Couple avgRating 49992.000, 3 movies (a49991; a49994)
8. Couple avgRating 49992.000, 3 movies (a49992; a49993)
9. Couple avgRating 49992.000, 3 movies (a49992; a49994)
10. Couple avgRating 49991.500, 4 movies (a49990; a49991)
11. Couple avgRating 49982.500,
                                       4 movies (a49983; a49984)
12. Couple avgRating 49982.000,
                                       3 movies (a49980; a49982)
13. Couple avgRating 49982.000, 3 movies (a49980; a49983)
14. Couple avgRating 49982.000, 3 movies (a49980; a49984)
15. Couple avgRating 49982.000,
                                       3 movies (a49981; a49982)
```

```
1. Couple avgRating 49992.500, 4 movies (a49993; a49994)
2. Couple avgRating 49991.500, 4 movies (a49990; a49991)
3. Couple avgRating 49982.500,
                               4 movies (a49983; a49984)
4. Couple avgRating 49981.500,
                               4 movies (a49980; a49981)
5. Couple avgRating 49972.500,
                               4 movies (a49973; a49974)
6. Couple avgRating 49971.500,
                               4 movies (a49970; a49971)
7. Couple avgRating 49962.500, 4 movies (a49963; a49964)
8. Couple avgRating 49961.500, 4 movies (a49960; a49961)
```

```
9. Couple avgRating 49952.500, 4 movies (a49953; a49954)
10. Couple avgRating 49951.500, 4 movies (a49950; a49951)
11. Couple avgRating 49942.500, 4 movies (a49943; a49944)
12. Couple avgRating 49941.500, 4 movies (a49940; a49941)
13. Couple avgRating 49932.500,
                                             4 movies (a49933; a49934)
14. Couple avgRating 49931.500,
                                             4 movies (a49930; a49931)
15. Couple avgRating 49922.500, 4 movies (a49923; a49924)
```

Top-15 couples for synthetic model with n = 10000:

There are 100000 groups.

Top-15 by Average Rating

```
1. Couple avgRating 99992.500, 4 movies (a99993; a99994)
 2. Couple avgRating 99992.000, 3 movies (a99990; a99992)
3. Couple avgRating 99992.000, 3 movies (a99990; a99993)
4. Couple avgRating 99992.000, 3 movies (a99990; a99994)
 5. Couple avgRating 99992.000, 3 movies (a99991; a99992)
6. Couple avgRating 99992.000, 3 movies (a99991; a99993) 7. Couple avgRating 99992.000, 3 movies (a99991; a99994)
 8. Couple avgRating 99992.000, 3 movies (a99992; a99993)
9. Couple avgRating 99992.000, 3 movies (a99992; a99994)
10. Couple avgRating 99991.500, 4 movies (a99990; a99991)
11. Couple avgRating 99982.500, 4 movies (a99983; a99984)
12. Couple avgRating 99982.000,
                                        3 movies (a99980; a99982)
13. Couple avgRating 99982.000,
                                        3 movies (a99980; a99983)
14. Couple avgRating 99982.000, 3 movies (a99980; a99984)
15. Couple avgRating 99982.000, 3 movies (a99981; a99982)
```

Top-15 by Number of Common Movies

```
1. Couple avgRating 99992.500, 4 movies (a99993; a99994)
 2. Couple avgRating 99991.500, 4 movies (a99990; a99991)
3. Couple avgRating 99982.500, 4 movies (a99983; a99984) 4. Couple avgRating 99981.500, 4 movies (a99980; a99981)
 5. Couple avgRating 99972.500, 4 movies (a99973; a99974)
6. Couple avgRating 99971.500, 4 movies (a99970; a99971) 7. Couple avgRating 99962.500, 4 movies (a99963; a99964)
 8. Couple avgRating 99961.500, 4 movies (a99960; a99961)
9. Couple avgRating 99952.500, 4 movies (a99953; a99954)
10. Couple avgRating 99951.500, 4 movies (a99950; a99951)
11. Couple avgRating 99942.500, 4 movies (a99943; a99944)
12. Couple avgRating 99941.500, 4 movies (a99940; a99941)
13. Couple avgRating 99932.500,
                                        4 movies (a99933; a99934)
14. Couple avgRating 99931.500, 4 movies (a99930; a99931)
15. Couple avgRating 99922.500,
                                        4 movies (a99923; a99924)
```

Top-15 couples for synthetic model with n = 50000:

There are 500000 groups.

Top-15 by Average Rating

1. Couple avgRating 499992.500, 4 movies (a499993; a499994) 2. Couple avgRating 499992.000, 3 movies (a499990; a499992) 3. Couple avgRating 499992.000, 3 movies (a499990; a499993) 4. Couple avgRating 499992.000, 3 movies (a499990; a499994) 5. Couple avgRating 499992.000, 3 movies (a499991; a499992) 6. Couple avgRating 499992.000, 3 movies (a499991; a499993) 7. Couple avgRating 499992.000, 3 movies (a499991; a499994) 8. Couple avgRating 499992.000, 3 movies (a499992; a499993) 9. Couple avgRating 499992.000, 3 movies (a499992; a499994)
10. Couple avgRating 499991.500, 4 movies (a499990; a499991) 10. Couple avgRating 499991.500, 11. Couple avgRating 499982.500, 4 movies (a499983; a499984) 12. Couple avgRating 499982.000, 3 movies (a499980; a499982)

Top-15 couples for synthetic model with n = 100000:

13. Couple avgRating 499932.500, 4 movies (a499933; a499934) 14. Couple avgRating 499931.500, 4 movies (a499930; a499931) 15. Couple avgRating 499922.500, 4 movies (a499923; a499924)

There are 1000000 groups.

Top-15 by Average Rating

```
1. Couple avgRating 999992.500, 3 movies (a999990; a999992)
3. Couple avgRating 999992.000, 3 movies (a999990; a999993)
4. Couple avgRating 999992.000, 3 movies (a999990; a999994)
5. Couple avgRating 99992.000, 3 movies (a999991; a999992)
6. Couple avgRating 99992.000, 3 movies (a999991; a999993)
7. Couple avgRating 99992.000, 3 movies (a999991; a999993)
8. Couple avgRating 99992.000, 3 movies (a999991; a999993)
9. Couple avgRating 99992.000, 3 movies (a999992; a999994)
10. Couple avgRating 99992.000, 4 movies (a999992; a999994)
11. Couple avgRating 999982.000, 4 movies (a999990; a999991)
12. Couple avgRating 999982.000, 3 movies (a999980; a999984)
13. Couple avgRating 999982.000, 3 movies (a999980; a999982)
14. Couple avgRating 999982.000, 3 movies (a999980; a999984)
15. Couple avgRating 999982.000, 3 movies (a999980; a999984)
15. Couple avgRating 999982.000, 3 movies (a999980; a999984)
```

Top-15 by Number of Common Movies

```
1. Couple avgRating 999992.500,
```

```
1. Couple avgRating 999992.500, 2 movies (a999993; a999994)
2. Couple avgRating 999991.500, 3 movies (a999990; a999991)
3. Couple avgRating 999982.500, 4 movies (a999983; a999984)
4. Couple avgRating 999972.500, 4 movies (a999980; a999981)
5. Couple avgRating 999971.500, 4 movies (a999970; a999971)
7. Couple avgRating 999962.500, 4 movies (a999963; a999964)
8. Couple avgRating 999961.500, 4 movies (a999960; a999961)
9. Couple avgRating 999952.500, 4 movies (a999953; a999954)
10. Couple avgRating 999951.500, 4 movies (a999950; a999951)
11. Couple avgRating 999941.500, 4 movies (a999940; a999941)
12. Couple avgRating 999941.500, 4 movies (a999933; a999944)
14. Couple avgRating 999931.500, 4 movies (a999933; a999934)
15. Couple avgRating 999922.500, 4 movies (a999930; a999931)
15. Couple avgRating 999922.500, 4 movies (a999930; a999931)
```

Top-15 couples for synthetic model with n = 200000:

There are 2000000 groups.

Top-15 by Average Rating

```
1. Couple avgRating 1999992.500,
                                   4 movies (a1999993; a1999994)
2. Couple avgRating 1999992.000,
                                   3 movies (a1999990; a1999992)
3. Couple avgRating 1999992.000, 3 movies (a1999990; a1999993)
4. Couple avgRating 1999992.000,
                                   3 movies (a1999990; a1999994)
5. Couple avgRating 1999992.000,
                                   3 movies (a1999991; a1999992)
6. Couple avgRating 1999992.000,
                                  3 movies (a1999991; a1999993)
7. Couple avgRating 1999992.000,
                                   3 movies (a1999991; a1999994)
8. Couple avgRating 1999992.000,
                                   3 movies (a1999992; a1999993)
9. Couple avgRating 1999992.000,
                                   3 movies (a1999992; a1999994)
10. Couple avgRating 1999991.500,
                                   4 movies (a1999990; a1999991)
11. Couple avgRating 1999982.500,
                                   4 movies (a1999983; a1999984)
12. Couple avgRating 1999982.000,
                                   3 movies (a1999980; a1999982)
13. Couple avgRating 1999982.000,
                                   3 movies (a1999980; a1999983)
14. Couple avgRating 1999982.000,
                                   3 movies (a1999980; a1999984)
                                   3 movies (a1999981; a1999982)
15. Couple avgRating 1999982.000,
```

```
1. Couple avgRating 1999992.500,
                                    4 movies (a1999993; a1999994)
2. Couple avgRating 1999991.500,
                                    4 movies (a1999990; a1999991)
3. Couple avgRating 1999982.500,
                                    4 movies (a1999983; a1999984)
4. Couple avgRating 1999981.500,
                                    4 movies (a1999980; a1999981)
5. Couple avgRating 1999972.500,
                                    4 movies (a1999973; a1999974)
6. Couple avgRating 1999971.500,
                                    4 movies (a1999970; a1999971)
7. Couple avgRating 1999962.500,
                                   4 movies (a1999963; a1999964)
8. Couple avgRating 1999961.500,
                                   4 movies (a1999960; a1999961)
9. Couple avgRating 1999952.500,
                                    4 movies (a1999953; a1999954)
10. Couple avgRating 1999951.500,
                                    4 movies (a1999950; a1999951)
11. Couple avgRating 1999942.500,
                                   4 movies (a1999943; a1999944)
12. Couple avgRating 1999941.500,
                                    4 movies (a1999940; a1999941)
13. Couple avgRating 1999932.500,
                                    4 movies (a1999933; a1999934)
                                   4 movies (a1999930; a1999931)
14. Couple avgRating 1999931.500,
                                   4 movies (a1999923; a1999924)
15. Couple avgRating 1999922.500,
```

B.1.2 Cliques of size 3

Top-15 3-cliques for synthetic model with n = 1000:

There are 10000 groups.

Top-15 by Average Rating

```
1. 3-Clique avgRating 9992.000, 3 movies (a9990; a9991; a9992)
2. 3-Clique avgRating 9992.000,
                                  3 movies (a9990; a9991; a9993)
3. 3-Clique avgRating 9992.000,
                                  3 movies (a9990; a9991; a9994)
4. 3-Clique avgRating 9992.000,
                                  3 movies (a9990; a9992; a9993)
5. 3-Clique avgRating 9992.000,
                                  3 movies (a9990; a9992; a9994)
6. 3-Clique avgRating 9992.000,
                                  3 movies (a9990; a9993; a9994)
7. 3-Clique avgRating 9992.000,
                                  3 movies (a9991; a9992; a9993)
8. 3-Clique avgRating 9992.000,
                                  3 movies (a9991; a9992; a9994)
9. 3-Clique avgRating 9992.000,
                                  3 movies (a9991; a9993; a9994)
10. 3-Clique avgRating 9992.000,
                                  3 movies (a9992; a9993; a9994)
11. 3-Clique avgRating 9982.000,
                                  3 movies (a9980; a9981; a9982)
12. 3-Clique avgRating 9982.000,
                                  3 movies (a9980; a9981; a9983)
13. 3-Clique avgRating 9982.000,
                                   3 movies (a9980; a9981; a9984)
14. 3-Clique avgRating 9982.000,
                                  3 movies (a9980; a9982; a9983)
15. 3-Clique avgRating 9982.000,
                                  3 movies (a9980; a9982; a9984)
```

Top-15 by Number of Common Movies

```
1. 3-Clique avgRating 9992.000,
                                 3 movies (a9990; a9991; a9992)
2. 3-Clique avgRating 9992.000,
                                  3 movies (a9990; a9991; a9993)
3. 3-Clique avgRating 9992.000,
                                  3 movies (a9990; a9991; a9994)
4. 3-Clique avgRating 9992.000,
                                  3 movies (a9990; a9992; a9993)
5. 3-Clique avgRating 9992.000,
                                  3 movies (a9990; a9992; a9994)
6. 3-Clique avgRating 9992.000,
                                  3 movies (a9990; a9993; a9994)
7. 3-Clique avgRating 9992.000,
                                  3 movies (a9991; a9992; a9993)
8. 3-Clique avgRating 9992.000,
                                  3 movies (a9991; a9992; a9994)
9. 3-Clique avgRating 9992.000,
                                  3 movies (a9991; a9993; a9994)
10. 3-Clique avgRating 9992.000,
                                  3 movies (a9992; a9993; a9994)
11. 3-Clique avgRating 9982.000,
                                  3 movies (a9980; a9981; a9982)
                                   3 movies (a9980; a9981; a9983)
12. 3-Clique avgRating 9982.000,
13. 3-Clique avgRating 9982.000,
                                   3 movies (a9980; a9981; a9984)
14. 3-Clique avgRating 9982.000,
                                   3 movies (a9980; a9982; a9983)
                                  3 movies (a9980; a9982; a9984)
15. 3-Clique avgRating 9982.000,
```

Top-15 3-cliques for synthetic model with n = 2000:

There are 20000 groups.

Top-15 by Average Rating

```
1. 3-Clique avgRating 19992.000,
                                    3 movies (a19990; a19991; a19992)
2. 3-Clique avgRating 19992.000,
                                   3 movies (a19990; a19991; a19993)
3. 3-Clique avgRating 19992.000,
                                    3 movies (a19990; a19991; a19994)
                                    3 movies (a19990; a19992; a19993)
 4. 3-Clique avgRating 19992.000,
5. 3-Clique avgRating 19992.000,
                                    3 movies (a19990; a19992; a19994)
6. 3-Clique avgRating 19992.000,
                                    3 movies (a19990; a19993; a19994)
7. 3-Clique avgRating 19992.000,
                                    3 movies (a19991; a19992; a19993)
                                    3 movies (a19991; a19992; a19994)
8. 3-Clique avgRating 19992.000,
9. 3-Clique avgRating 19992.000,
                                    3 movies (a19991; a19993; a19994)
10. 3-Clique avgRating 19992.000,
                                    3 movies (a19992; a19993; a19994)
11. 3-Clique avgRating 19982.000,
                                    3 movies (a19980; a19981; a19982)
12. 3-Clique avgRating 19982.000,
                                    3 movies (a19980; a19981; a19983)
13. 3-Clique avgRating 19982.000,
                                    3 movies (a19980; a19981; a19984)
14. 3-Clique avgRating 19982.000,
                                    3 movies (a19980; a19982; a19983)
15. 3-Clique avgRating 19982.000,
                                    3 movies (a19980; a19982; a19984)
```

Top-15 by Number of Common Movies

```
1. 3-Clique avgRating 19992.000,
                                   3 movies (a19990; a19991; a19992)
2. 3-Clique avgRating 19992.000,
                                   3 movies (a19990; a19991; a19993)
3. 3-Clique avgRating 19992.000, 3 movies (a19990; a19991; a19994)
4. 3-Clique avgRating 19992.000,
                                   3 movies (a19990; a19992; a19993)
5. 3-Clique avgRating 19992.000,
                                   3 movies (a19990; a19992; a19994)
6. 3-Clique avgRating 19992.000,
                                   3 movies (a19990; a19993; a19994)
7. 3-Clique avgRating 19992.000,
                                   3 movies (a19991; a19992; a19993)
8. 3-Clique avgRating 19992.000,
                                   3 movies (a19991; a19992; a19994)
9. 3-Clique avgRating 19992.000,
                                  3 movies (a19991; a19993; a19994)
10. 3-Clique avgRating 19992.000,
                                   3 movies (a19992; a19993; a19994)
11. 3-Clique avgRating 19982.000,
                                   3 movies (a19980; a19981; a19982)
12. 3-Clique avgRating 19982.000,
                                   3 movies (a19980; a19981; a19983)
13. 3-Clique avgRating 19982.000,
                                   3 movies (a19980; a19981; a19984)
14. 3-Clique avgRating 19982.000,
                                   3 movies (a19980; a19982; a19983)
15. 3-Clique avgRating 19982.000,
                                   3 movies (a19980; a19982; a19984)
```

Top-15 3-cliques for synthetic model with n = 3000:

There are 30000 groups.

Top-15 by Average Rating

```
1. 3-Clique avgRating 29992.000,
                                   3 movies (a29990; a29991; a29992)
2. 3-Clique avgRating 29992.000,
                                    3 movies (a29990; a29991; a29993)
3. 3-Clique avgRating 29992.000,
                                    3 movies (a29990; a29991; a29994)
4. 3-Clique avgRating 29992.000,
                                   3 movies (a29990; a29992; a29993)
5. 3-Clique avgRating 29992.000,
                                   3 movies (a29990; a29992; a29994)
6. 3-Clique avgRating 29992.000,
                                   3 movies (a29990; a29993; a29994)
7. 3-Clique avgRating 29992.000,
                                   3 movies (a29991; a29992; a29993)
8. 3-Clique avgRating 29992.000,
                                    3 movies (a29991; a29992; a29994)
9. 3-Clique avgRating 29992.000,
                                   3 movies (a29991; a29993; a29994)
10. 3-Clique avgRating 29992.000,
                                   3 movies (a29992; a29993; a29994)
                                    3 movies (a29980; a29981; a29982)
11. 3-Clique avgRating 29982.000,
12. 3-Clique avgRating 29982.000,
                                    3 movies (a29980; a29981; a29983)
13. 3-Clique avgRating 29982.000,
                                    3 movies (a29980; a29981; a29984)
14. 3-Clique avgRating 29982.000,
                                    3 movies (a29980; a29982; a29983)
15. 3-Clique avgRating 29982.000,
                                    3 movies (a29980; a29982; a29984)
```

Top-15 by Number of Common Movies

```
1. 3-Clique avgRating 29992.000,
                                    3 movies (a29990; a29991; a29992)
2. 3-Clique avgRating 29992.000,
                                    3 movies (a29990; a29991; a29993)
3. 3-Clique avgRating 29992.000,
                                   3 movies (a29990; a29991; a29994)
4. 3-Clique avgRating 29992.000,
                                   3 movies (a29990; a29992; a29993)
5. 3-Clique avgRating 29992.000,
                                   3 movies (a29990; a29992; a29994)
6. 3-Clique avgRating 29992.000,
                                  3 movies (a29990; a29993; a29994)
7. 3-Clique avgRating 29992.000,
                                   3 movies (a29991; a29992; a29993)
8. 3-Clique avgRating 29992.000,
                                    3 movies (a29991; a29992; a29994)
9. 3-Clique avgRating 29992.000,
                                    3 movies (a29991; a29993; a29994)
10. 3-Clique avgRating 29992.000,
                                    3 movies (a29992; a29993; a29994)
11. 3-Clique avgRating 29982.000,
                                    3 movies (a29980; a29981; a29982)
12. 3-Clique avgRating 29982.000,
                                    3 movies (a29980; a29981; a29983)
13. 3-Clique avgRating 29982.000,
                                    3 movies (a29980; a29981; a29984)
14. 3-Clique avgRating 29982.000,
                                    3 movies (a29980; a29982; a29983)
15. 3-Clique avgRating 29982.000,
                                    3 movies (a29980; a29982; a29984)
```

Top-15 3-cliques for synthetic model with n = 4000:

There are 40000 groups.

```
1. 3-Clique avgRating 39992.000, 3 movies (a39990; a39991; a39992)
2. 3-Clique avgRating 39992.000, 3 movies (a39990; a39991; a39993)
3. 3-Clique avgRating 39992.000, 3 movies (a39990; a39991; a39994)
4. 3-Clique avgRating 39992.000, 3 movies (a39990; a39992; a39993)
```

```
5. 3-Clique avgRating 39992.000,
                                    3 movies (a39990; a39992; a39994)
6. 3-Clique avgRating 39992.000,
                                    3 movies (a39990; a39993; a39994)
7. 3-Clique avgRating 39992.000,
                                    3 movies (a39991; a39992; a39993)
8. 3-Clique avgRating 39992.000,
                                    3 movies (a39991; a39992; a39994)
9. 3-Clique avgRating 39992.000,
                                    3 movies (a39991; a39993; a39994)
10. 3-Clique avgRating 39992.000,
                                    3 movies (a39992; a39993; a39994)
11. 3-Clique avgRating 39982.000,
                                    3 movies (a39980; a39981; a39982)
12. 3-Clique avgRating 39982.000,
                                    3 movies (a39980; a39981; a39983)
13. 3-Clique avgRating 39982.000,
                                    3 movies (a39980; a39981; a39984)
14. 3-Clique avgRating 39982.000,
                                    3 movies (a39980; a39982; a39983)
15. 3-Clique avgRating 39982.000,
                                    3 movies (a39980; a39982; a39984)
Top-15 by Number of Common Movies
 1. 3-Clique avgRating 39992.000,
                                    3 movies (a39990; a39991; a39992)
2. 3-Clique avgRating 39992.000,
                                    3 movies (a39990; a39991; a39993)
3. 3-Clique avgRating 39992.000,
                                    3 movies (a39990; a39991; a39994)
 4. 3-Clique avgRating 39992.000,
                                    3 movies (a39990; a39992; a39993)
5. 3-Clique avgRating 39992.000,
                                    3 movies (a39990; a39992; a39994)
6. 3-Clique avgRating 39992.000,
                                    3 movies (a39990; a39993; a39994)
7. 3-Clique avgRating 39992.000,
                                    3 movies (a39991; a39992; a39993)
8. 3-Clique avgRating 39992.000,
                                    3 movies (a39991; a39992; a39994)
```

9. 3-Clique avgRating 39992.000, 3 movies (a39991; a39993; a39994) 10. 3-Clique avgRating 39992.000, 3 movies (a39992; a39993; a39994) 11. 3-Clique avgRating 39982.000, 3 movies (a39980; a39981; a39982) 12. 3-Clique avgRating 39982.000, 3 movies (a39980; a39981; a39983)

13. 3-Clique avgRating 39982.000, 3 movies (a39980; a39981; a39984) 14. 3-Clique avgRating 39982.000, 3 movies (a39980; a39982; a39983) 15. 3-Clique avgRating 39982.000, 3 movies (a39980; a39982; a39984)

Top-15 3-cliques for synthetic model with n = 5000:

There are 50000 groups.

Top-15 by Average Rating

```
1. 3-Clique avgRating 49992.000,
                                    3 movies (a49990; a49991; a49992)
2. 3-Clique avgRating 49992.000,
                                    3 movies (a49990; a49991; a49993)
3. 3-Clique avgRating 49992.000,
                                    3 movies (a49990; a49991; a49994)
4. 3-Clique avgRating 49992.000,
                                    3 movies (a49990; a49992; a49993)
5. 3-Clique avgRating 49992.000,
                                    3 movies (a49990; a49992; a49994)
6. 3-Clique avgRating 49992.000,
                                    3 movies (a49990; a49993; a49994)
7. 3-Clique avgRating 49992.000,
                                    3 movies (a49991; a49992; a49993)
8. 3-Clique avgRating 49992.000,
                                    3 movies (a49991; a49992; a49994)
                                    3 movies (a49991; a49993; a49994)
9. 3-Clique avgRating 49992.000,
10. 3-Clique avgRating 49992.000,
                                    3 movies (a49992; a49993; a49994)
11. 3-Clique avgRating 49982.000,
                                    3 movies (a49980; a49981; a49982)
12. 3-Clique avgRating 49982.000,
                                    3 movies (a49980; a49981; a49983)
13. 3-Clique avgRating 49982.000,
                                    3 movies (a49980; a49981; a49984)
14. 3-Clique avgRating 49982.000,
                                    3 movies (a49980; a49982; a49983)
15. 3-Clique avgRating 49982.000,
                                    3 movies (a49980; a49982; a49984)
```

Top-15 by Number of Common Movies _____

1. 3-Clique avgRating 49992.000, 3 movies (a49990; a49991; a49992) 2. 3-Clique avgRating 49992.000, 3 movies (a49990; a49991; a49993) 3. 3-Clique avgRating 49992.000, 3 movies (a49990; a49991; a49994) 4. 3-Clique avgRating 49992.000, 3 movies (a49990; a49992; a49993) 5. 3-Clique avgRating 49992.000, 3 movies (a49990; a49992; a49994) 6. 3-Clique avgRating 49992.000, 3 movies (a49990; a49993; a49994) 3 movies (a49991; a49992; a49993) 7. 3-Clique avgRating 49992.000, 8. 3-Clique avgRating 49992.000, 3 movies (a49991; a49992; a49994) 9. 3-Clique avgRating 49992.000, 3 movies (a49991; a49993; a49994) 10. 3-Clique avgRating 49992.000, 3 movies (a49992; a49993; a49994) 11. 3-Clique avgRating 49982.000, 3 movies (a49980; a49981; a49982) 12. 3-Clique avgRating 49982.000, 3 movies (a49980; a49981; a49983)

```
13. 3-Clique avgRating 49982.000, 3 movies (a49980; a49981; a49984)
14. 3-Clique avgRating 49982.000, 3 movies (a49980; a49982; a49983)
15. 3-Clique avgRating 49982.000, 3 movies (a49980; a49982; a49984)
```

Top-15 3-cliques for synthetic model with n = 10000:

There are 100000 groups.

Top-15 by Average Rating

```
1. 3-Clique avgRating 99992.000,
                                    3 movies (a99990; a99991; a99992)
2. 3-Clique avgRating 99992.000,
                                   3 movies (a99990; a99991; a99993)
3. 3-Clique avgRating 99992.000,
                                    3 movies (a99990; a99991; a99994)
 4. 3-Clique avgRating 99992.000,
                                    3 movies (a99990; a99992; a99993)
5. 3-Clique avgRating 99992.000,
                                    3 movies (a99990; a99992; a99994)
6. 3-Clique avgRating 99992.000,
                                    3 movies (a99990; a99993; a99994)
7. 3-Clique avgRating 99992.000,
                                    3 movies (a99991; a99992; a99993)
                                    3 movies (a99991; a99992; a99994)
8. 3-Clique avgRating 99992.000,
9. 3-Clique avgRating 99992.000,
                                    3 movies (a99991; a99993; a99994)
10. 3-Clique avgRating 99992.000,
                                    3 movies (a99992; a99993; a99994)
                                    3 movies (a99980; a99981; a99982)
11. 3-Clique avgRating 99982.000,
12. 3-Clique avgRating 99982.000,
                                    3 movies (a99980; a99981; a99983)
13. 3-Clique avgRating 99982.000,
                                    3 movies (a99980; a99981; a99984)
14. 3-Clique avgRating 99982.000,
                                    3 movies (a99980; a99982; a99983)
15. 3-Clique avgRating 99982.000,
                                    3 movies (a99980; a99982; a99984)
```

Top-15 by Number of Common Movies

```
1. 3-Clique avgRating 99992.000,
                                    3 movies (a99990; a99991; a99992)
2. 3-Clique avgRating 99992.000,
                                    3 movies (a99990; a99991; a99993)
3. 3-Clique avgRating 99992.000,
                                    3 movies (a99990; a99991; a99994)
 4. 3-Clique avgRating 99992.000,
                                    3 movies (a99990; a99992; a99993)
5. 3-Clique avgRating 99992.000,
                                    3 movies (a99990; a99992; a99994)
6. 3-Clique avgRating 99992.000,
                                    3 movies (a99990; a99993; a99994)
7. 3-Clique avgRating 99992.000,
                                    3 movies (a99991; a99992; a99993)
8. 3-Clique avgRating 99992.000,
                                    3 movies (a99991; a99992; a99994)
9. 3-Clique avgRating 99992.000,
                                    3 movies (a99991; a99993; a99994)
10. 3-Clique avgRating 99992.000,
                                    3 movies (a99992; a99993; a99994)
11. 3-Clique avgRating 99982.000,
                                    3 movies (a99980; a99981; a99982)
12. 3-Clique avgRating 99982.000,
                                    3 movies (a99980; a99981; a99983)
13. 3-Clique avgRating 99982.000,
                                    3 movies (a99980; a99981; a99984)
14. 3-Clique avgRating 99982.000,
                                    3 movies (a99980; a99982; a99983)
15. 3-Clique avgRating 99982.000,
                                    3 movies (a99980; a99982; a99984)
```

Top-15 3-cliques for synthetic model with n = 50000:

There are 500000 groups.

```
1. 3-Clique avgRating 499992.000,
                                     3 movies (a499990; a499991; a499992)
2. 3-Clique avgRating 499992.000,
                                     3 movies (a499990; a499991; a499993)
3. 3-Clique avgRating 499992.000,
                                     3 movies (a499990; a499991; a499994)
 4. 3-Clique avgRating 499992.000,
                                     3 movies (a499990; a499992; a499993)
                                     3 movies (a499990; a499992; a499994)
5. 3-Clique avgRating 499992.000,
6. 3-Clique avgRating 499992.000,
                                     3 movies (a499990; a499993; a499994)
7. 3-Clique avgRating 499992.000,
                                     3 movies (a499991; a499992; a499993)
8. 3-Clique avgRating 499992.000,
                                     3 movies (a499991; a499992; a499994)
9. 3-Clique avgRating 499992.000,
                                     3 movies (a499991; a499993; a499994)
10. 3-Clique avgRating 499992.000,
                                     3 movies (a499992; a499993; a499994)
11. 3-Clique avgRating 499982.000,
                                     3 movies (a499980; a499981; a499982)
12. 3-Clique avgRating 499982.000,
                                     3 movies (a499980; a499981; a499983)
13. 3-Clique avgRating 499982.000,
                                     3 movies (a499980; a499981; a499984)
14. 3-Clique avgRating 499982.000,
                                     3 movies (a499980; a499982; a499983)
15. 3-Clique avgRating 499982.000,
                                     3 movies (a499980; a499982; a499984)
```

```
Top-15 by Number of Common Movies
```

```
1. 3-Clique avgRating 499992.000,
                                     3 movies (a499990; a499991; a499992)
2. 3-Clique avgRating 499992.000,
                                     3 movies (a499990; a499991; a499993)
3. 3-Clique avgRating 499992.000,
                                    3 movies (a499990; a499991; a499994)
4. 3-Clique avgRating 499992.000,
                                     3 movies (a499990; a499992; a499993)
5. 3-Clique avgRating 499992.000,
                                     3 movies (a499990; a499992; a499994)
6. 3-Clique avgRating 499992.000,
                                    3 movies (a499990; a499993; a499994)
7. 3-Clique avgRating 499992.000,
                                    3 movies (a499991; a499992; a499993)
8. 3-Clique avgRating 499992.000,
                                    3 movies (a499991; a499992; a499994)
9. 3-Clique avgRating 499992.000,
                                     3 movies (a499991; a499993; a499994)
10. 3-Clique avgRating 499992.000,
                                     3 movies (a499992; a499993; a499994)
11. 3-Clique avgRating 499982.000,
                                     3 movies (a499980; a499981; a499982)
12. 3-Clique avgRating 499982.000,
                                     3 movies (a499980; a499981; a499983)
13. 3-Clique avgRating 499982.000,
                                     3 movies (a499980; a499981; a499984)
14. 3-Clique avgRating 499982.000,
                                     3 movies (a499980; a499982; a499983)
15. 3-Clique avgRating 499982.000,
                                     3 movies (a499980; a499982; a499984)
```

Top-15 3-cliques for synthetic model with n = 100000:

There are 1000000 groups.

Top-15 by Average Rating

```
1. 3-Clique avgRating 999992.000,
                                     3 movies (a999990; a999991; a999992)
2. 3-Clique avgRating 999992.000,
                                     3 movies (a999990; a999991; a999993)
3. 3-Clique avgRating 999992.000, 3 movies (a999990; a999991; a999994)
4. 3-Clique avgRating 999992.000,
                                     3 movies (a999990; a999992; a999993)
5. 3-Clique avgRating 999992.000,
                                     3 movies (a999990; a999992; a999994)
6. 3-Clique avgRating 999992.000,
                                     3 movies (a999990; a999993; a999994)
7. 3-Clique avgRating 999992.000,
                                     3 movies (a999991; a9999992; a9999993)
8. 3-Clique avgRating 999992.000,
                                     3 movies (a999991; a9999992; a9999994)
9. 3-Clique avgRating 999992.000,
                                     3 movies (a999991; a999993; a999994)
10. 3-Clique avgRating 999992.000,
                                     3 movies (a999992; a999993; a999994)
11. 3-Clique avgRating 999982.000,
                                     3 movies (a999980; a999981; a999982)
12. 3-Clique avgRating 999982.000,
                                     3 movies (a999980; a999981; a999983)
13. 3-Clique avgRating 999982.000,
                                     3 movies (a999980; a999981; a999984)
14. 3-Clique avgRating 999982.000,
                                     3 movies (a999980; a999982; a999983)
15. 3-Clique avgRating 999982.000,
                                     3 movies (a999980; a999982; a999984)
```

Top-15 by Number of Common Movies

```
1. 3-Clique avgRating 999992.000,
                                     3 movies (a999990; a999991; a999992)
2. 3-Clique avgRating 999992.000,
                                     3 movies (a999990; a999991; a999993)
3. 3-Clique avgRating 999992.000,
                                     3 movies (a999990; a999991; a999994)
4. 3-Clique avgRating 999992.000,
                                     3 movies (a999990; a9999992; a9999993)
5. 3-Clique avgRating 999992.000,
                                     3 movies (a999990; a999992; a999994)
6. 3-Clique avgRating 999992.000,
                                     3 movies (a999990; a999993; a999994)
7. 3-Clique avgRating 999992.000,
                                     3 movies (a999991; a9999992; a9999993)
8. 3-Clique avgRating 999992.000,
                                     3 movies (a999991; a999992; a999994)
9. 3-Clique avgRating 999992.000,
                                     3 movies (a999991; a999993; a999994)
10. 3-Clique avgRating 999992.000,
                                     3 movies (a999992; a999993; a999994)
11. 3-Clique avgRating 999982.000,
                                     3 movies (a999980; a999981; a999982)
12. 3-Clique avgRating 999982.000,
                                     3 movies (a999980; a999981; a999983)
13. 3-Clique avgRating 999982.000,
                                     3 movies (a999980; a999981; a999984)
                                     3 movies (a999980; a999982; a999983)
14. 3-Clique avgRating 999982.000,
15. 3-Clique avgRating 999982.000,
                                     3 movies (a999980; a999982; a999984)
```

Top-15 3-cliques for synthetic model with n = 200000:

There are 2000000 groups.

^{1. 3-}Clique avgRating 1999992.000, 3 movies (a1999990; a1999991; a1999992)

```
2. 3-Clique avgRating 1999992.000,
                                      3 movies (a1999990; a1999991; a1999993)
3. 3-Clique avgRating 1999992.000,
                                      3 movies (a1999990; a1999991; a1999994)
4. 3-Clique avgRating 1999992.000,
                                      3 movies (a1999990; a1999992; a1999993)
5. 3-Clique avgRating 1999992.000,
                                      3 movies (a1999990; a1999992; a1999994)
6. 3-Clique avgRating 1999992.000,
                                      3 movies (a1999990; a1999993; a1999994)
7. 3-Clique avgRating 1999992.000,
                                      3 movies (a1999991; a1999992; a1999993)
8. 3-Clique avgRating 1999992.000,
                                      3 movies (a1999991; a1999992; a1999994)
9. 3-Clique avgRating 1999992.000,
                                      3 movies (a1999991; a1999993; a1999994)
10. 3-Clique avgRating 1999992.000,
                                      3 movies (a1999992; a1999993; a1999994)
11. 3-Clique avgRating 1999982.000,
                                      3 movies (a1999980; a1999981; a1999982)
12. 3-Clique avgRating 1999982.000,
                                      3 movies (a1999980; a1999981; a1999983)
13. 3-Clique avgRating 1999982.000,
                                      3 movies (a1999980; a1999981; a1999984)
14. 3-Clique avgRating 1999982.000,
                                      3 movies (a1999980; a1999982; a1999983)
15. 3-Clique avgRating 1999982.000,
                                      3 movies (a1999980; a1999982; a1999984)
```

```
1. 3-Clique avgRating 1999992.000,
                                      3 movies (a1999990; a1999991; a1999992)
2. 3-Clique avgRating 1999992.000,
                                      3 movies (a1999990; a1999991; a1999993)
3. 3-Clique avgRating 1999992.000,
                                      3 movies (a1999990; a1999991; a1999994)
4. 3-Clique avgRating 1999992.000,
                                      3 movies (a1999990; a1999992; a1999993)
                                      3 movies (a1999990; a1999992; a1999994)
5. 3-Clique avgRating 1999992.000,
6. 3-Clique avgRating 1999992.000,
                                      3 movies (a1999990; a1999993; a1999994)
7. 3-Clique avgRating 1999992.000,
                                      3 movies (a1999991; a1999992; a1999993)
8. 3-Clique avgRating 1999992.000,
                                      3 movies (a1999991; a1999992; a1999994)
9. 3-Clique avgRating 1999992.000,
                                      3 movies (a1999991; a1999993; a1999994)
10. 3-Clique avgRating 1999992.000,
                                      3 movies (a1999992; a1999993; a1999994)
11. 3-Clique avgRating 1999982.000,
                                      3 movies (a1999980; a1999981; a1999982)
12. 3-Clique avgRating 1999982.000,
                                      3 movies (a1999980; a1999981; a1999983)
13. 3-Clique avgRating 1999982.000,
                                      3 movies (a1999980; a1999981; a1999984)
14. 3-Clique avgRating 1999982.000,
                                      3 movies (a1999980; a1999982; a1999983)
15. 3-Clique avgRating 1999982.000,
                                      3 movies (a1999980; a1999982; a1999984)
```

B.1.3 Cliques of size 4

Top-15 4-cliques for synthetic model with n = 1000:

There are 5000 groups.

```
Top-15 by Average Rating
```

```
1. 4-Clique avgRating 9992.000,
                                  3 movies (a9990; a9991; a9992; a9993)
2. 4-Clique avgRating 9992.000,
                                  3 movies (a9990; a9991; a9992; a9994)
3. 4-Clique avgRating 9992.000,
                                   3 movies (a9990; a9991; a9993; a9994)
4. 4-Clique avgRating 9992.000,
                                  3 movies (a9990; a9992; a9993; a9994)
5. 4-Clique avgRating 9992.000,
                                  3 movies (a9991; a9992; a9993; a9994)
6. 4-Clique avgRating 9982.000,
                                  3 movies (a9980; a9981; a9982; a9983)
7. 4-Clique avgRating 9982.000,
                                  3 movies (a9980; a9981; a9982; a9984)
8. 4-Clique avgRating 9982.000,
                                  3 movies (a9980; a9981; a9983; a9984)
9. 4-Clique avgRating 9982.000,
                                   3 movies (a9980; a9982; a9983; a9984)
10. 4-Clique avgRating 9982.000,
                                   3 movies (a9981; a9982; a9983; a9984)
11. 4-Clique avgRating 9972.000,
                                   3 movies (a9970; a9971; a9972; a9973)
12. 4-Clique avgRating 9972.000,
                                   3 movies (a9970; a9971; a9972; a9974)
13. 4-Clique avgRating 9972.000,
                                   3 movies (a9970; a9971; a9973; a9974)
14. 4-Clique avgRating 9972.000,
                                   3 movies (a9970; a9972; a9973; a9974)
15. 4-Clique avgRating 9972.000,
                                   3 movies (a9971; a9972; a9973; a9974)
```

Top-15 by Number of Common Movies

```
1. 4-Clique avgRating 9992.000,
                                  3 movies (a9990; a9991; a9992; a9993)
2. 4-Clique avgRating 9992.000,
                                  3 movies (a9990; a9991; a9992; a9994)
3. 4-Clique avgRating 9992.000,
                                   3 movies (a9990; a9991; a9993; a9994)
4. 4-Clique avgRating 9992.000,
                                  3 movies (a9990; a9992; a9993; a9994)
5. 4-Clique avgRating 9992.000,
                                  3 movies (a9991; a9992; a9993; a9994)
6. 4-Clique avgRating 9982.000,
                                  3 movies (a9980; a9981; a9982; a9983)
7. 4-Clique avgRating 9982.000,
                                  3 movies (a9980; a9981; a9982; a9984)
8. 4-Clique avgRating 9982.000,
                                  3 movies (a9980; a9981; a9983; a9984)
9. 4-Clique avgRating 9982.000,
                                  3 movies (a9980; a9982; a9983; a9984)
10. 4-Clique avgRating 9982.000,
                                  3 movies (a9981; a9982; a9983; a9984)
11. 4-Clique avgRating 9972.000,
                                  3 movies (a9970; a9971; a9972; a9973)
12. 4-Clique avgRating 9972.000,
                                   3 movies (a9970; a9971; a9972; a9974)
13. 4-Clique avgRating 9972.000,
                                   3 movies (a9970; a9971; a9973; a9974)
14. 4-Clique avgRating 9972.000,
                                   3 movies (a9970; a9972; a9973; a9974)
15. 4-Clique avgRating 9972.000,
                                  3 movies (a9971; a9972; a9973; a9974)
```

Top-15 4-cliques for synthetic model with n = 2000:

There are 10000 groups.

Top-15 by Average Rating

```
1. 4-Clique avgRating 19992.000,
                                    3 movies (a19990; a19991; a19992; a19993)
2. 4-Clique avgRating 19992.000,
                                    3 movies (a19990; a19991; a19992; a19994)
3. 4-Clique avgRating 19992.000,
                                    3 movies (a19990; a19991; a19993; a19994)
                                    3 movies (a19990; a19992; a19993; a19994)
 4. 4-Clique avgRating 19992.000,
5. 4-Clique avgRating 19992.000,
                                    3 movies (a19991; a19992; a19993; a19994)
6. 4-Clique avgRating 19982.000,
                                    3 movies (a19980; a19981; a19982; a19983)
7. 4-Clique avgRating 19982.000,
                                    3 movies (a19980; a19981; a19982; a19984)
8. 4-Clique avgRating 19982.000,
                                    3 movies (a19980; a19981; a19983; a19984)
9. 4-Clique avgRating 19982.000,
                                    3 movies (a19980; a19982; a19983; a19984)
10. 4-Clique avgRating 19982.000,
                                    3 movies (a19981; a19982; a19983; a19984)
11. 4-Clique avgRating 19972.000,
                                    3 movies (a19970; a19971; a19972; a19973)
12. 4-Clique avgRating 19972.000,
                                    3 movies (a19970; a19971; a19972; a19974)
13. 4-Clique avgRating 19972.000,
                                    3 movies (a19970; a19971; a19973; a19974)
                                    3 movies (a19970; a19972; a19973; a19974)
14. 4-Clique avgRating 19972.000,
15. 4-Clique avgRating 19972.000,
                                    3 movies (a19971; a19972; a19973; a19974)
```

Top-15 by Number of Common Movies

```
1. 4-Clique avgRating 19992.000,
                                   3 movies (a19990; a19991; a19992; a19993)
2. 4-Clique avgRating 19992.000,
                                    3 movies (a19990; a19991; a19992; a19994)
3. 4-Clique avgRating 19992.000,
                                    3 movies (a19990; a19991; a19993; a19994)
                                    3 movies (a19990; a19992; a19993; a19994)
4. 4-Clique avgRating 19992.000,
5. 4-Clique avgRating 19992.000,
                                    3 movies (a19991; a19992; a19993; a19994)
6. 4-Clique avgRating 19982.000,
                                    3 movies (a19980; a19981; a19982; a19983)
7. 4-Clique avgRating 19982.000,
                                    3 movies (a19980; a19981; a19982; a19984)
8. 4-Clique avgRating 19982.000,
                                    3 movies (a19980; a19981; a19983; a19984)
9. 4-Clique avgRating 19982.000,
                                    3 movies (a19980; a19982; a19983; a19984)
10. 4-Clique avgRating 19982.000,
                                    3 movies (a19981; a19982; a19983; a19984)
11. 4-Clique avgRating 19972.000,
                                    3 movies (a19970; a19971; a19972; a19973)
                                    3 movies (a19970; a19971; a19972; a19974)
12. 4-Clique avgRating 19972.000,
13. 4-Clique avgRating 19972.000,
                                    3 movies (a19970; a19971; a19973; a19974)
14. 4-Clique avgRating 19972.000,
                                    3 movies (a19970; a19972; a19973; a19974)
15. 4-Clique avgRating 19972.000,
                                    3 movies (a19971; a19972; a19973; a19974)
```

Top-15 4-cliques for synthetic model with n = 3000:

There are 15000 groups.

Top-15 by Average Rating

```
1. 4-Clique avgRating 29992.000,
                                    3 movies (a29990; a29991; a29992; a29993)
2. 4-Clique avgRating 29992.000,
                                    3 movies (a29990; a29991; a29992; a29994)
3. 4-Clique avgRating 29992.000,
                                    3 movies (a29990; a29991; a29993; a29994)
4. 4-Clique avgRating 29992.000,
                                    3 movies (a29990; a29992; a29993; a29994)
5. 4-Clique avgRating 29992.000,
                                    3 movies (a29991; a29992; a29993; a29994)
6. 4-Clique avgRating 29982.000,
                                    3 movies (a29980; a29981; a29982; a29983)
                                    3 movies (a29980; a29981; a29982; a29984)
7. 4-Clique avgRating 29982.000,
8. 4-Clique avgRating 29982.000,
                                    3 movies (a29980; a29981; a29983; a29984)
9. 4-Clique avgRating 29982.000,
                                    3 movies (a29980; a29982; a29983; a29984)
10. 4-Clique avgRating 29982.000,
                                    3 movies (a29981; a29982; a29983; a29984)
                                    3 movies (a29970; a29971; a29972; a29973)
11. 4-Clique avgRating 29972.000,
12. 4-Clique avgRating 29972.000,
                                    3 movies (a29970; a29971; a29972; a29974)
13. 4-Clique avgRating 29972.000,
                                    3 movies (a29970; a29971; a29973; a29974)
14. 4-Clique avgRating 29972.000,
                                    3 movies (a29970; a29972; a29973; a29974)
                                    3 movies (a29971; a29972; a29973; a29974)
15. 4-Clique avgRating 29972.000,
```

Top-15 by Number of Common Movies

```
1. 4-Clique avgRating 29992.000,
                                    3 movies (a29990; a29991; a29992; a29993)
2. 4-Clique avgRating 29992.000,
                                    3 movies (a29990; a29991; a29992; a29994)
3. 4-Clique avgRating 29992.000,
                                    3 movies (a29990; a29991; a29993; a29994)
4. 4-Clique avgRating 29992.000,
                                    3 movies (a29990; a29992; a29993; a29994)
5. 4-Clique avgRating 29992.000,
                                    3 movies (a29991; a29992; a29993; a29994)
6. 4-Clique avgRating 29982.000,
                                    3 movies (a29980; a29981; a29982; a29983)
7. 4-Clique avgRating 29982.000,
                                    3 movies (a29980; a29981; a29982; a29984)
8. 4-Clique avgRating 29982.000,
                                    3 movies (a29980; a29981; a29983; a29984)
9. 4-Clique avgRating 29982.000,
                                    3 movies (a29980; a29982; a29983; a29984)
10. 4-Clique avgRating 29982.000,
                                    3 movies (a29981; a29982; a29983; a29984)
11. 4-Clique avgRating 29972.000,
                                    3 movies (a29970; a29971; a29972; a29973)
12. 4-Clique avgRating 29972.000,
                                    3 movies (a29970; a29971; a29972; a29974)
13. 4-Clique avgRating 29972.000,
                                    3 movies (a29970; a29971; a29973; a29974)
14. 4-Clique avgRating 29972.000,
                                    3 movies (a29970; a29972; a29973; a29974)
15. 4-Clique avgRating 29972.000,
                                    3 movies (a29971; a29972; a29973; a29974)
```

Top-15 4-cliques for synthetic model with n = 4000:

There are 20000 groups.

```
1. 4-Clique avgRating 39992.000, 3 movies (a39990; a39991; a39992; a39993)
2. 4-Clique avgRating 39992.000, 3 movies (a39990; a39991; a39992; a39994)
3. 4-Clique avgRating 39992.000, 3 movies (a39990; a39991; a39993; a39994)
4. 4-Clique avgRating 39992.000, 3 movies (a39990; a39992; a39993; a39994)
```

```
5. 4-Clique avgRating 39992.000,
                                    3 movies (a39991; a39992; a39993; a39994)
6. 4-Clique avgRating 39982.000,
                                    3 movies (a39980; a39981; a39982; a39983)
7. 4-Clique avgRating 39982.000,
                                    3 movies (a39980; a39981; a39982; a39984)
8. 4-Clique avgRating 39982.000,
                                    3 movies (a39980; a39981; a39983; a39984)
9. 4-Clique avgRating 39982.000,
                                    3 movies (a39980; a39982; a39983; a39984)
10. 4-Clique avgRating 39982.000,
                                    3 movies (a39981; a39982; a39983; a39984)
11. 4-Clique avgRating 39972.000,
                                    3 movies (a39970; a39971; a39972; a39973)
12. 4-Clique avgRating 39972.000,
                                    3 movies (a39970; a39971; a39972; a39974)
13. 4-Clique avgRating 39972.000,
                                    3 movies (a39970; a39971; a39973; a39974)
14. 4-Clique avgRating 39972.000,
                                    3 movies (a39970; a39972; a39973; a39974)
15. 4-Clique avgRating 39972.000,
                                    3 movies (a39971; a39972; a39973; a39974)
Top-15 by Number of Common Movies
 1. 4-Clique avgRating 39992.000,
                                    3 movies (a39990; a39991; a39992; a39993)
2. 4-Clique avgRating 39992.000,
                                    3 movies (a39990; a39991; a39992; a39994)
3. 4-Clique avgRating 39992.000,
                                    3 movies (a39990; a39991; a39993; a39994)
 4. 4-Clique avgRating 39992.000,
                                    3 movies (a39990; a39992; a39993; a39994)
                                    3 movies (a39991; a39992; a39993; a39994)
5. 4-Clique avgRating 39992.000,
6. 4-Clique avgRating 39982.000,
                                    3 movies (a39980; a39981; a39982; a39983)
7. 4-Clique avgRating 39982.000,
                                    3 movies (a39980; a39981; a39982; a39984)
8. 4-Clique avgRating 39982.000,
                                    3 movies (a39980; a39981; a39983; a39984)
9. 4-Clique avgRating 39982.000,
                                    3 movies (a39980; a39982; a39983; a39984)
10. 4-Clique avgRating 39982.000,
                                    3 movies (a39981; a39982; a39983; a39984)
                                    3 movies (a39970; a39971; a39972; a39973)
11. 4-Clique avgRating 39972.000,
```

Top-15 4-cliques for synthetic model with n = 5000:

There are 25000 groups.

12. 4-Clique avgRating 39972.000,13. 4-Clique avgRating 39972.000,

14. 4-Clique avgRating 39972.000,

15. 4-Clique avgRating 39972.000,

Top-15 by Average Rating

```
1. 4-Clique avgRating 49992.000,
                                    3 movies (a49990; a49991; a49992; a49993)
2. 4-Clique avgRating 49992.000,
                                    3 movies (a49990; a49991; a49992; a49994)
3. 4-Clique avgRating 49992.000,
                                    3 movies (a49990; a49991; a49993; a49994)
4. 4-Clique avgRating 49992.000,
                                    3 movies (a49990; a49992; a49993; a49994)
5. 4-Clique avgRating 49992.000,
                                    3 movies (a49991; a49992; a49993; a49994)
6. 4-Clique avgRating 49982.000,
                                    3 movies (a49980; a49981; a49982; a49983)
7. 4-Clique avgRating 49982.000,
                                    3 movies (a49980; a49981; a49982; a49984)
8. 4-Clique avgRating 49982.000,
                                    3 movies (a49980; a49981; a49983; a49984)
                                    3 movies (a49980; a49982; a49983; a49984)
9. 4-Clique avgRating 49982.000,
10. 4-Clique avgRating 49982.000,
                                    3 movies (a49981; a49982; a49983; a49984)
11. 4-Clique avgRating 49972.000,
                                    3 movies (a49970; a49971; a49972; a49973)
12. 4-Clique avgRating 49972.000,
                                    3 movies (a49970; a49971; a49972; a49974)
13. 4-Clique avgRating 49972.000,
                                    3 movies (a49970; a49971; a49973; a49974)
14. 4-Clique avgRating 49972.000,
                                    3 movies (a49970; a49972; a49973; a49974)
15. 4-Clique avgRating 49972.000,
                                    3 movies (a49971; a49972; a49973; a49974)
```

Top-15 by Number of Common Movies

```
1. 4-Clique avgRating 49992.000,
                                    3 movies (a49990; a49991; a49992; a49993)
2. 4-Clique avgRating 49992.000,
                                    3 movies (a49990; a49991; a49992; a49994)
3. 4-Clique avgRating 49992.000,
                                    3 movies (a49990; a49991; a49993; a49994)
                                    3 movies (a49990; a49992; a49993; a49994)
4. 4-Clique avgRating 49992.000,
5. 4-Clique avgRating 49992.000,
                                    3 movies (a49991; a49992; a49993; a49994)
6. 4-Clique avgRating 49982.000,
                                    3 movies (a49980; a49981; a49982; a49983)
7. 4-Clique avgRating 49982.000,
                                    3 movies (a49980; a49981; a49982; a49984)
8. 4-Clique avgRating 49982.000,
                                    3 movies (a49980; a49981; a49983; a49984)
9. 4-Clique avgRating 49982.000,
                                    3 movies (a49980; a49982; a49983; a49984)
10. 4-Clique avgRating 49982.000,
                                    3 movies (a49981; a49982; a49983; a49984)
11. 4-Clique avgRating 49972.000,
                                    3 movies (a49970; a49971; a49972; a49973)
12. 4-Clique avgRating 49972.000,
                                    3 movies (a49970; a49971; a49972; a49974)
```

3 movies (a39970; a39971; a39972; a39974)

3 movies (a39970; a39971; a39973; a39974)

3 movies (a39970; a39972; a39973; a39974)

3 movies (a39971; a39972; a39973; a39974)

```
13. 4-Clique avgRating 49972.000, 3 movies (a49970; a49971; a49973; a49974)
14. 4-Clique avgRating 49972.000, 3 movies (a49970; a49972; a49973; a49974)
15. 4-Clique avgRating 49972.000, 3 movies (a49971; a49972; a49973; a49974)
```

Top-15 4-cliques for synthetic model with n = 10000:

There are 50000 groups.

Top-15 by Average Rating

```
1. 4-Clique avgRating 99992.000,
                                    3 movies (a99990; a99991; a99992; a99993)
2. 4-Clique avgRating 99992.000,
                                    3 movies (a99990; a99991; a99992; a99994)
3. 4-Clique avgRating 99992.000,
                                    3 movies (a99990; a99991; a99993; a99994)
 4. 4-Clique avgRating 99992.000,
                                    3 movies (a99990; a99992; a99993; a99994)
5. 4-Clique avgRating 99992.000,
                                    3 movies (a99991; a99992; a99993; a99994)
6. 4-Clique avgRating 99982.000,
                                    3 movies (a99980; a99981; a99982; a99983)
7. 4-Clique avgRating 99982.000,
                                    3 movies (a99980; a99981; a99982; a99984)
8. 4-Clique avgRating 99982.000,
                                    3 movies (a99980; a99981; a99983; a99984)
9. 4-Clique avgRating 99982.000,
                                    3 movies (a99980; a99982; a99983; a99984)
10. 4-Clique avgRating 99982.000,
                                    3 movies (a99981; a99982; a99983; a99984)
11. 4-Clique avgRating 99972.000,
                                    3 movies (a99970; a99971; a99972; a99973)
12. 4-Clique avgRating 99972.000,
                                    3 movies (a99970; a99971; a99972; a99974)
                                    3 movies (a99970; a99971; a99973; a99974)
13. 4-Clique avgRating 99972.000,
14. 4-Clique avgRating 99972.000,
                                    3 movies (a99970; a99972; a99973; a99974)
15. 4-Clique avgRating 99972.000,
                                    3 movies (a99971; a99972; a99973; a99974)
```

Top-15 by Number of Common Movies

```
1. 4-Clique avgRating 99992.000,
                                    3 movies (a99990; a99991; a99992; a99993)
2. 4-Clique avgRating 99992.000,
                                    3 movies (a99990; a99991; a99992; a99994)
3. 4-Clique avgRating 99992.000,
                                    3 movies (a99990; a99991; a99993; a99994)
 4. 4-Clique avgRating 99992.000,
                                    3 movies (a99990; a99992; a99993; a99994)
5. 4-Clique avgRating 99992.000,
                                    3 movies (a99991; a99992; a99993; a99994)
6. 4-Clique avgRating 99982.000,
                                    3 movies (a99980; a99981; a99982; a99983)
7. 4-Clique avgRating 99982.000,
                                    3 movies (a99980; a99981; a99982; a99984)
8. 4-Clique avgRating 99982.000,
                                    3 movies (a99980; a99981; a99983; a99984)
9. 4-Clique avgRating 99982.000,
                                    3 movies (a99980; a99982; a99983; a99984)
10. 4-Clique avgRating 99982.000,
                                    3 movies (a99981; a99982; a99983; a99984)
11. 4-Clique avgRating 99972.000,
                                    3 movies (a99970; a99971; a99972; a99973)
12. 4-Clique avgRating 99972.000,
                                    3 movies (a99970; a99971; a99972; a99974)
13. 4-Clique avgRating 99972.000,
                                    3 movies (a99970; a99971; a99973; a99974)
14. 4-Clique avgRating 99972.000,
                                    3 movies (a99970; a99972; a99973; a99974)
15. 4-Clique avgRating 99972.000,
                                    3 movies (a99971; a99972; a99973; a99974)
```

Top-15 4-cliques for synthetic model with n = 50000:

There are 250000 groups.

```
1. 4-Clique avgRating 499992.000,
                                     3 movies (a499990; a499991; a499992; a499993)
2. 4-Clique avgRating 499992.000,
                                     3 movies (a499990; a499991; a499992; a499994)
3. 4-Clique avgRating 499992.000,
                                     3 movies (a499990; a499991; a499993; a499994)
 4. 4-Clique avgRating 499992.000,
                                     3 movies (a499990; a499992; a499993; a499994)
                                     3 movies (a499991; a499992; a499993; a499994)
5. 4-Clique avgRating 499992.000,
6. 4-Clique avgRating 499982.000,
                                     3 movies (a499980; a499981; a499982; a499983)
7. 4-Clique avgRating 499982.000,
                                     3 movies (a499980; a499981; a499982; a499984)
8. 4-Clique avgRating 499982.000,
                                     3 movies (a499980; a499981; a499983; a499984)
9. 4-Clique avgRating 499982.000,
                                     3 movies (a499980; a499982; a499983; a499984)
10. 4-Clique avgRating 499982.000,
                                     3 movies (a499981; a499982; a499983; a499984)
11. 4-Clique avgRating 499972.000,
                                     3 movies (a499970; a499971; a499972; a499973)
12. 4-Clique avgRating 499972.000,
                                     3 movies (a499970; a499971; a499972; a499974)
13. 4-Clique avgRating 499972.000,
                                     3 movies (a499970; a499971; a499973; a499974)
14. 4-Clique avgRating 499972.000,
                                     3 movies (a499970; a499972; a499973; a499974)
15. 4-Clique avgRating 499972.000,
                                     3 movies (a499971; a499972; a499973; a499974)
```

```
1. 4-Clique avgRating 499992.000,
                                     3 movies (a499990; a499991; a499992; a499993)
2. 4-Clique avgRating 499992.000,
                                     3 movies (a499990; a499991; a499992; a499994)
3. 4-Clique avgRating 499992.000,
                                     3 movies (a499990; a499991; a499993; a499994)
4. 4-Clique avgRating 499992.000,
                                     3 movies (a499990; a499992; a499993; a499994)
5. 4-Clique avgRating 499992.000,
                                     3 movies (a499991; a499992; a499993; a499994)
6. 4-Clique avgRating 499982.000,
                                     3 movies (a499980; a499981; a499982; a499983)
7. 4-Clique avgRating 499982.000,
                                     3 movies (a499980; a499981; a499982; a499984)
8. 4-Clique avgRating 499982.000,
                                     3 movies (a499980; a499981; a499983; a499984)
9. 4-Clique avgRating 499982.000,
                                     3 movies (a499980; a499982; a499983; a499984)
10. 4-Clique avgRating 499982.000,
                                     3 movies (a499981; a499982; a499983; a499984)
11. 4-Clique avgRating 499972.000,
                                     3 movies (a499970; a499971; a499972; a499973)
12. 4-Clique avgRating 499972.000,
                                     3 movies (a499970; a499971; a499972; a499974)
13. 4-Clique avgRating 499972.000,
                                     3 movies (a499970; a499971; a499973; a499974)
                                     3 movies (a499970; a499972; a499973; a499974)
14. 4-Clique avgRating 499972.000,
                                     3 movies (a499971; a499972; a499973; a499974)
15. 4-Clique avgRating 499972.000,
```

Top-15 4-cliques for synthetic model with n = 100000:

There are 500000 groups.

Top-15 by Average Rating

```
1. 4-Clique avgRating 999992.000,
                                     3 movies (a999990; a999991; a9999992; a9999993)
2. 4-Clique avgRating 999992.000,
                                     3 movies (a999990; a999991; a9999992; a9999994)
3. 4-Clique avgRating 999992.000,
                                     3 movies (a999990; a999991; a999993; a999994)
                                     3 movies (a999990; a999992; a9999993; a9999994)
4. 4-Clique avgRating 999992.000,
5. 4-Clique avgRating 999992.000,
                                     3 movies (a999991; a999992; a999993; a999994)
6. 4-Clique avgRating 999982.000,
                                     3 movies (a999980; a999981; a999982; a999983)
7. 4-Clique avgRating 999982.000,
                                     3 movies (a999980; a999981; a999982; a999984)
8. 4-Clique avgRating 999982.000,
                                     3 movies (a999980; a999981; a999983; a999984)
9. 4-Clique avgRating 999982.000,
                                     3 movies (a999980; a999982; a999983; a999984)
10. 4-Clique avgRating 999982.000,
                                     3 movies (a999981; a999982; a999983; a999984)
11. 4-Clique avgRating 999972.000,
                                     3 movies (a999970; a999971; a999972; a999973)
12. 4-Clique avgRating 999972.000,
                                     3 movies (a999970; a999971; a999972; a999974)
13. 4-Clique avgRating 999972.000,
                                     3 movies (a999970; a999971; a999973; a999974)
14. 4-Clique avgRating 999972.000,
                                     3 movies (a999970; a999972; a999973; a999974)
                                     3 movies (a999971; a999972; a999973; a999974)
15. 4-Clique avgRating 999972.000,
```

Top-15 by Number of Common Movies

```
1. 4-Clique avgRating 999992.000,
                                     3 movies (a999990; a999991; a9999992; a9999993)
2. 4-Clique avgRating 999992.000,
                                     3 movies (a999990; a999991; a9999992; a999994)
3. 4-Clique avgRating 999992.000,
                                     3 movies (a999990; a999991; a9999993; a999994)
4. 4-Clique avgRating 999992.000,
                                     3 movies (a999990; a9999992; a9999993; a9999994)
5. 4-Clique avgRating 999992.000,
                                     3 movies (a999991; a999992; a999993; a999994)
6. 4-Clique avgRating 999982.000,
                                     3 movies (a999980; a999981; a999982; a999983)
7. 4-Clique avgRating 999982.000,
                                     3 movies (a999980; a999981; a999982; a999984)
8. 4-Clique avgRating 999982.000,
                                     3 movies (a999980; a999981; a999983; a999984)
9. 4-Clique avgRating 999982.000,
                                     3 movies (a999980; a999982; a999983; a999984)
10. 4-Clique avgRating 999982.000,
                                     3 movies (a999981; a999982; a999983; a999984)
11. 4-Clique avgRating 999972.000,
                                     3 movies (a999970; a999971; a999972; a999973)
12. 4-Clique avgRating 999972.000,
                                     3 movies (a999970; a999971; a999972; a999974)
13. 4-Clique avgRating 999972.000,
                                     3 movies (a999970; a999971; a999973; a999974)
                                     3 movies (a999970; a999972; a999973; a999974)
14. 4-Clique avgRating 999972.000,
15. 4-Clique avgRating 999972.000,
                                     3 movies (a999971; a999972; a999973; a999974)
```

Top-15 4-cliques for synthetic model with n = 200000:

There are 1000000 groups.

Top-15 by Average Rating

1. 4-Clique avgRating 1999992.000, 3 movies (a1999990; a1999991; a1999992; a1999993)

```
3 movies (a1999990; a1999991; a1999992; a1999994)
2. 4-Clique avgRating 1999992.000,
3. 4-Clique avgRating 1999992.000,
                                      3 movies (a1999990; a1999991; a1999993; a1999994)
4. 4-Clique avgRating 1999992.000,
                                      3 movies (a1999990; a1999992; a1999993; a1999994)
5. 4-Clique avgRating 1999992.000,
                                      3 movies (a1999991; a19999992; a19999993; a19999994)
6. 4-Clique avgRating 1999982.000,
                                      3 movies (a1999980; a1999981; a1999982; a1999983)
7. 4-Clique avgRating 1999982.000,
                                      3 movies (a1999980; a1999981; a1999982; a1999984)
8. 4-Clique avgRating 1999982.000,
                                      3 movies (a1999980; a1999981; a1999983; a1999984)
9. 4-Clique avgRating 1999982.000,
                                      3 movies (a1999980; a1999982; a1999983; a1999984)
10. 4-Clique avgRating 1999982.000,
                                      3 movies (a1999981; a1999982; a1999983; a1999984)
11. 4-Clique avgRating 1999972.000,
                                      3 movies (a1999970; a1999971; a1999972; a1999973)
12. 4-Clique avgRating 1999972.000,
                                      3 movies (a1999970; a1999971; a1999972; a1999974)
                                      3 movies (a1999970; a1999971; a1999973; a1999974)
13. 4-Clique avgRating 1999972.000,
14. 4-Clique avgRating 1999972.000,
                                      3 movies (a1999970; a1999972; a1999973; a1999974)
15. 4-Clique avgRating 1999972.000,
                                      3 movies (a1999971; a1999972; a1999973; a1999974)
```

```
1. 4-Clique avgRating 1999992.000,
                                      3 movies (a1999990; a1999991; a1999992; a1999993)
2. 4-Clique avgRating 1999992.000,
                                      3 movies (a1999990; a19999991; a19999992; a19999994)
3. 4-Clique avgRating 1999992.000,
                                      3 movies (a1999990; a1999991; a1999993; a1999994)
4. 4-Clique avgRating 1999992.000,
                                      3 movies (a1999990; a1999992; a1999993; a1999994)
                                      3 movies (a1999991; a19999992; a19999993; a19999994)
5. 4-Clique avgRating 1999992.000,
6. 4-Clique avgRating 1999982.000,
                                      3 movies (a1999980; a1999981; a1999982; a1999983)
7. 4-Clique avgRating 1999982.000,
                                      3 movies (a1999980; a1999981; a1999982; a1999984)
8. 4-Clique avgRating 1999982.000,
                                      3 movies (a1999980; a1999981; a1999983; a1999984)
                                      3 movies (a1999980; a1999982; a1999983; a1999984)
9. 4-Clique avgRating 1999982.000,
10. 4-Clique avgRating 1999982.000,
                                      3 movies (a1999981; a1999982; a1999983; a1999984)
11. 4-Clique avgRating 1999972.000,
                                      3 movies (a1999970; a1999971; a1999972; a1999973)
12. 4-Clique avgRating 1999972.000,
                                      3 movies (a1999970; a1999971; a1999972; a1999974)
13. 4-Clique avgRating 1999972.000,
                                      3 movies (a1999970; a1999971; a1999973; a1999974)
14. 4-Clique avgRating 1999972.000,
                                      3 movies (a1999970; a1999972; a1999973; a1999974)
15. 4-Clique avgRating 1999972.000,
                                      3 movies (a1999971; a1999972; a1999973; a1999974)
```

B.1.4 Cliques of size 5

Top-15 5-cliques for synthetic model with n = 1000:

There are 1000 groups.

Top-15 by Average Rating

```
1. 5-Clique avgRating 9992.000,
                                  3 movies (a9990; a9991; a9992; a9993; a9994)
                                  3 movies (a9980; a9981; a9982; a9983; a9984)
2. 5-Clique avgRating 9982.000,
3. 5-Clique avgRating 9972.000,
                                   3 movies (a9970; a9971; a9972; a9973; a9974)
4. 5-Clique avgRating 9962.000,
                                  3 movies (a9960; a9961; a9962; a9963; a9964)
5. 5-Clique avgRating 9952.000,
                                  3 movies (a9950; a9951; a9952; a9953; a9954)
6. 5-Clique avgRating 9942.000,
                                   3 movies (a9940; a9941; a9942; a9943; a9944)
7. 5-Clique avgRating 9932.000,
                                  3 movies (a9930; a9931; a9932; a9933; a9934)
8. 5-Clique avgRating 9922.000,
                                  3 movies (a9920; a9921; a9922; a9923; a9924)
9. 5-Clique avgRating 9912.000,
                                   3 movies (a9910; a9911; a9912; a9913; a9914)
10. 5-Clique avgRating 9902.000,
                                   3 movies (a9900; a9901; a9902; a9903; a9904)
11. 5-Clique avgRating 9892.000,
                                   3 movies (a9890; a9891; a9892; a9893; a9894)
12. 5-Clique avgRating 9882.000,
                                   3 movies (a9880; a9881; a9882; a9883; a9884)
13. 5-Clique avgRating 9872.000,
                                   3 movies (a9870; a9871; a9872; a9873; a9874)
14. 5-Clique avgRating 9862.000,
                                   3 movies (a9860; a9861; a9862; a9863; a9864)
15. 5-Clique avgRating 9852.000,
                                   3 movies (a9850; a9851; a9852; a9853; a9854)
```

Top-15 by Number of Common Movies

```
1. 5-Clique avgRating 9992.000,
                                  3 movies (a9990; a9991; a9992; a9993; a9994)
2. 5-Clique avgRating 9982.000,
                                  3 movies (a9980; a9981; a9982; a9983; a9984)
3. 5-Clique avgRating 9972.000,
                                   3 movies (a9970; a9971; a9972; a9973; a9974)
4. 5-Clique avgRating 9962.000,
                                   3 movies (a9960; a9961; a9962; a9963; a9964)
5. 5-Clique avgRating 9952.000,
                                  3 movies (a9950; a9951; a9952; a9953; a9954)
6. 5-Clique avgRating 9942.000,
                                  3 movies (a9940; a9941; a9942; a9943; a9944)
                                   3 movies (a9930; a9931; a9932; a9933; a9934)
7. 5-Clique avgRating 9932.000,
8. 5-Clique avgRating 9922.000,
                                  3 movies (a9920; a9921; a9922; a9923; a9924)
9. 5-Clique avgRating 9912.000,
                                  3 movies (a9910; a9911; a9912; a9913; a9914)
10. 5-Clique avgRating 9902.000,
                                   3 movies (a9900; a9901; a9902; a9903; a9904)
11. 5-Clique avgRating 9892.000,
                                   3 movies (a9890; a9891; a9892; a9893; a9894)
                                   3 movies (a9880; a9881; a9882; a9883; a9884)
12. 5-Clique avgRating 9882.000,
13. 5-Clique avgRating 9872.000,
                                   3 movies (a9870; a9871; a9872; a9873; a9874)
14. 5-Clique avgRating 9862.000,
                                   3 movies (a9860; a9861; a9862; a9863; a9864)
                                   3 movies (a9850; a9851; a9852; a9853; a9854)
15. 5-Clique avgRating 9852.000,
```

Top-15 5-cliques for synthetic model with n = 2000:

There are 2000 groups.

Top-15 by Average Rating

```
1. 5-Clique avgRating 19992.000,
                                    3 movies (a19990; a19991; a19992; a19993; a19994)
2. 5-Clique avgRating 19982.000,
                                    3 movies (a19980; a19981; a19982; a19983; a19984)
3. 5-Clique avgRating 19972.000,
                                    3 movies (a19970; a19971; a19972; a19973; a19974)
 4. 5-Clique avgRating 19962.000,
                                    3 movies (a19960; a19961; a19962; a19963; a19964)
5. 5-Clique avgRating 19952.000,
                                    3 movies (a19950; a19951; a19952; a19953; a19954)
6. 5-Clique avgRating 19942.000,
                                    3 movies (a19940; a19941; a19942; a19943; a19944)
7. 5-Clique avgRating 19932.000,
                                    3 movies (a19930; a19931; a19932; a19933; a19934)
                                    3 movies (a19920; a19921; a19922; a19923; a19924)
8. 5-Clique avgRating 19922.000,
9. 5-Clique avgRating 19912.000,
                                    3 movies (a19910; a19911; a19912; a19913; a19914)
10. 5-Clique avgRating 19902.000,
                                    3 movies (a19900; a19901; a19902; a19903; a19904)
                                    3 movies (a19890; a19891; a19892; a19893; a19894)
11. 5-Clique avgRating 19892.000,
12. 5-Clique avgRating 19882.000,
                                    3 movies (a19880; a19881; a19882; a19883; a19884)
13. 5-Clique avgRating 19872.000,
                                    3 movies (a19870; a19871; a19872; a19873; a19874)
                                    3 movies (a19860; a19861; a19862; a19863; a19864)
14. 5-Clique avgRating 19862.000,
15. 5-Clique avgRating 19852.000,
                                    3 movies (a19850; a19851; a19852; a19853; a19854)
```

Top-15 by Number of Common Movies

```
1. 5-Clique avgRating 19992.000,
                                    3 movies (a19990; a19991; a19992; a19993; a19994)
2. 5-Clique avgRating 19982.000,
                                    3 movies (a19980; a19981; a19982; a19983; a19984)
3. 5-Clique avgRating 19972.000,
                                    3 movies (a19970; a19971; a19972; a19973; a19974)
                                    3 movies (a19960; a19961; a19962; a19963; a19964)
4. 5-Clique avgRating 19962.000,
5. 5-Clique avgRating 19952.000,
                                    3 movies (a19950; a19951; a19952; a19953; a19954)
6. 5-Clique avgRating 19942.000,
                                    3 movies (a19940; a19941; a19942; a19943; a19944)
7. 5-Clique avgRating 19932.000,
                                    3 \text{ movies} (a19930; a19931; a19932; a19933; a19934)
8. 5-Clique avgRating 19922.000,
                                    3 movies (a19920; a19921; a19922; a19923; a19924)
9. 5-Clique avgRating 19912.000,
                                    3 movies (a19910; a19911; a19912; a19913; a19914)
10. 5-Clique avgRating 19902.000,
                                    3 movies (a19900; a19901; a19902; a19903; a19904)
11. 5-Clique avgRating 19892.000,
                                    3 movies (a19890; a19891; a19892; a19893; a19894)
                                    3 movies (a19880; a19881; a19882; a19883; a19884)
12. 5-Clique avgRating 19882.000,
13. 5-Clique avgRating 19872.000,
                                    3 movies (a19870; a19871; a19872; a19873; a19874)
14. 5-Clique avgRating 19862.000,
                                    3 movies (a19860; a19861; a19862; a19863; a19864)
15. 5-Clique avgRating 19852.000,
                                    3 movies (a19850; a19851; a19852; a19853; a19854)
```

Top-15 5-cliques for synthetic model with n = 3000:

There are 3000 groups.

Top-15 by Average Rating

```
3 movies (a29990; a29991; a29992; a29993; a29994)
1. 5-Clique avgRating 29992.000,
2. 5-Clique avgRating 29982.000,
                                    3 movies (a29980; a29981; a29982; a29983; a29984)
3. 5-Clique avgRating 29972.000,
                                    3 movies (a29970; a29971; a29972; a29973; a29974)
4. 5-Clique avgRating 29962.000,
                                    3 movies (a29960; a29961; a29962; a29963; a29964)
5. 5-Clique avgRating 29952.000,
                                    3 movies (a29950; a29951; a29952; a29953; a29954)
6. 5-Clique avgRating 29942.000,
                                    3 movies (a29940; a29941; a29942; a29943; a29944)
7. 5-Clique avgRating 29932.000,
                                    3 movies (a29930; a29931; a29932; a29933; a29934)
8. 5-Clique avgRating 29922.000,
                                    3 movies (a29920; a29921; a29922; a29923; a29924)
9. 5-Clique avgRating 29912.000,
                                    3 movies (a29910; a29911; a29912; a29913; a29914)
10. 5-Clique avgRating 29902.000,
                                    3 movies (a29900; a29901; a29902; a29903; a29904)
                                    3 movies (a29890; a29891; a29892; a29893; a29894)
11. 5-Clique avgRating 29892.000,
12. 5-Clique avgRating 29882.000,
                                    3 movies (a29880; a29881; a29882; a29883; a29884)
13. 5-Clique avgRating 29872.000,
                                    3 movies (a29870; a29871; a29872; a29873; a29874)
14. 5-Clique avgRating 29862.000,
                                    3 movies (a29860; a29861; a29862; a29863; a29864)
                                    3 movies (a29850; a29851; a29852; a29853; a29854)
15. 5-Clique avgRating 29852.000,
```

Top-15 by Number of Common Movies

```
1. 5-Clique avgRating 29992.000,
                                    3 movies (a29990; a29991; a29992; a29993; a29994)
2. 5-Clique avgRating 29982.000,
                                    3 movies (a29980; a29981; a29982; a29983; a29984)
3. 5-Clique avgRating 29972.000,
                                    3 movies (a29970; a29971; a29972; a29973; a29974)
                                    3 movies (a29960; a29961; a29962; a29963; a29964)
4. 5-Clique avgRating 29962.000,
5. 5-Clique avgRating 29952.000,
                                    3 movies (a29950; a29951; a29952; a29953; a29954)
6. 5-Clique avgRating 29942.000,
                                    3 movies (a29940; a29941; a29942; a29943; a29944)
                                    3 movies (a29930; a29931; a29932; a29933; a29934)
7. 5-Clique avgRating 29932.000,
8. 5-Clique avgRating 29922.000,
                                    3 movies (a29920; a29921; a29922; a29923; a29924)
9. 5-Clique avgRating 29912.000,
                                    3 movies (a29910; a29911; a29912; a29913; a29914)
10. 5-Clique avgRating 29902.000,
                                    3 movies (a29900; a29901; a29902; a29903; a29904)
11. 5-Clique avgRating 29892.000,
                                    3 movies (a29890; a29891; a29892; a29893; a29894)
                                    3 movies (a29880; a29881; a29882; a29883; a29884)
12. 5-Clique avgRating 29882.000,
13. 5-Clique avgRating 29872.000,
                                    3 movies (a29870; a29871; a29872; a29873; a29874)
14. 5-Clique avgRating 29862.000,
                                    3 movies (a29860; a29861; a29862; a29863; a29864)
15. 5-Clique avgRating 29852.000,
                                    3 movies (a29850; a29851; a29852; a29853; a29854)
```

Top-15 5-cliques for synthetic model with n = 4000:

There are 4000 groups.

```
1. 5-Clique avgRating 39992.000, 3 movies (a39990; a39991; a39992; a39993; a39994)
2. 5-Clique avgRating 39982.000, 3 movies (a39980; a39981; a39982; a39983; a39984)
3. 5-Clique avgRating 39972.000, 3 movies (a39970; a39971; a39972; a39973; a39974)
4. 5-Clique avgRating 39962.000, 3 movies (a39960; a39961; a39962; a39963; a39964)
```

```
5. 5-Clique avgRating 39952.000,
                                    3 movies (a39950; a39951; a39952; a39953; a39954)
6. 5-Clique avgRating 39942.000,
                                    3 movies (a39940; a39941; a39942; a39943; a39944)
7. 5-Clique avgRating 39932.000,
                                    3 movies (a39930; a39931; a39932; a39933; a39934)
8. 5-Clique avgRating 39922.000,
                                    3 movies (a39920; a39921; a39922; a39923; a39924)
9. 5-Clique avgRating 39912.000,
                                    3 movies (a39910; a39911; a39912; a39913; a39914)
10. 5-Clique avgRating 39902.000,
                                    3 movies (a39900; a39901; a39902; a39903; a39904)
                                    3 movies (a39890; a39891; a39892; a39893; a39894)
11. 5-Clique avgRating 39892.000,
12. 5-Clique avgRating 39882.000,
                                    3 movies (a39880; a39881; a39882; a39883; a39884)
13. 5-Clique avgRating 39872.000,
                                    3 movies (a39870; a39871; a39872; a39873; a39874)
14. 5-Clique avgRating 39862.000,
                                    3 movies (a39860; a39861; a39862; a39863; a39864)
15. 5-Clique avgRating 39852.000,
                                    3 movies (a39850; a39851; a39852; a39853; a39854)
Top-15 by Number of Common Movies
 1. 5-Clique avgRating 39992.000,
                                    3 movies (a39990; a39991; a39992; a39993; a39994)
2. 5-Clique avgRating 39982.000,
                                    3 movies (a39980; a39981; a39982; a39983; a39984)
3. 5-Clique avgRating 39972.000,
                                    3 movies (a39970; a39971; a39972; a39973; a39974)
 4. 5-Clique avgRating 39962.000,
                                    3 movies (a39960; a39961; a39962; a39963; a39964)
5. 5-Clique avgRating 39952.000,
                                    3 movies (a39950; a39951; a39952; a39953; a39954)
6. 5-Clique avgRating 39942.000,
                                    3 movies (a39940; a39941; a39942; a39943; a39944)
7. 5-Clique avgRating 39932.000,
                                    3 movies (a39930; a39931; a39932; a39933; a39934)
                                    3 movies (a39920; a39921; a39922; a39923; a39924)
8. 5-Clique avgRating 39922.000,
9. 5-Clique avgRating 39912.000,
                                    3 movies (a39910; a39911; a39912; a39913; a39914)
10. 5-Clique avgRating 39902.000,
                                    3 movies (a39900; a39901; a39902; a39903; a39904)
```

3 movies (a39890; a39891; a39892; a39893; a39894)

3 movies (a39880; a39881; a39882; a39883; a39884)

3 movies (a39870; a39871; a39872; a39873; a39874)

3 movies (a39860; a39861; a39862; a39863; a39864)

3 movies (a39850; a39851; a39852; a39853; a39854)

Top-15 5-cliques for synthetic model with n = 5000:

There are 5000 groups.

11. 5-Clique avgRating 39892.000,

12. 5-Clique avgRating 39882.000,

13. 5-Clique avgRating 39872.000,

14. 5-Clique avgRating 39862.000,

15. 5-Clique avgRating 39852.000,

Top-15 by Average Rating

```
3 movies (a49990; a49991; a49992; a49993; a49994)
1. 5-Clique avgRating 49992.000,
2. 5-Clique avgRating 49982.000,
                                    3 movies (a49980; a49981; a49982; a49983; a49984)
3. 5-Clique avgRating 49972.000,
                                    3 movies (a49970; a49971; a49972; a49973; a49974)
                                    3 movies (a49960; a49961; a49962; a49963; a49964)
4. 5-Clique avgRating 49962.000,
5. 5-Clique avgRating 49952.000,
                                    3 movies (a49950; a49951; a49952; a49953; a49954)
6. 5-Clique avgRating 49942.000,
                                    3 movies (a49940; a49941; a49942; a49943; a49944)
                                    3 movies (a49930; a49931; a49932; a49933; a49934)
7. 5-Clique avgRating 49932.000,
8. 5-Clique avgRating 49922.000,
                                    3 movies (a49920; a49921; a49922; a49923; a49924)
9. 5-Clique avgRating 49912.000,
                                    3 movies (a49910; a49911; a49912; a49913; a49914)
                                    3 movies (a49900; a49901; a49902; a49903; a49904)
10. 5-Clique avgRating 49902.000,
11. 5-Clique avgRating 49892.000,
                                    3 movies (a49890; a49891; a49892; a49893; a49894)
12. 5-Clique avgRating 49882.000,
                                    3 \text{ movies } (a49880; a49881; a49882; a49883; a49884)
13. 5-Clique avgRating 49872.000,
                                    3 movies (a49870; a49871; a49872; a49873; a49874)
14. 5-Clique avgRating 49862.000,
                                    3 movies (a49860; a49861; a49862; a49863; a49864)
15. 5-Clique avgRating 49852.000,
                                    3 movies (a49850; a49851; a49852; a49853; a49854)
```

```
1. 5-Clique avgRating 49992.000,
                                    3 movies (a49990; a49991; a49992; a49993; a49994)
2. 5-Clique avgRating 49982.000,
                                    3 movies (a49980; a49981; a49982; a49983; a49984)
3. 5-Clique avgRating 49972.000,
                                    3 movies (a49970; a49971; a49972; a49973; a49974)
                                    3 movies (a49960; a49961; a49962; a49963; a49964)
4. 5-Clique avgRating 49962.000,
5. 5-Clique avgRating 49952.000,
                                    3 movies (a49950; a49951; a49952; a49953; a49954)
6. 5-Clique avgRating 49942.000,
                                    3 movies (a49940; a49941; a49942; a49943; a49944)
                                    3 movies (a49930; a49931; a49932; a49933; a49934)
7. 5-Clique avgRating 49932.000,
8. 5-Clique avgRating 49922.000,
                                    3 movies (a49920; a49921; a49922; a49923; a49924)
9. 5-Clique avgRating 49912.000,
                                    3 movies (a49910; a49911; a49912; a49913; a49914)
10. 5-Clique avgRating 49902.000,
                                    3 movies (a49900; a49901; a49902; a49903; a49904)
11. 5-Clique avgRating 49892.000,
                                    3 movies (a49890; a49891; a49892; a49893; a49894)
                                    3 movies (a49880; a49881; a49882; a49883; a49884)
12. 5-Clique avgRating 49882.000,
```

```
13. 5-Clique avgRating 49872.000, 3 movies (a49870; a49871; a49872; a49873; a49874)
14. 5-Clique avgRating 49862.000, 3 movies (a49860; a49861; a49862; a49863; a49864)
15. 5-Clique avgRating 49852.000, 3 movies (a49850; a49851; a49852; a49853; a49854)
```

Top-15 5-cliques for synthetic model with n = 10000:

There are 10000 groups.

Top-15 by Average Rating

```
1. 5-Clique avgRating 99992.000,
                                    3 movies (a99990; a99991; a99992; a99993; a99994)
2. 5-Clique avgRating 99982.000,
                                    3 movies (a99980; a99981; a99982; a99983; a99984)
3. 5-Clique avgRating 99972.000,
                                    3 movies (a99970; a99971; a99972; a99973; a99974)
 4. 5-Clique avgRating 99962.000,
                                    3 movies (a99960; a99961; a99962; a99963; a99964)
5. 5-Clique avgRating 99952.000,
                                    3 movies (a99950; a99951; a99952; a99953; a99954)
6. 5-Clique avgRating 99942.000,
                                    3 movies (a99940; a99941; a99942; a99943; a99944)
7. 5-Clique avgRating 99932.000,
                                    3 movies (a99930; a99931; a99932; a99933; a99934)
                                    3 movies (a99920; a99921; a99922; a99923; a99924)
8. 5-Clique avgRating 99922.000,
9. 5-Clique avgRating 99912.000,
                                    3 movies (a99910; a99911; a99912; a99913; a99914)
10. 5-Clique avgRating 99902.000,
                                    3 movies (a99900; a99901; a99902; a99903; a99904)
11. 5-Clique avgRating 99892.000,
                                    3 movies (a99890; a99891; a99892; a99893; a99894)
12. 5-Clique avgRating 99882.000,
                                    3 movies (a99880; a99881; a99882; a99883; a99884)
                                    3 movies (a99870; a99871; a99872; a99873; a99874)
13. 5-Clique avgRating 99872.000,
14. 5-Clique avgRating 99862.000,
                                    3 movies (a99860; a99861; a99862; a99863; a99864)
15. 5-Clique avgRating 99852.000,
                                    3 movies (a99850; a99851; a99852; a99853; a99854)
```

Top-15 by Number of Common Movies

```
1. 5-Clique avgRating 99992.000,
                                    3 movies (a99990; a99991; a99992; a99993; a99994)
2. 5-Clique avgRating 99982.000,
                                    3 movies (a99980; a99981; a99982; a99983; a99984)
3. 5-Clique avgRating 99972.000,
                                    3 movies (a99970; a99971; a99972; a99973; a99974)
 4. 5-Clique avgRating 99962.000,
                                    3 movies (a99960; a99961; a99962; a99963; a99964)
5. 5-Clique avgRating 99952.000,
                                    3 movies (a99950; a99951; a99952; a99953; a99954)
6. 5-Clique avgRating 99942.000,
                                    3 movies (a99940; a99941; a99942; a99943; a99944)
7. 5-Clique avgRating 99932.000,
                                    3 movies (a99930; a99931; a99932; a99933; a99934)
8. 5-Clique avgRating 99922.000,
                                    3 movies (a99920; a99921; a99922; a99923; a99924)
9. 5-Clique avgRating 99912.000,
                                    3 movies (a99910; a99911; a99912; a99913; a99914)
10. 5-Clique avgRating 99902.000,
                                    3 movies (a99900; a99901; a99902; a99903; a99904)
11. 5-Clique avgRating 99892.000,
                                    3 movies (a99890; a99891; a99892; a99893; a99894)
12. 5-Clique avgRating 99882.000,
                                    3 movies (a99880; a99881; a99882; a99883; a99884)
                                    3 movies (a99870; a99871; a99872; a99873; a99874)
13. 5-Clique avgRating 99872.000,
                                    3 movies (a99860; a99861; a99862; a99863; a99864)
14. 5-Clique avgRating 99862.000,
15. 5-Clique avgRating 99852.000,
                                    3 movies (a99850; a99851; a99852; a99853; a99854)
```

Top-15 5-cliques for synthetic model with n = 50000:

There are 50000 groups.

```
1. 5-Clique avgRating 499992.000,
                                     3 movies (a499990; a499991; a499992; a499993; a499994)
2. 5-Clique avgRating 499982.000,
                                     3 movies (a499980; a499981; a499982; a499983; a499984)
3. 5-Clique avgRating 499972.000,
                                     3 movies (a499970; a499971; a499972; a499973; a499974)
 4. 5-Clique avgRating 499962.000,
                                     3 movies (a499960; a499961; a499962; a499963; a499964)
5. 5-Clique avgRating 499952.000,
                                     3 movies (a499950; a499951; a499952; a499953; a499954)
6. 5-Clique avgRating 499942.000,
                                     3 movies (a499940; a499941; a499942; a499943; a499944)
7. 5-Clique avgRating 499932.000,
                                     3 movies (a499930; a499931; a499932; a499933; a499934)
8. 5-Clique avgRating 499922.000,
                                     3 movies (a499920; a499921; a499922; a499923; a499924)
9. 5-Clique avgRating 499912.000,
                                     3 movies (a499910; a499911; a499912; a499913; a499914)
10. 5-Clique avgRating 499902.000,
                                     3 movies (a499900; a499901; a499902; a499903; a499904)
11. 5-Clique avgRating 499892.000,
                                     3 movies (a499890; a499891; a499892; a499893; a499894)
12. 5-Clique avgRating 499882.000,
                                     3 movies (a499880; a499881; a499882; a499883; a499884)
13. 5-Clique avgRating 499872.000,
                                     3 \text{ movies } (a499870; a499871; a499872; a499873; a499874)
14. 5-Clique avgRating 499862.000,
                                     3 movies (a499860; a499861; a499862; a499863; a499864)
15. 5-Clique avgRating 499852.000,
                                     3 movies (a499850; a499851; a499852; a499853; a499854)
```

```
1. 5-Clique avgRating 499992.000,
                                     3 movies (a499990; a499991; a499992; a499993; a499994)
2. 5-Clique avgRating 499982.000,
                                     3 movies (a499980; a499981; a499982; a499983; a499984)
3. 5-Clique avgRating 499972.000,
                                     3 movies (a499970; a499971; a499972; a499973; a499974)
4. 5-Clique avgRating 499962.000,
                                     3 movies (a499960; a499961; a499962; a499963; a499964)
5. 5-Clique avgRating 499952.000,
                                     3 movies (a499950; a499951; a499952; a499953; a499954)
6. 5-Clique avgRating 499942.000,
                                     3 movies (a499940; a499941; a499942; a499943; a499944)
7. 5-Clique avgRating 499932.000,
                                     3 movies (a499930; a499931; a499932; a499933; a499934)
8. 5-Clique avgRating 499922.000,
                                     3 movies (a499920; a499921; a499922; a499923; a499924)
9. 5-Clique avgRating 499912.000,
                                     3 movies (a499910; a499911; a499912; a499913; a499914)
10. 5-Clique avgRating 499902.000,
                                     3 movies (a499900; a499901; a499902; a499903; a499904)
11. 5-Clique avgRating 499892.000,
                                     3 movies (a499890; a499891; a499892; a499893; a499894)
                                     3 movies (a499880; a499881; a499882; a499883; a499884)
12. 5-Clique avgRating 499882.000,
13. 5-Clique avgRating 499872.000,
                                     3 movies (a499870; a499871; a499872; a499873; a499874)
                                     3 movies (a499860; a499861; a499862; a499863; a499864)
14. 5-Clique avgRating 499862.000,
                                     3 movies (a499850; a499851; a499852; a499853; a499854)
15. 5-Clique avgRating 499852.000,
```

Top-15 5-cliques for synthetic model with n = 100000:

There are 100000 groups.

Top-15 by Average Rating

```
1. 5-Clique avgRating 999992.000,
                                     3 movies (a999990; a999991; a9999992; a9999993; a9999994)
2. 5-Clique avgRating 999982.000,
                                     3 movies (a999980; a999981; a999982; a999983; a999984)
3. 5-Clique avgRating 999972.000,
                                     3 movies (a999970; a999971; a999972; a999973; a999974)
                                     3 movies (a999960; a999961; a999962; a999963; a999964)
4. 5-Clique avgRating 999962.000,
5. 5-Clique avgRating 999952.000,
                                     3 movies (a999950; a999951; a999952; a999953; a999954)
6. 5-Clique avgRating 999942.000,
                                     3 movies (a999940; a999941; a999942; a999943; a999944)
7. 5-Clique avgRating 999932.000,
                                     3 movies (a999930; a999931; a999932; a999933; a999934)
8. 5-Clique avgRating 999922.000,
                                     3 movies (a999920; a999921; a999922; a999923; a999924)
9. 5-Clique avgRating 999912.000,
                                     3 movies (a999910; a999911; a999912; a999913; a999914)
10. 5-Clique avgRating 999902.000,
                                     3 movies (a999900; a999901; a999902; a999903; a999904)
11. 5-Clique avgRating 999892.000,
                                     3 movies (a999890; a999891; a999892; a999893; a999894)
12. 5-Clique avgRating 999882.000,
                                     3 movies (a999880; a999881; a999882; a999883; a999884)
13. 5-Clique avgRating 999872.000,
                                     3 movies (a999870; a999871; a999872; a999873; a999874)
14. 5-Clique avgRating 999862.000,
                                     3 movies (a999860; a999861; a999862; a999863; a999864)
                                     3 movies (a999850; a999851; a999852; a999853; a999854)
15. 5-Clique avgRating 999852.000,
```

Top-15 by Number of Common Movies

```
3 movies (a999990; a999991; a9999992; a9999993; a9999994)
1. 5-Clique avgRating 999992.000,
2. 5-Clique avgRating 999982.000,
                                     3 movies (a999980; a999981; a999982; a999983; a999984)
3. 5-Clique avgRating 999972.000,
                                     3 movies (a999970; a999971; a999972; a999973; a999974)
4. 5-Clique avgRating 999962.000,
                                     3 movies (a999960; a999961; a999962; a999963; a999964)
5. 5-Clique avgRating 999952.000,
                                     3 movies (a999950; a999951; a999952; a999953; a999954)
6. 5-Clique avgRating 999942.000,
                                     3 movies (a999940; a999941; a999942; a999943; a999944)
7. 5-Clique avgRating 999932.000,
                                     3 movies (a999930; a999931; a999932; a999933; a999934)
8. 5-Clique avgRating 999922.000,
                                     3 movies (a999920; a999921; a999922; a999923; a999924)
9. 5-Clique avgRating 999912.000,
                                     3 movies (a999910; a999911; a999912; a999913; a999914)
10. 5-Clique avgRating 999902.000,
                                     3 movies (a999900; a999901; a999902; a999903; a999904)
11. 5-Clique avgRating 999892.000,
                                     3 movies (a999890; a999891; a999892; a999893; a999894)
12. 5-Clique avgRating 999882.000,
                                     3 movies (a999880; a999881; a999882; a999883; a999884)
13. 5-Clique avgRating 999872.000,
                                     3 movies (a999870; a999871; a999872; a999873; a999874)
                                     3 movies (a999860; a999861; a999862; a999863; a999864)
14. 5-Clique avgRating 999862.000,
15. 5-Clique avgRating 999852.000,
                                     3 movies (a999850; a999851; a999852; a999853; a999854)
```

Top-15 5-cliques for synthetic model with n = 200000:

There are 200000 groups.

Top-15 by Average Rating

1. 5-Clique avgRating 1999992.000, 3 movies (a1999990; a1999991; a1999992; a1999993; a1999994)

```
3 movies (a1999980; a1999981; a1999982; a1999983; a1999984)
2. 5-Clique avgRating 1999982.000,
3. 5-Clique avgRating 1999972.000,
                                      3 movies (a1999970; a1999971; a1999972; a1999973; a1999974)
4. 5-Clique avgRating 1999962.000,
                                      3 movies (a1999960; a1999961; a1999962; a1999963; a1999964)
5. 5-Clique avgRating 1999952.000,
                                      3 movies (a1999950; a1999951; a1999952; a1999953; a1999954)
6. 5-Clique avgRating 1999942.000,
                                      3 movies (a1999940; a1999941; a1999942; a1999943; a1999944)
7. 5-Clique avgRating 1999932.000,
                                      3 movies (a1999930; a1999931; a1999932; a1999933; a1999934)
8. 5-Clique avgRating 1999922.000,
                                      3 movies (a1999920; a1999921; a1999922; a1999923; a1999924)
9. 5-Clique avgRating 1999912.000,
                                      3 movies (a1999910; a1999911; a1999912; a1999913; a1999914)
10. 5-Clique avgRating 1999902.000,
                                      3 movies (a1999900; a1999901; a1999902; a1999903; a1999904)
11. 5-Clique avgRating 1999892.000,
                                      3 movies (a1999890; a1999891; a1999892; a1999893; a1999894)
12. 5-Clique avgRating 1999882.000,
                                      3 movies (a1999880; a1999881; a1999882; a1999883; a1999884)
13. 5-Clique avgRating 1999872.000,
                                      3 movies (a1999870; a1999871; a1999872; a1999873; a1999874)
14. 5-Clique avgRating 1999862.000,
                                      3 movies (a1999860; a1999861; a1999862; a1999863; a1999864)
15. 5-Clique avgRating 1999852.000,
                                      3 movies (a1999850; a1999851; a1999852; a1999853; a1999854)
```

3 movies (a1999990; a1999991; a1999992; a1999993; a1999994) 1. 5-Clique avgRating 1999992.000, 2. 5-Clique avgRating 1999982.000, 3 movies (a1999980; a1999981; a1999982; a1999983; a1999984) 3. 5-Clique avgRating 1999972.000, 3 movies (a1999970; a1999971; a1999972; a1999973; a1999974) 4. 5-Clique avgRating 1999962.000, 3 movies (a1999960; a1999961; a1999962; a1999963; a1999964) 3 movies (a1999950; a1999951; a1999952; a1999953; a1999954) 5. 5-Clique avgRating 1999952.000, 6. 5-Clique avgRating 1999942.000, 3 movies (a1999940; a1999941; a1999942; a1999943; a1999944) 7. 5-Clique avgRating 1999932.000, 3 movies (a1999930; a1999931; a1999932; a1999933; a1999934) 8. 5-Clique avgRating 1999922.000, 3 movies (a1999920; a1999921; a1999922; a1999923; a1999924) 3 movies (a1999910; a1999911; a1999912; a1999913; a1999914) 9. 5-Clique avgRating 1999912.000, 10. 5-Clique avgRating 1999902.000, 3 movies (a1999900; a1999901; a1999902; a1999903; a1999904) 11. 5-Clique avgRating 1999892.000, 3 movies (a1999890; a1999891; a1999892; a1999893; a1999894) 12. 5-Clique avgRating 1999882.000, 3 movies (a1999880; a1999881; a1999882; a1999883; a1999884) 13. 5-Clique avgRating 1999872.000, 3 movies (a1999870; a1999871; a1999872; a1999873; a1999874) 14. 5-Clique avgRating 1999862.000, 3 movies (a1999860; a1999861; a1999862; a1999863; a1999864) 15. 5-Clique avgRating 1999852.000, 3 movies (a1999850; a1999851; a1999852; a1999853; a1999854)

B.2 IMDb Models

B.2.1 Couples

Top-15 couples for model imdb-0005000-49930:

```
Top-15 by Average Rating
```

```
_____
1. Couple avgRating 8.900, 3 movies (Harden, Meryl; Sedgwick, Misha)
2. Couple avgRating 8.600, 3 movies (Dano, Rick; Pitt, Brandon (II))
3. Couple avgRating 8.300,
                             3 movies (Hargland, Julie; Huffman, Gayle)
4. Couple avgRating 8.300,
                            3 movies (Huffman, Gayle; Sedgwick, Misha)
5. Couple avgRating 8.267, 3 movies (Cotillon, Carine; Sedgwick, Misha)
6. Couple avgRating 8.200,
                             3 movies (Benz, Kelly; Carpenter, Charlotte (II))
7. Couple avgRating 8.133,
                            3 movies (Hargland, Julie; Longoria, Gilda)
8. Couple avgRating 8.100,
                            3 movies (Cotillon, Carine; Harden, Meryl)
9. Couple avgRating 8.100,
                             3 movies (Cotillon, Carine; Hirsch, Eric (III))
10. Couple avgRating 8.100,
                             3 movies (Harden, Meryl; Hirsch, Eric (III))
11. Couple avgRating 8.100,
                             3 movies (Harden, Meryl; Holbrook, Hayden)
                             3 movies (Hirsch, Eric (III); Holbrook, Hayden)
12. Couple avgRating 8.100,
13. Couple avgRating 8.067,
                             3 movies (Baldwin, Allen; Hargland, Julie)
14. Couple avgRating 8.067,
                             3 movies (Falco, Laurence; Hall, Michael C. (II))
15. Couple avgRating 8.067,
                            3 movies (Falco, Laurence; Hargland, Julie)
Top-15 by Number of Common Movies
1. Couple avgRating 0.000, 21 movies (Enberg, Oscar; Olsen, Merritt)
```

```
1. Couple avgRating 0.000, 21 movies (Enberg, Uscar; Ulsen, Merritt)
2. Couple avgRating 5.630, 20 movies (Hefner, James; Lee, Christopher (II))
3. Couple avgRating 6.161, 18 movies (Cormanich, Rogelio; Lee, Christopher (II))
4. Couple avgRating 1.712, 17 movies (Madden, John (IX); Summerall, Tryon)
5. Couple avgRating 5.894, 16 movies (Lee, Christopher (II); Ray, Garett)
6. Couple avgRating 0.488, 16 movies (Aaron, Harrison; Mayse, Jeff)
7. Couple avgRating 5.613, 15 movies (Lee, Christopher (II); Lugosi, Bela)
8. Couple avgRating 4.521, 14 movies (Gwynne, Bob; Ripken, Werner)
9. Couple avgRating 1.329, 14 movies (Berman, Clifford; Kiper, Mfit)
10. Couple avgRating 0.000, 14 movies (Boz (II); Diesel, Shawn)
11. Couple avgRating 0.000, 14 movies (Christman, Randy; Gowdy, Howdy)
12. Couple avgRating 5.538, 13 movies (Hefner, James; Lugosi, Bela)
13. Couple avgRating 0.600, 13 movies (Tedeschini, Paul; Valentino (XII))
14. Couple avgRating 0.000, 13 movies (Grange, Jared; Nelson, Lloyd (I))
```

Top-15 couples for model imdb-0010000-98168:

Top-15 by Average Rating

```
1. Couple avgRating 9.567, 3 movies (Vartan, Vagelis; White, Betty (III))
2. Couple avgRating 8.900, 3 movies (Harden, Meryl; Sedgwick, Misha)
3. Couple avgRating 8.600, 3 movies (Dano, Rick; Pitt, Brandon (II))
4. Couple avgRating 8.567, 3 movies (Dale, Alan (II); Haysbert, John)
5. Couple avgRating 8.433, 3 movies (Dale, Alan (II); Sutherland, Kyle)
6. Couple avgRating 8.360, 5 movies (Rajsk, Hana; Sutherland, Kyle)
7. Couple avgRating 8.360, 5 movies (Haysbert, John; Sutherland, Kyle)
8. Couple avgRating 8.300, 3 movies (Hargland, Julie; Huffman, Gayle)
9. Couple avgRating 8.300, 3 movies (Huffman, Gayle; Sedgwick, Misha)
10. Couple avgRating 8.300, 3 movies (Huffman, Gayle; Lason: Latife, Teta)
```

- 10. Couple avgRating 8.300, 3 movies (Hughley, Jason; Latife, Teta)
 11. Couple avgRating 8.300, 3 movies (Leighton, Laya; Mullally, Roisin)
 12. Couple avgRating 8.267, 3 movies (Cotillon, Carine; Sedgwick, Misha)
- 13. Couple avgRating 8.200, 3 movies (Benz, Kelly; Carpenter, Charlotte (II))
 14. Couple avgRating 8.133, 3 movies (Bernard, Catherine (III); Cochran, Ron)
- 15. Couple avgRating 8.133, 3 movies (Bernard, Catherine (III); Johnson, Peta)

```
    Couple avgRating 0.661, 23 movies (Fontana, Sal; Tedeschini, Paul)
    Couple avgRating 0.661, 23 movies (Tedeschini, Paul; Valentino (XII))
```

```
3. Couple avgRating 0.000, 21 movies (Enberg, Oscar; Olsen, Merritt)
4. Couple avgRating 5.630, 20 movies (Hefner, James; Lee, Christopher (II))
5. Couple avgRating 0.800, 19 movies (Fontana, Sal; Valentino (XII))
6. Couple avgRating 0.411, 19 movies (Dickens, Stafford; Tedeschini, Paul)
7. Couple avgRating 6.161, 18 movies (Cormanich, Rogelio; Lee, Christopher (II))
8. Couple avgRating 1.712, 17 movies (Madden, John (IX); Summerall, Tryon)
9. Couple avgRating 0.912, 17 movies (Aaron, Harrison; Mayse, Jeff)
10. Couple avgRating 0.000, 17 movies (Franklin, Ronald; Gottfried, Richard)
11. Couple avgRating 5.894, 16 movies (Lee, Christopher (II); Ray, Garett)
12. Couple avgRating 0.000, 16 movies (Berman, Clifford; Kiper, Mfit)
13. Couple avgRating 5.820, 15 movies (Buck, Joe (III); McCarvill, Martin)
14. Couple avgRating 5.613, 15 movies (Lee, Christopher (II); Lugosi, Bela)
```

Top-15 couples for model imdb-0030000-207420:

Top-15 by Average Rating

```
1. Couple avgRating 9.567, 3 movies (Vartan, Vagelis; White, Betty (III))
                                 3 movies (Harden, Meryl; Sedgwick, Misha)
3 movies (Dano, Rick; Pitt, Brandon (II))
 2. Couple avgRating 8.900,
 3. Couple avgRating 8.600,
 4. Couple avgRating 8.567, 3 movies (Dale, Alan (II); Haysbert, John)
                                 3 movies (Dale, Alan (II); Sutherland, Kyle)
3 movies (Rajsk, Hana; Sutherland, Kyle)
 5. Couple avgRating 8.567,
 6. Couple avgRating 8.433,
 7. Couple avgRating 8.360, 5 movies (Haysbert, John; Sutherland, Kyle)
8. Couple avgRating 8.333, 3 movies (Beatty, Lauren (I); Brunsmann, Keith)
9. Couple avgRating 8.333, 3 movies (Beatty, Lauren (I); Campbell, Richard (XXII))
9. Couple avgRating 8.333,
10. Couple avgRating 8.333, 3 movies (Beatty, Lauren (I); Coleman, Brittani)
11. Couple avgRating 8.333, 3 movies (Beatty, Lauren (I); Criss, Jason)
12. Couple avgRating 8.333,
                                  3 movies (Beatty, Lauren (I); Lopez, Layla)
13. Couple avgRating 8.333, 3 movies (Beatty, Lauren (I); Lytle, Donna)
14. Couple avgRating 8.333, 3 movies (Beatty, Lauren (I); Marks, Lindsey)
15. Couple avgRating 8.333,
                                  3 movies (Beatty, Lauren (I); Moses, Joel)
```

Top-15 by Number of Common Movies $\,$

```
1. Couple avgRating 0.563, 27 movies (Fontana, Sal; Tedeschini, Paul)
2. Couple avgRating 0.608, 25 movies (Tedeschini, Paul; Valentino (XII))
3. Couple avgRating 0.000, 23 movies (Lyons, Edward; Moran, Lee (III))
4. Couple avgRating 0.724, 21 movies (Fontana, Sal; Valentino (XII))
5. Couple avgRating 0.000, 21 movies (Enberg, Oscar; Olsen, Merritt)
6. Couple avgRating 5.630, 20 movies (Hefner, James; Lee, Christopher (II))
7. Couple avgRating 3.058, 19 movies (Butler, William K.; Dillon, Edward F.)
8. Couple avgRating 0.411, 19 movies (Dickens, Stafford; Tedeschini, Paul)
9. Couple avgRating 0.326, 19 movies (Sascha (IX); Surf, The)
10. Couple avgRating 6.161, 18 movies (Cormanich, Rogelio; Lee, Christopher (II))
11. Couple avgRating 0.000, 18 movies (Franey, Hughes; Henry, Galle)
12. Couple avgRating 0.000, 18 movies (Prior, James (I); Trunova, Yana)
13. Couple avgRating 3.253, 17 movies (Paget, Anne (II); West, Charles (III))
14. Couple avgRating 2.241, 17 movies (Madden, John (IX); Summerall, Tryon)
```

Top-15 couples for model imdb-0045000-299504:

```
3 movies (Vartan, Vagelis; White, Betty (III))
3 movies (Harden, Meryl; Sedgwick, Misha)
1. Couple avgRating 9.567,
2. Couple avgRating 8.900,
3. Couple avgRating 8.600, 3 movies (Dano, Rick; Pitt, Brandon (II))
4. Couple avgRating 8.567,
                               3 movies (Dale, Alan (II); Haysbert, John)
                               3 movies (Dale, Alan (II); Sutherland, Kyle)
5. Couple avgRating 8.567,
6. Couple avgRating 8.433,
                               3 movies (Rajsk, Hana; Sutherland, Kyle)
                               5 movies (Haysbert, John; Sutherland, Kyle)
7. Couple avgRating 8.360,
                               3 movies (Beatty, Lauren (I); Brunsmann, Keith)
8. Couple avgRating 8.333,
9. Couple avgRating 8.333, 3 movies (Beatty, Lauren (I); Campbell, Richard (XXII))
10. Couple avgRating 8.333, 3 movies (Beatty, Lauren (I); Coleman, Brittani)
```

```
11. Couple avgRating 8.333,
                                3 movies (Beatty, Lauren (I); Criss, Jason)
12. Couple avgRating 8.333,
                                 3 movies (Beatty, Lauren (I); Lopez, Layla)
13. Couple avgRating 8.333, 3 movies (Beatty, Lauren (I); Lytle, Donna)
14. Couple avgRating 8.333,
                                 3 movies (Beatty, Lauren (I); Marks, Lindsey)
15. Couple avgRating 8.333,
                                 3 movies (Beatty, Lauren (I); Moses, Joel)
Top-15 by Number of Common Movies
 1. Couple avgRating 0.000, 31 movies (Kataine, Kim; Wakabayashi, Hidetoshi)
2. Couple avgRating 0.000, 31 movies (Kataine, Kim; Yamamura, Noriko (I))
3. Couple avgRating 0.000, 31 movies (Kataine, Kim; mura, Masao)
4. Couple avgRating 0.000, 31 movies (Wakabayashi, Hidetoshi; Yamamura, Noriko (I))
5. Couple avgRating 0.000, 31 movies (Wakabayashi, Hidetoshi; mura, Masao)
6. Couple avgRating 0.000, 31 movies (Yamamura, Noriko (I); mura, Masao)
7. Couple avgRating 0.000, 30 movies (Lyons, Edward; Moran, Lee (III))
8. Couple avgRating 0.000, 28 movies (Kataine, Kim; Miki, Sharon)
9. Couple avgRating 0.000, 28 movies (Miki, Sharon; Wakabayashi, Hidetoshi)
10. Couple avgRating 0.000, 28 movies (Miki, Sharon; Yamamura, Noriko (I))
11. Couple avgRating 0.000, 28 movies (Miki, Sharon; mura, Masao)
12. Couple avgRating 0.563, 27 movies (Fontana, Sal; Tedeschini, Paul)
13. Couple avgRating 0.608, 25 movies (Tedeschini, Paul; Valentino (XII))
14. Couple avgRating 0.204, 25 movies (Potel, Vincent; Todd, Helen (II))
15. Couple avgRating 2.641, 22 movies (Butler, William K.; Dillon, Edward F.)
Top-15 couples for model imdb-0065000-404920:
Top-15 by Average Rating
 1. Couple avgRating 9.567,
                                 3 movies (Vartan, Vagelis; White, Betty (III))
2. Couple avgRating 8.900, 3 movies (Harden, Meryl; Sedgwick, Misha)
3. Couple avgRating 8.800, 3 movies (Powers, Leona; Tiger, Lilly)
                                 3 movies (Dano, Rick; Pitt, Brandon (II))
4. Couple avgRating 8.600,
5. Couple avgRating 8.567,
                                 3 movies (Dale, Alan (II); Haysbert, John)
6. Couple avgRating 8.567,
                                3 movies (Dale, Alan (II); Sutherland, Kyle)
7. Couple avgRating 8.433,
                                 3 movies (Dogg, Swamp; Hughley, Jason)
8. Couple avgRating 8.433,
                                 3 movies (Rajsk, Hana; Sutherland, Kyle)
9. Couple avgRating 8.360, 5 movies (Haysbert, John; Sutherland, Kyle)
                                4 movies (Beatty, Lauren (I); Lopez, Layla)
4 movies (Beatty, Lauren (I); Povolotskiy, Georgiy)
10. Couple avgRating 8.350,
11. Couple avgRating 8.350,
12. Couple avgRating 8.350, 4 movies (Beatty, Lauren (I); Richter, Jonas)
                               4 movies (Beatty, Lauren (I); Rosenthal, Bruce)
4 movies (Beatty, Lauren (I); Saunders, Eddie (II))
13. Couple avgRating 8.350,
14. Couple avgRating 8.350,
15. Couple avgRating 8.350, 4 movies (Beatty, Lauren (I); Walker, Joe (XXVI))
Top-15 by Number of Common Movies
1. Couple avgRating 4.196, 53 movies (Byron, Tom L.; Wallice, Vince)
2. Couple avgRating 3.081, 48 movies (Boy, Teddy; Byron, Tom L.)
3. Couple avgRating 3.534, 38 movies (Boy, Teddy; Wallice, Vince)
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4. Couple avgRating 0.000, 38 movies (Lyons, Edward; Moran, Lee (III)) 5. Couple avgRating 3.942, 36 movies (Boy, Teddy; Silvera, Jonathan)
 6. Couple avgRating 0.406, 33 movies (Bhasi, Puthillam; Nazir, Ramin)
 7. Couple avgRating 4.055, 31 movies (Byron, Tom L.; Silvera, Jonathan)
 8. Couple avgRating 0.000, 31 movies (Kataine, Kim; Wakabayashi, Hidetoshi)
 9. Couple avgRating 0.000, 31 movies (Kataine, Kim; Yamamura, Noriko (I))
10. Couple avgRating 0.000, 31 movies (Kataine, Kim; mura, Masao)
11. Couple avgRating 0.000, 31 movies (Wakabayashi, Hidetoshi; Yamamura, Noriko (I))
12. Couple avgRating 0.000, 31 movies (Wakabayashi, Hidetoshi; mura, Masao)
13. Couple avgRating 0.000, 31 movies (Yamamura, Noriko (I); mura, Masao)
14. Couple avgRating 1.159, 29 movies (Pete, Panhandle; Wood, Mark (V))
15. Couple avgRating 5.707, 28 movies (Byron, Tom L.; North, Peter (II))
```

Top-15 couples for model imdb-0085000-499995:

```
1. Couple avgRating 9.567,
                               3 movies (Vartan, Vagelis; White, Betty (III))
2. Couple avgRating 9.100, 3 movies (Apergis, Dennis; Goldfarb, Audrey)
3. Couple avgRating 9.100, 3 movies (Apergis, Dennis; Rosato, Danielle) 4. Couple avgRating 9.100, 3 movies (Baichoo, Shyam; Goldfarb, Audrey)
5. Couple avgRating 9.100, 3 movies (Baichoo, Shyam; Rosato, Danielle)
6. Couple avgRating 9.100, 3 movies (Camacho, Matthew (II); Goldfarb, Audrey)
7. Couple avgRating 9.100,
                                3 movies (Camacho, Matthew (II); Rosato, Danielle)
8. Couple avgRating 9.100, 3 movies (Galura, Charo (II); Goldfarb, Audrey)
9. Couple avgRating 9.100, 3 movies (Galura, Charo (II); Rosato, Danielle)
10. Couple avgRating 9.100,
                                3 movies (Goldfarb, Audrey; Ivanovici, Ion)
11. Couple avgRating 9.100,
                                3 movies (Goldfarb, Audrey; Mestroni, Ethan)
12. Couple avgRating 9.100,
                                3 movies (Goldfarb, Audrey; North, Oliver)
13. Couple avgRating 9.100, 14. Couple avgRating 9.100,
                                3 movies (Goldfarb, Audrey; Rosato, Danielle)
                                3 movies (Goldfarb, Audrey; Schneider, Elizabeth (I))
15. Couple avgRating 9.100,
                               3 movies (Goldfarb, Audrey; Smith, Roger D.)
```

```
1. Couple avgRating 4.490, 67 movies (Byron, Tom L.; Wallice, Vince)
 2. Couple avgRating 3.607, 58 movies (Boy, Teddy; Byron, Tom L.)
 3. Couple avgRating 1.215, 54 movies (Stefano, Padre; Strong, John (II))
 4. Couple avgRating 4.116, 49 movies (Boy, Teddy; Wallice, Vince)
 5. Couple avgRating 1.219, 47 movies (Ferrara, Marco; Holmes, Steve (III))
 6. Couple avgRating 0.715, 47 movies (Pete, Panhandle; Wood, Mark (V))
7. Couple avgRating 6.144, 45 movies (Boy, Teddy; North, Peter (II)) 8. Couple avgRating 4.044, 43 movies (Boy, Teddy; Silvera, Jonathan)
 9. Couple avgRating 1.181, 43 movies (Strong, John (II); Wood, Mark (V))
10. Couple avgRating 5.845, 42 movies (Byron, Tom L.; North, Peter (II))
11. Couple avgRating 4.349, 41 movies (Byron, Tom L.; Silvera, Jonathan)
12. Couple avgRating 0.000, 40 movies (Lyons, Edward; Moran, Lee (III))
13. Couple avgRating 0.932, 38 movies (Holmes, Steve (III); Perry, David (VII))
14. Couple avgRating 0.353, 38 movies (Bhasi, Puthillam; Nazir, Ramin)
15. Couple avgRating 0.835, 37 movies (Ferrara, Marco; Stefano, Padre)
```

Top-15 couples for model imdb-0130000-709551:

Top-15 by Average Rating

```
1. Couple avgRating 9.733, 3 movies (Kadic, Miodrag; Sovagovic, Filip)
2. Couple avgRating 9.567, 3 movies (Vartan, Vagelis; White, Betty (III))
                             3 movies (Blum, Steve (X); Brooks, Kimberly (VI))
3. Couple avgRating 9.567,
                             4 movies (Rose, Romel; Tatasopoulos, Giannis)
4. Couple avgRating 9.375,
5. Couple avgRating 9.333, 3 movies (Cox, Chris (II); Kane, Tom (IX))
                             3 movies (Kane, Tom (IX); Wasserman, Rob)
6. Couple avgRating 9.333,
7. Couple avgRating 9.333,
                             3 movies (Kane, Tom (IX); Wingerter, Ben)
8. Couple avgRating 9.333, 3 movies (Gough, Michael (X); Kaye, David (II))
9. Couple avgRating 9.333,
                             3 movies (Gough, Michael (X); Rose, Romel)
10. Couple avgRating 9.333,
                             3 movies (Kaye, David (II); Meskin, Aharon)
11. Couple avgRating 9.333,
                             3 movies (Kaye, David (II); Rose, Romel)
12. Couple avgRating 9.333,
                             3 movies (Kaye, David (II); Tatasopoulos, Giannis)
13. Couple avgRating 9.333,
                              3 movies (Meskin, Aharon; Rose, Romel)
14. Couple avgRating 9.333, 3 movies (North, Oliver; Rose, Romel)
15. Couple avgRating 9.233,
                            3 movies (Dichaviciene, Genovaite; Vanessa (IX))
```

Top-15 by Number of Common Movies

```
1. Couple avgRating 4.870, 98 movies (Byron, Tom L.; Wallice, Vince)
2. Couple avgRating 0.753, 95 movies (Pete, Panhandle; Wood, Mark (V))
```

3. Couple avgRating 0.938, 79 movies (Strong, John (II); Wood, Mark (V)) 4. Couple avgRating 5.819, 74 movies (Byron, Tom L.; North, Peter (II))

5. Couple avgRating 3.644, 70 movies (Boy, Teddy; Byron, Tom L.)

6. Couple avgRating 1.181, 68 movies (Stefano, Padre; Strong, John (II))
7. Couple avgRating 0.957, 67 movies (Ferrara, Marco; Holmes, Steve (III))

8. Couple avgRating 0.143, 67 movies (Mac, CJ; Threats, Thomas)

9. Couple avgRating 5.898, 63 movies (Boy, Teddy; North, Peter (II))

```
10. Couple avgRating 4.182, 62 movies (Boy, Teddy; Wallice, Vince)
11. Couple avgRating 4.797, 61 movies (Byron, Tom L.; Silvera, Jonathan)
12. Couple avgRating 0.295, 60 movies (Anderson, Gladstone; Todd, Helen (II))
13. Couple avgRating 0.600, 59 movies (Holmes, Steve (III); Perry, David (VII))
14. Couple avgRating 0.185, 59 movies (Anderson, Gladstone; Clayton, Martene)
15. Couple avgRating 6.356, 57 movies (North, Peter (II); Wallice, Vince)
```

Top-15 couples for model imdb-0200000-1004463:

Top-15 by Average Rating

```
1. Couple avgRating 9.673, 26 movies (Brewster, Renee-Marie; Cook, Abby)
2. Couple avgRating 9.673, 26 movies (Brewster, Renee-Marie; Gibson, Thomas (IV))
3. Couple avgRating 9.673, 26 movies (Brewster, Renee-Marie; Gubler, Matthias)
4. Couple avgRating 9.673, 26 movies (Brewster, Renee-Marie; Mantei, Matt)
5. Couple avgRating 9.673, 26 movies (Brewster, Renee-Marie; Moore, Sherron)
6. Couple avgRating 9.673, 26 movies (Brewster, Renee-Marie; Vangsoe, Michaela)
7. Couple avgRating 9.673, 26 movies (Cook, Abby; Moore, Sherron)
8. Couple avgRating 9.673, 26 movies (Cook, Abby; Vangsoe, Michaela)
9. Couple avgRating 9.673, 26 movies (Gibson, Thomas (IV); Moore, Sherron)
10. Couple avgRating 9.673, 26 movies (Gibson, Thomas (IV); Vangsoe, Michaela)
11. Couple avgRating 9.673, 26 movies (Gubler, Matthias; Moore, Sherron)
12. Couple avgRating 9.673, 26 movies (Gubler, Matthias; Vangsoe, Michaela)
13. Couple avgRating 9.673, 26 movies (Mantei, Matt; Moore, Sherron)
14. Couple avgRating 9.673, 26 movies (Moore, Sherron; Vangsoe, Michaela)
15. Couple avgRating 9.673, 3 movies (Vartan, Vagelis; White, Betty (III))
```

Top-15 by Number of Common Movies

```
1. Couple avgRating 5.004, 133 movies (Byron, Tom L.; Wallice, Vince)
2. Couple avgRating 0.803, 119 movies (Pete, Panhandle; Wood, Mark (V))
3. Couple avgRating 5.850, 117 movies (Byron, Tom L.; North, Peter (II))
4. Couple avgRating 0.757, 109 movies (Strong, John (II); Wood, Mark (V))
5. Couple avgRating 0.951, 92 movies (Stefano, Padre; Strong, John (II))
6. Couple avgRating 0.867, 92 movies (Ferrara, Marco; Holmes, Steve (III))
7. Couple avgRating 4.274, 89 movies (Boy, Teddy; Wallice, Vince)
8. Couple avgRating 3.806, 89 movies (Boy, Teddy; Byron, Tom L.)
9. Couple avgRating 6.020, 84 movies (North, Peter (II); Wallice, Vince)
10. Couple avgRating 5.800, 84 movies (Boy, Teddy; North, Peter (II))
11. Couple avgRating 4.988, 84 movies (Byron, Tom L.; Silvera, Jonathan)
12. Couple avgRating 1.777, 81 movies (Everhard, Nick; Ferrara, Marco)
13. Couple avgRating 0.795, 79 movies (Ferrara, Marco; Stefano, Padre)
14. Couple avgRating 2.078, 76 movies (Blue, Mike (I); Deen, Jamie)
15. Couple avgRating 0.585, 72 movies (Holmes, Steve (III); Perry, David (VII))
```

Top-15 couples for model imdb-0340000-1505143:

```
1. Couple avgRating 9.615, 27 movies (Brewster, Renee-Marie; Cook, Abby)
2. Couple avgRating 9.615, 27 movies (Brewster, Renee-Marie; Gibson, Thomas (IV))
3. Couple avgRating 9.615, 27 movies (Brewster, Renee-Marie; Gubler, Matthias)
4. Couple avgRating 9.615, 27 movies (Brewster, Renee-Marie; Mantei, Matt)
5. Couple avgRating 9.615, 27 movies (Brewster, Renee-Marie; Moore, Sherron)
6. Couple avgRating 9.615, 27 movies (Brewster, Renee-Marie; Vangsoe, Michaela)
7. Couple avgRating 9.615, 27 movies (Cook, Abby; Moore, Sherron)
8. Couple avgRating 9.615, 27 movies (Gibson, Thomas (IV); Moore, Sherron)
10. Couple avgRating 9.615, 27 movies (Gibson, Thomas (IV); Vangsoe, Michaela)
11. Couple avgRating 9.615, 27 movies (Gubler, Matthias; Moore, Sherron)
12. Couple avgRating 9.615, 27 movies (Gubler, Matthias; Vangsoe, Michaela)
13. Couple avgRating 9.615, 27 movies (Mantei, Matt; Moore, Sherron)
14. Couple avgRating 9.615, 27 movies (Moore, Sherron; Vangsoe, Michaela)
15. Couple avgRating 9.657, 3 movies (Berlin, Jeff (II); Pearlstein, Rob)
```

Top-15 by Number of Common Movies

```
1. Couple avgRating 4.896, 194 movies (Byron, Tom L.; Wallice, Vince)
2. Couple avgRating 5.714, 182 movies (Byron, Tom L.; North, Peter (II))
3. Couple avgRating 0.882, 169 movies (Pete, Panhandle; Wood, Mark (V))
4. Couple avgRating 0.868, 160 movies (Strong, John (II); Wood, Mark (V))
5. Couple avgRating 5.699, 150 movies (North, Peter (II); Wallice, Vince)
7. Couple avgRating 5.608, 145 movies (Boy, Teddy; North, Peter (II))
8. Couple avgRating 0.890, 142 movies (Ferrara, Marco; Holmes, Steve (III))
9. Couple avgRating 1.561, 130 movies (Everhard, Nick; Ferrara, Marco)
10. Couple avgRating 0.872, 127 movies (Ferrara, Marco; Stefano, Padre)
11. Couple avgRating 0.411, 124 movies (Boy, Teddy; Wallice, Vince)
12. Couple avgRating 0.411, 124 movies (Boy, Teddy; Wallice, Vince)
13. Couple avgRating 4.124, 120 movies (Boy, Teddy; Byron, Tom L.)
14. Couple avgRating 4.972, 116 movies (Byron, Tom L.; Silvera, Jonathan)
15. Couple avgRating 2.832, 111 movies (Marcus, Neil; Steele, Lisa E.)
```

Top-15 couples for model imdb-0495000-2000900:

Top-15 by Average Rating

```
1. Couple avgRating 10.000, 3 movies (Licina, Predrag; Sovagovic, Filip)
2. Couple avgRating 9.615, 27 movies (Brewster, Renee-Marie; Cook, Abby)
3. Couple avgRating 9.615, 27 movies (Brewster, Renee-Marie; Gibson, Thomas (IV))
4. Couple avgRating 9.615, 27 movies (Brewster, Renee-Marie; Gubler, Matthias)
5. Couple avgRating 9.615, 27 movies (Brewster, Renee-Marie; Mantei, Matt)
6. Couple avgRating 9.615, 27 movies (Brewster, Renee-Marie; Moore, Sherron)
7. Couple avgRating 9.615, 27 movies (Brewster, Renee-Marie; Vangsoe, Michaela)
8. Couple avgRating 9.615, 27 movies (Cook, Abby; Moore, Sherron)
9. Couple avgRating 9.615, 27 movies (Cook, Abby; Vangsoe, Michaela)
10. Couple avgRating 9.615, 27 movies (Gibson, Thomas (IV); Moore, Sherron)
11. Couple avgRating 9.615, 27 movies (Gibson, Thomas (IV); Vangsoe, Michaela)
12. Couple avgRating 9.615, 27 movies (Gubler, Matthias; Moore, Sherron)
13. Couple avgRating 9.615, 27 movies (Gubler, Matthias; Vangsoe, Michaela)
14. Couple avgRating 9.567, 3 movies (Berlin, Jeff (II); Pearlstein, Rob)
15. Couple avgRating 9.567, 3 movies (Vartan, Vagelis; White, Betty (III))
```

Top-15 by Number of Common Movies

```
1. Couple avgRating 4.865, 221 movies (Byron, Tom L.; Wallice, Vince)
2. Couple avgRating 5.697, 216 movies (Byron, Tom L.; North, Peter (II))
3. Couple avgRating 0.794, 206 movies (Pete, Panhandle; Wood, Mark (V))
4. Couple avgRating 0.748, 205 movies (Strong, John (II); Wood, Mark (V))
5. Couple avgRating 5.737, 180 movies (North, Peter (II); Wallice, Vince)
6. Couple avgRating 0.677, 175 movies (Stefano, Padre; Strong, John (II))
7. Couple avgRating 0.353, 169 movies (Ashley, Mark (III); Pete, Panhandle)
9. Couple avgRating 0.839, 167 movies (Ashley, Mark (III); Pete, Panhandle)
10. Couple avgRating 0.446, 157 movies (Everhard, Nick; Ferrara, Marco)
11. Couple avgRating 0.958, 148 movies (Ferrara, Marco; Stefano, Padre)
13. Couple avgRating 0.900, 140 movies (Blue, Mike (I); Deen, Jamie)
14. Couple avgRating 0.000, 140 movies (Lyons, Edward; Moran, Lee (III))
15. Couple avgRating 4.029, 139 movies (Boy, Teddy; Byron, Tom L.)
```

Top-15 couples for model imdb-0660000-2501893:

```
1. Couple avgRating 10.000, 3 movies (Kutikov, Aleksandr; Sovagovic, Filip)
2. Couple avgRating 9.600, 3 movies (Bunch, W.G.; Hawkins, Jenna (III))
3. Couple avgRating 9.600, 3 movies (Bunch, W.G.; Jones, Lee (III))
4. Couple avgRating 9.582, 28 movies (Brewster, Renee-Marie; Mantei, Matt)
5. Couple avgRating 9.567, 3 movies (Berlin, Jeff (II); Pearlstein, Rob)
6. Couple avgRating 9.567, 3 movies (Vartan, Vagelis; White, Betty (III))
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```
7. Couple avgRating 9.560, 5 movies (Kraljevic, Eva; Sovagovic, Filip)
8. Couple avgRating 9.552, 29 movies (Brewster, Renee-Marie; Cook, Abby)
9. Couple avgRating 9.552, 29 movies (Brewster, Renee-Marie; Gibson, Thomas (IV))
10. Couple avgRating 9.552, 29 movies (Brewster, Renee-Marie; Gubler, Matthias)
11. Couple avgRating 9.552, 29 movies (Brewster, Renee-Marie; Moore, Sherron)
12. Couple avgRating 9.552, 29 movies (Brewster, Renee-Marie; Vangsoe, Michaela)
13. Couple avgRating 9.552, 29 movies (Cook, Abby; Moore, Sherron)
14. Couple avgRating 9.552, 29 movies (Cook, Abby; Vangsoe, Michaela)
15. Couple avgRating 9.552, 29 movies (Gibson, Thomas (IV); Moore, Sherron)
```

```
1. Couple avgRating 5.636, 277 movies (Byron, Tom L.; North, Peter (II))
2. Couple avgRating 4.932, 275 movies (Byron, Tom L.; Wallice, Vince)
3. Couple avgRating 0.832, 271 movies (Pete, Panhandle; Wood, Mark (V))
4. Couple avgRating 0.683, 268 movies (Strong, John (II); Wood, Mark (V))
5. Couple avgRating 0.453, 245 movies (Bhasi, Puthillam; Nazir, Ramin)
6. Couple avgRating 5.545, 234 movies (Boy, Teddy; North, Peter (II))
7. Couple avgRating 5.678, 228 movies (North, Peter (II); Wallice, Vince)
8. Couple avgRating 0.686, 214 movies (Stefano, Padre; Strong, John (II))
9. Couple avgRating 0.511, 200 movies (Everhard, Nick; Ferrara, Marco)
10. Couple avgRating 0.884, 198 movies (Ferrara, Marco; Holmes, Steve (III))
12. Couple avgRating 2.127, 183 movies (Blue, Mike (I); Pete, Panhandle)
13. Couple avgRating 0.000, 178 movies (Lyons, Edward; Moran, Lee (III))
```

15. Couple avgRating 0.995, 174 movies (Ferrara, Marco; Stefano, Padre)

Top-15 couples for model imdb-all-3257145:

Top-15 by Average Rating

```
1. Couple avgRating 10.000, 5 movies (Kutikov, Aleksandr; Sovagovic, Filip)
2. Couple avgRating 10.000,
                              3 movies (Grkovic, Mato (II); Sovagovic, Filip)
                             3 movies (Podgorski, Leigh (II); Sovagovic, Filip)
3. Couple avgRating 10.000,
4. Couple avgRating 10.000, 3 movies (Sovagovic, Filip; Stipanicev, Milena)
5. Couple avgRating 9.900,
                              3 movies (Biggs, Jeff; Deutch, John)
6. Couple avgRating 9.900,
                             3 movies (Deutch, John; Lindhout, Marieke)
7. Couple avgRating 9.900, 3 movies (Deutch, John; Torrence, Osagyefo)
8. Couple avgRating 9.867,
                              3 movies (Berting, Francine; Boche, Herbert)
9. Couple avgRating 9.700,
                             3 movies (Lee, Misun (I); O'Brien, Liam (VI))
10. Couple avgRating 9.700,
                             3 movies (Rutte, Celia Alida; Selleck, Zachary)
11. Couple avgRating 9.667,
                              3 movies (Berting, Francine; Ritter, Jonathan)
12. Couple avgRating 9.667,
                              3 movies (Berting, Francine; Wendt, George (II))
                              3 movies (Howard, Ronald (I); O'Hara, Chantal)
13. Couple avgRating 9.667,
14. Couple avgRating 9.633,
                              3 movies (Berting, Francine; Travolta, Joseph)
15. Couple avgRating 9.600,
                              3 movies (Bunch, W.G.; Hawkins, Jenna (III))
```

```
1. Couple avgRating 5.534, 418 movies (Byron, Tom L.; North, Peter (II))
2. Couple avgRating 5.058, 407 movies (Byron, Tom L.; Wallice, Vince)
3. Couple avgRating 0.762, 370 movies (Pete, Panhandle; Wood, Mark (V))
4. Couple avgRating 0.606, 363 movies (Strong, John (II); Wood, Mark (V))
5. Couple avgRating 5.513, 335 movies (North, Peter (II); Wallice, Vince)
6. Couple avgRating 0.000, 316 movies (Lyons, Edward; Moran, Lee (III))
7. Couple avgRating 0.373, 297 movies (Bhasi, Puthillam; Nazir, Ramin)
9. Couple avgRating 0.559, 286 movies (Ashley, Mark (III); Pete, Panhandle)
10. Couple avgRating 0.671, 275 movies (Stefano, Padre; Strong, John (II))
11. Couple avgRating 0.992, 264 movies (Everhard, Nick; Ferrara, Marco)
12. Couple avgRating 6.665, 252 movies (Fine, Larry (II); Howard, Monroe)
14. Couple avgRating 2.000, 250 movies (Blue, Mike (I); Pete, Panhandle)
15. Couple avgRating 1.055, 250 movies (Blue, Mike (I); Pete, Panhandle)
```

B.2.2 Cliques of size 3

Top-15 3-cliques for model imdb-0005000-49930:

```
Top-15 by Average Rating
```

```
1. 3-Clique avgRating 8.300,
                                  3 movies (Hargland, Julie; Huffman, Gayle; Sedgwick, Misha)
2. 3-Clique avgRating 8.267,
                                  3 movies (Clooney, Nick; Cotillon, Carine; Sedgwick, Misha)
3. 3-Clique avgRating 8.133,
                                  3 movies (Hargland, Julie; Longoria, Gilda; Sedgwick, Misha)
                                  3 movies (Cotillon, Carine; Harden, Meryl; Hirsch, Eric (III))
4. 3-Clique avgRating 8.100,
5. 3-Clique avgRating 8.100,
                                  3 movies (Cotillon, Carine; Harden, Meryl; Holbrook, Hayden)
6. 3-Clique avgRating 8.100,
                                  3 movies (Cotillon, Carine; Hirsch, Eric (III); Holbrook, Hayden)
7. 3-Clique avgRating 8.100,
                                  3 movies (Harden, Meryl; Hirsch, Eric (III); Holbrook, Hayden)
8. 3-Clique avgRating 8.067,
                                  3 movies (Baldwin, Allen; Falco, Laurence; Hall, Michael C. (II))
9. 3-Clique avgRating 8.067,
                                  3 movies (Baldwin, Allen; Falco, Laurence; Hargland, Julie)
10. 3-Clique avgRating 8.067,
                                  3 movies (Baldwin, Allen; Falco, Laurence; Sedgwick, Misha)
                                  3 movies (Baldwin, Allen; Hall, Michael C. (II); Hargland, Julie)
3 movies (Baldwin, Allen; Hall, Michael C. (II); White, Betty (III))
11. 3-Clique avgRating 8.067,
12. 3-Clique avgRating 8.067,
13. 3-Clique avgRating 8.067,
                                  3 movies (Baldwin, Allen; Hargland, Julie; Sedgwick, Misha)
14. 3-Clique avgRating 8.067,
                                  3 movies (Baldwin, Allen; Hargland, Julie; White, Betty (III))
15. 3-Clique avgRating 8.067,
                                  3 movies (Falco, Laurence; Hall, Michael C. (II); Hargland, Julie)
Top-15 by Number of Common Movies
```

```
1. 3-Clique avgRating 5.538, 13 movies (Hefner, James; Lee, Christopher (II); Lugosi, Bela)
2. 3-Clique avgRating 0.650,
                              12 movies (Aaron, Harrison; Mayse, Jeff; Robinson, Bruce 'Preacher')
3. 3-Clique avgRating 5.818, 11 movies (Hefner, James; Lee, Christopher (II); Ray, Garett)
4. 3-Clique avgRating 0.000, 11 movies (Boz (II); Diesel, Shawn; Mann, Richard (IX))
5. 3-Clique avgRating 5.180, 10 movies (Bass, Lawrence (I); Chashchim, Alexkey; Fatone, Thomas)
6. 3-Clique avgRating 5.180, 10 movies (Bass, Lawrence (I); Chashchim, Alexkey; Kirkpatrick, Dale)
7. 3-Clique avgRating 5.180, 10 movies (Bass, Lawrence (I); Chashchim, Alexkey; Timberlake, Krishan)
8. 3-Clique avgRating 5.180, 10 movies (Bass, Lawrence (I); Fatone, Thomas; Kirkpatrick, Dale)
9. 3-Clique avgRating 5.180, 10 movies (Bass, Lawrence (I); Fatone, Thomas; Timberlake, Krishan)
10. 3-Clique avgRating 5.180, 10 movies (Bass, Lawrence (I); Kirkpatrick, Dale; Timberlake, Krishan)
11. 3-Clique avgRating 5.180, 10 movies (Chashchim, Alexkey; Fatone, Thomas; Kirkpatrick, Dale)
12. 3-Clique avgRating 5.180, 10 movies (Chashchim, Alexkey; Fatone, Thomas; Timberlake, Krishan)
13. 3-Clique avgRating 5.180, 10 movies (Chashchim, Alexkey; Kirkpatrick, Dale; Timberlake, Krishan)
14. 3-Clique avgRating 5.180, 10 movies (Fatone, Thomas; Kirkpatrick, Dale; Timberlake, Krishan)
15. 3-Clique avgRating 2.900, 10 movies (Boggs, William (I); Puckett, Matthew; Ripken, Werner)
```

Top-15 3-cliques for model imdb-0010000-98168:

Top-15 by Average Rating

```
1. 3-Clique avgRating 8.567,
                                3 movies (Dale, Alan (II); Haysbert, John; Sutherland, Kyle)
2. 3-Clique avgRating 8.300,
                                3 movies (Hargland, Julie; Huffman, Gayle; Sedgwick, Misha)
                                3 movies (Clooney, Nick; Cotillon, Carine; Sedgwick, Misha)
3. 3-Clique avgRating 8.267,
4. 3-Clique avgRating 8.133,
                                3 movies (Bernard, Catherine (III); Clarke, Sarah (II); Cochran, Ron)
5. 3-Clique avgRating 8.133,
                                3 movies (Bernard, Catherine (III); Clarke, Sarah (II); Gordon, Howard (II))
6. 3-Clique avgRating 8.133,
                                3 movies (Bernard, Catherine (III); Clarke, Sarah (II); Johnson, Peta)
7. 3-Clique avgRating 8.133,
                                3 movies (Bernard, Catherine (III); Cochran, Ron; Cuthbert, Emma)
8. 3-Clique avgRating 8.133,
                                3 movies (Bernard, Catherine (III); Cochran, Ron; Gordon, Howard (II))
9. 3-Clique avgRating 8.133,
                                3 movies (Bernard, Catherine (III); Cochran, Ron; Haysbert, John)
10. 3-Clique avgRating 8.133,
                                3 movies (Bernard, Catherine (III); Cochran, Ron; Johnson, Peta)
11. 3-Clique avgRating 8.133,
                                3 movies (Bernard, Catherine (III); Cochran, Ron; Sutherland, Kyle)
                                3 movies (Bernard, Catherine (III); Cuthbert, Emma; Gordon, Howard (II))
12. 3-Clique avgRating 8.133,
13. 3-Clique avgRating 8.133,
                                3 movies (Bernard, Catherine (III); Cuthbert, Emma; Johnson, Peta)
14. 3-Clique avgRating 8.133,
                                3 movies (Bernard, Catherine (III); Gordon, Howard (II); Haysbert, John)
                                3 movies (Bernard, Catherine (III); Gordon, Howard (II); Johnson, Peta)
15. 3-Clique avgRating 8.133,
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1. 3-Clique avgRating 0.894, 17 movies (Fontana, Sal; Tedeschini, Paul; Valentino (XII))
2. 3-Clique avgRating 4.600, 15 movies (Burton, Jeff (V); Gordon, Jeff (VI); LaBonte, Don)
```

^{3. 3-}Clique avgRating 0.000, 15 movies (Dickens, Stafford; Tedeschini, Paul; Valentino (XII))

^{4. 3-}Clique avgRating 4.436, 14 movies (Bifiskis, Arnoldas; Burton, Jeff (V); Busch, Kyle)

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5. 3-Clique avgRating 4.436, 14 movies (Bifiskis, Arnoldas; Burton, Jeff (V); Busch, Lukan)
6. 3-Clique avgRating 4.436, 14 movies (Bifiskis, Arnoldas; Burton, Jeff (V); Earnhardt, Dale)
7. 3-Clique avgRating 4.436, 14 movies (Bifiskis, Arnoldas; Burton, Jeff (V); Gordon, Jeff (VI))
8. 3-Clique avgRating 4.436, 14 movies (Bifiskis, Arnoldas; Burton, Jeff (V); Hamlin, Divinoni)
9. 3-Clique avgRating 4.436, 14 movies (Bifiskis, Arnoldas; Burton, Jeff (V); Harvick, Robert)
10. 3-Clique avgRating 4.436, 14 movies (Bifiskis, Arnoldas; Burton, Jeff (V); Johnson, Jimmie (II))
11. 3-Clique avgRating 4.436, 14 movies (Bifiskis, Arnoldas; Burton, Jeff (V); Kahnemann, Heinz)
12. 3-Clique avgRating 4.436, 14 movies (Bifiskis, Arnoldas; Burton, Jeff (V); Kensett, Toby)
13. 3-Clique avgRating 4.436, 14 movies (Bifiskis, Arnoldas; Burton, Jeff (V); LaBonte, Don)
14. 3-Clique avgRating 4.436, 14 movies (Bifiskis, Arnoldas; Burton, Jeff (V); McMurray, Jamie (III))
15. 3-Clique avgRating 4.436, 14 movies (Bifiskis, Arnoldas; Burton, Jeff (V); Newman, Ryan (IV))
```

Top-15 3-cliques for model imdb-0030000-207420:

Top-15 by Average Rating

```
1. 3-Clique avgRating 8.567,
                                3 movies (Dale, Alan (II); Haysbert, John; Sutherland, Kyle)
2. 3-Clique avgRating 8.333,
                                3 movies (Beatty, Lauren (I); Brunsmann, Keith; Campbell, Richard (XXII))
3. 3-Clique avgRating 8.333,
                                3 movies (Beatty, Lauren (I); Brunsmann, Keith; Coleman, Brittani)
 4. 3-Clique avgRating 8.333,
                                3 movies (Beatty, Lauren (I); Brunsmann, Keith; Criss, Jason)
5. 3-Clique avgRating 8.333,
                                3 movies (Beatty, Lauren (I); Brunsmann, Keith; Lopez, Layla)
6. 3-Clique avgRating 8.333,
                                3 movies (Beatty, Lauren (I); Brunsmann, Keith; Lytle, Donna)
7. 3-Clique avgRating 8.333,
                                3 movies (Beatty, Lauren (I); Brunsmann, Keith; Marks, Lindsey)
8. 3-Clique avgRating 8.333,
                                3 movies (Beatty, Lauren (I); Brunsmann, Keith; Moses, Joel)
9. 3-Clique avgRating 8.333,
                                3 movies (Beatty, Lauren (I); Brunsmann, Keith; Povolotskiy, Georgiy)
10. 3-Clique avgRating 8.333,
                                3 movies (Beatty, Lauren (I); Brunsmann, Keith; Richter, Jonas)
11. 3-Clique avgRating 8.333,
                                3 movies (Beatty, Lauren (I); Brunsmann, Keith; Rosenthal, Bruce)
12. 3-Clique avgRating 8.333,
                                3 movies (Beatty, Lauren (I); Brunsmann, Keith; Saunders, Eddie (II))
                                3 movies (Beatty, Lauren (I); Brunsmann, Keith; Tajima, Seina)
13. 3-Clique avgRating 8.333,
14. 3-Clique avgRating 8.333,
                                 3 movies (Beatty, Lauren (I); Brunsmann, Keith; Walker, Joe (XXVI))
15. 3-Clique avgRating 8.333,
                                3 movies (Beatty, Lauren (I); Campbell, Richard (XXII); Coleman, Brittani)
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Top-15 by Number of Common Movies

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1. 3-Clique avgRating 0.800, 19 movies (Fontana, Sal; Tedeschini, Paul; Valentino (XII))
2. 3-Clique avgRating 0.000, 16 movies (Franey, Hughes; Henry, Galle; Morante, Panfilo)
3. 3-Clique avgRating 4.600, 15 movies (Burton, Jeff (V); Gordon, Jeff (VI); LaBonte, Don)
4. 3-Clique avgRating 0.000, 15 movies (Dickens, Stafford; Tedeschini, Paul; Valentino (XII))
5. 3-Clique avgRating 4.436, 14 movies (Bifiskis, Arnoldas; Burton, Jeff (V); Busch, Kyle)
6. 3-Clique avgRating 4.436, 14 movies (Bifiskis, Arnoldas; Burton, Jeff (V); Busch, Lukan)
7. 3-Clique avgRating 4.436, 14 movies (Bifiskis, Arnoldas; Burton, Jeff (V); Gordon, Jeff (VI))
8. 3-Clique avgRating 4.436, 14 movies (Bifiskis, Arnoldas; Burton, Jeff (V); Gordon, Jeff (VI))
9. 3-Clique avgRating 4.436, 14 movies (Bifiskis, Arnoldas; Burton, Jeff (V); Hamlin, Divinoni)
10. 3-Clique avgRating 4.436, 14 movies (Bifiskis, Arnoldas; Burton, Jeff (V); Harvick, Robert)
11. 3-Clique avgRating 4.436, 14 movies (Bifiskis, Arnoldas; Burton, Jeff (V); Johnson, Jimmie (II))
12. 3-Clique avgRating 4.436, 14 movies (Bifiskis, Arnoldas; Burton, Jeff (V); Kahnemann, Heinz)
13. 3-Clique avgRating 4.436, 14 movies (Bifiskis, Arnoldas; Burton, Jeff (V); Kahnemann, Heinz)
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14. 3-Clique avgRating 4.436, 14 movies (Bifiskis, Arnoldas; Burton, Jeff (V); LaBonte, Don)
15. 3-Clique avgRating 4.436, 14 movies (Bifiskis, Arnoldas; Burton, Jeff (V); McMurray, Jamie (III))

Top-15 3-cliques for model imdb-0045000-299504:

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1. 3-Clique avgRating 8.567, 3 movies (Dale, Alan (II); Haysbert, John; Sutherland, Kyle) 2. 3-Clique avgRating 8.333, 3 movies (Beatty, Lauren (I); Brunsmann, Keith; Campbell, Ri
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3 movies (Beatty, Lauren (I); Brunsmann, Keith; Campbell, Richard (XXII))
3. 3-Clique avgRating 8.333,
                                3 movies (Beatty, Lauren (I); Brunsmann, Keith; Coleman, Brittani)
4. 3-Clique avgRating 8.333,
                                3 movies (Beatty, Lauren (I); Brunsmann, Keith; Criss, Jason)
5. 3-Clique avgRating 8.333,
                                3 movies (Beatty, Lauren (I); Brunsmann, Keith; Lopez, Layla)
6. 3-Clique avgRating 8.333,
                                3 movies (Beatty, Lauren (I); Brunsmann, Keith; Lytle, Donna)
7. 3-Clique avgRating 8.333,
                                3 movies (Beatty, Lauren (I); Brunsmann, Keith; Marks, Lindsey)
8. 3-Clique avgRating 8.333,
                                3 movies (Beatty, Lauren (I); Brunsmann, Keith; Moses, Joel)
9. 3-Clique avgRating 8.333,
                                3 movies (Beatty, Lauren (I); Brunsmann, Keith; Povolotskiy, Georgiy)
10. 3-Clique avgRating 8.333,
                                3 movies (Beatty, Lauren (I); Brunsmann, Keith; Richter, Jonas)
11. 3-Clique avgRating 8.333,
                                3 movies (Beatty, Lauren (I); Brunsmann, Keith; Rosenthal, Bruce)
12. 3-Clique avgRating 8.333,
                                3 movies (Beatty, Lauren (I); Brunsmann, Keith; Saunders, Eddie (II))
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13. 3-Clique avgRating 8.333,
                                 3 movies (Beatty, Lauren (I); Brunsmann, Keith; Tajima, Seina)
14. 3-Clique avgRating 8.333,
                                3 movies (Beatty, Lauren (I); Brunsmann, Keith; Walker, Joe (XXVI))
                                3 movies (Beatty, Lauren (I); Campbell, Richard (XXII); Coleman, Brittani)
15. 3-Clique avgRating 8.333,
Top-15 by Number of Common Movies
 1. 3-Clique avgRating 0.000, 31 movies (Kataine, Kim; Wakabayashi, Hidetoshi; Yamamura, Noriko (I))
2. 3-Clique avgRating 0.000, 31 movies (Kataine, Kim; Wakabayashi, Hidetoshi; mura, Masao)
3. 3-Clique avgRating 0.000, 31 movies (Kataine, Kim; Yamamura, Noriko (I); mura, Masao)
 4. 3-Clique avgRating 0.000,
                               31 movies (Wakabayashi, Hidetoshi; Yamamura, Noriko (I); mura, Masao)
5. 3-Clique avgRating 0.000, 28 movies (Kataine, Kim; Miki, Sharon; Wakabayashi, Hidetoshi)
6. 3-Clique avgRating 0.000, 28 movies (Kataine, Kim; Miki, Sharon; Yamamura, Noriko (I))
7. 3-Clique avgRating 0.000, 28 movies (Kataine, Kim; Miki, Sharon; mura, Masao)
8. 3-Clique avgRating 0.000, 28 movies (Miki, Sharon; Wakabayashi, Hidetoshi; Yamamura, Noriko (I))
9. 3-Clique avgRating 0.000, 28 movies (Miki, Sharon; Wakabayashi, Hidetoshi; mura, Masao)
10. 3-Clique avgRating 0.000, 28 movies (Miki, Sharon; Yamamura, Noriko (I); mura, Masao)
11. 3-Clique avgRating 0.800, 19 movies (Fontana, Sal; Tedeschini, Paul; Valentino (XII))
12. 3-Clique avgRating 0.000, 16 movies (Franey, Hughes; Henry, Galle; Morante, Panfilo)
13. 3-Clique avgRating 4.600, 15 movies (Burton, Jeff (V); Gordon, Jeff (VI); LaBonte, Don)
14. 3-Clique avgRating 0.000, 15 movies (Dickens, Stafford; Tedeschini, Paul; Valentino (XII))
15. 3-Clique avgRating 4.436, 14 movies (Bifiskis, Arnoldas; Burton, Jeff (V); Busch, Kyle)
Top-15 3-cliques for model imdb-0065000-404920:
Top-15 by Average Rating
_____
1. 3-Clique avgRating 8.567,
                                3 movies (Dale, Alan (II); Haysbert, John; Sutherland, Kyle)
2. 3-Clique avgRating 8.350,
                                4 movies (Beatty, Lauren (I); Lopez, Layla; Povolotskiy, Georgiy)
3. 3-Clique avgRating 8.350,
                                4 movies (Beatty, Lauren (I); Lopez, Layla; Richter, Jonas)
4. 3-Clique avgRating 8.350,
                                4 movies (Beatty, Lauren (I); Lopez, Layla; Rosenthal, Bruce)
5. 3-Clique avgRating 8.350,
                                4 movies (Beatty, Lauren (I); Lopez, Layla; Saunders, Eddie (II))
6. 3-Clique avgRating 8.350,
                                4 movies (Beatty, Lauren (I); Lopez, Layla; Walker, Joe (XXVI))
7. 3-Clique avgRating 8.350,
                                4 movies (Beatty, Lauren (I); Povolotskiy, Georgiy; Richter, Jonas)
8. 3-Clique avgRating 8.350,
                                4 movies (Beatty, Lauren (I); Povolotskiy, Georgiy; Rosenthal, Bruce)
9. 3-Clique avgRating 8.350,
                                4 movies (Beatty, Lauren (I); Povolotskiy, Georgiy; Saunders, Eddie (II))
                                4 movies (Beatty, Lauren (I); Povolotskiy, Georgiy; Walker, Joe (XXVI))
10. 3-Clique avgRating 8.350,
11. 3-Clique avgRating 8.350,
                                 4 movies (Beatty, Lauren (I); Richter, Jonas; Rosenthal, Bruce)
12. 3-Clique avgRating 8.350,
                                4 movies (Beatty, Lauren (I); Richter, Jonas; Saunders, Eddie (II))
13. 3-Clique avgRating 8.350,
                                4 movies (Beatty, Lauren (I); Richter, Jonas; Walker, Joe (XXVI))
14. 3-Clique avgRating 8.350,
                                4 movies (Beatty, Lauren (I); Rosenthal, Bruce; Saunders, Eddie (II))
15. 3-Clique avgRating 8.350,
                                4 movies (Beatty, Lauren (I); Rosenthal, Bruce; Walker, Joe (XXVI))
Top-15 by Number of Common Movies
 1. 3-Clique avgRating 0.000, 31 movies (Kataine, Kim; Wakabayashi, Hidetoshi; Yamamura, Noriko (I))
2. 3-Clique avgRating 0.000, 31 movies (Kataine, Kim; Wakabayashi, Hidetoshi; mura, Masao)
3. 3-Clique avgRating 0.000,
                               31 movies (Kataine, Kim; Yamamura, Noriko (I); mura, Masao)
4. 3-Clique avgRating 0.000, 31 movies (Wakabayashi, Hidetoshi; Yamamura, Noriko (I); mura, Masao)
5. 3-Clique avgRating 0.000, 28 movies (Kataine, Kim; Miki, Sharon; Wakabayashi, Hidetoshi)
6. 3-Clique avgRating 0.000, 28 movies (Kataine, Kim; Miki, Sharon; Yamamura, Noriko (I)) 7. 3-Clique avgRating 0.000, 28 movies (Kataine, Kim; Miki, Sharon; mura, Masao)
8. 3-Clique avgRating 0.000, 28 movies (Miki, Sharon; Wakabayashi, Hidetoshi; Yamamura, Noriko (I))
9. 3-Clique avgRating 0.000, 28 movies (Miki, Sharon; Wakabayashi, Hidetoshi; mura, Masao)
10. 3-Clique avgRating 0.000, 28 movies (Miki, Sharon; Yamamura, Noriko (I); mura, Masao)
11. 3-Clique avgRating 0.800, 19 movies (Fontana, Sal; Tedeschini, Paul; Valentino (XII))
12. 3-Clique avgRating 3.082, 17 movies (Boy, Teddy; Byron, Tom L.; Wallice, Vince)
13. 3-Clique avgRating 0.000, 17 movies (Franey, Hughes; Henry, Galle; Morante, Panfilo)
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Top-15 3-cliques for model imdb-0085000-499995:

Top-15 by Average Rating

1. 3-Clique avgRating 9.100, 3 movies (Apergis, Dennis; Baichoo, Shyam; Goldfarb, Audrey)

14. 3-Clique avgRating 4.600, 15 movies (Burton, Jeff (V); Gordon, Jeff (VI); LaBonte, Don) 15. 3-Clique avgRating 0.000, 15 movies (Dickens, Stafford; Tedeschini, Paul; Valentino (XII))

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2. 3-Clique avgRating 9.100,
                                 3 movies (Apergis, Dennis; Baichoo, Shyam; Rosato, Danielle)
 3. 3-Clique avgRating 9.100,
                                 3 movies (Apergis, Dennis; Camacho, Matthew (II); Goldfarb, Audrey)
                                 3 movies (Apergis, Dennis; Camacho, Matthew (II); Rosato, Danielle)
 4. 3-Clique avgRating 9.100,
5. 3-Clique avgRating 9.100,
                                 3 movies (Apergis, Dennis; Galura, Charo (II); Goldfarb, Audrey)
6. 3-Clique avgRating
                       9.100,
                                 3 movies (Apergis, Dennis; Galura, Charo (II); Rosato, Danielle)
7. 3-Clique avgRating 9.100,
                                 3 movies (Apergis, Dennis; Galura, Charo (II); Smith, Roger D.)
8. 3-Clique avgRating 9.100,
                                 3 movies (Apergis, Dennis; Goldfarb, Audrey; Ivanovici, Ion)
9. 3-Clique avgRating
                       9.100,
                                 3 movies (Apergis, Dennis; Goldfarb, Audrey; Mestroni, Ethan)
10. 3-Clique avgRating 9.100,
                                 3 movies (Apergis, Dennis; Goldfarb, Audrey; North, Oliver)
11. 3-Clique avgRating 9.100,
                                 3 movies (Apergis, Dennis; Goldfarb, Audrey; Rosato, Danielle)
12. 3-Clique avgRating 9.100,
                                 3 movies (Apergis, Dennis; Goldfarb, Audrey; Schneider, Elizabeth (I))
13. 3-Clique avgRating 9.100,
                                 3 movies (Apergis, Dennis; Goldfarb, Audrey; Smith, Roger D.)
14. 3-Clique avgRating 9.100,
                                 3 movies (Apergis, Dennis; Goldfarb, Audrey; Standke, Rebeca-Sarah)
15. 3-Clique avgRating 9.100,
                                 3 movies (Apergis, Dennis; Goldfarb, Audrey; Verrupen, Stephanie)
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1. 3-Clique avgRating 2.913, 31 movies (Ayers, Jeff (V); Johnson, Julie (IX); Wirtz, Stephanie)
2. 3-Clique avgRating 0.000,
                                31 movies (Kataine, Kim; Wakabayashi, Hidetoshi; Yamamura, Noriko (I))
3. 3-Clique avgRating 0.000,
                                31 movies (Kataine, Kim; Wakabayashi, Hidetoshi; mura, Masao)
4. 3-Clique avgRating 0.000,
                                31 movies (Kataine, Kim; Yamamura, Noriko (I); mura, Masao)
5. 3-Clique avgRating 0.000,
                                31 movies (Wakabayashi, Hidetoshi; Yamamura, Noriko (I); mura, Masao)
6. 3-Clique avgRating 3.011,
                                28 movies (Nelson, Kyle (II); Stinson, Chris (III); Wendt, Eckehard)
7. 3-Clique avgRating 3.011, 28 movies (Stinson, Chris (III); Wendt, Eckehard; Wirtz, Stephanie)
8. 3-Clique avgRating 0.000, 28 movies (Kataine, Kim; Miki, Sharon; Wakabayashi, Hidetoshi)
9. 3-Clique avgRating 0.000,
                                28 movies (Kataine, Kim; Miki, Sharon; Yamamura, Noriko (I))
                                28 movies (Kataine, Kim; Miki, Sharon; mura, Masao)
10. 3-Clique avgRating 0.000,
11. 3-Clique avgRating 0.000,
                                28 movies (Miki, Sharon; Wakabayashi, Hidetoshi; Yamamura, Noriko (I))
                                28 movies (Miki, Sharon; Wakabayashi, Hidetoshi; mura, Masao)
28 movies (Miki, Sharon; Yamamura, Noriko (I); mura, Masao)
12. 3-Clique avgRating 0.000,
13. 3-Clique avgRating 0.000,
14. 3-Clique avgRating 3.122,
                                27 movies (Nelson, Kyle (II); Stinson, Chris (III); Wirtz, Stephanie)
15. 3-Clique avgRating 3.122, 27 movies (Nelson, Kyle (II); Wendt, Eckehard; Wirtz, Stephanie)
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Top-15 3-cliques for model imdb-0130000-709551:

Top-15 by Average Rating

```
1. 3-Clique avgRating 9.333,
                                  3 movies (Baker, Tug; Blum, Steve (X); Meskin, Aharon)
2. 3-Clique avgRating 9.333,
                                  3 movies (Blum, Steve (X); Cox, Chris (II); Kane, Tom (IX))
3. 3-Clique avgRating 9.333,
                                  3 movies (Blum, Steve (X); Cox, Chris (II); Wasserman, Rob)
 4. 3-Clique avgRating 9.333,
                                  3 movies (Blum, Steve (X); Cox, Chris (II); Wingerter, Ben)
                                  3 movies (Blum, Steve (X); Kane, Tom (IX); Wasserman, Rob) 3 movies (Blum, Steve (X); Kane, Tom (IX); Wingerter, Ben)
5. 3-Clique avgRating 9.333,
6. 3-Clique avgRating 9.333,
7. 3-Clique avgRating 9.333,
                                  3 movies (Blum, Steve (X); Tatasopoulos, Giannis; Wasserman, Rob)
                                  3 movies (Blum, Steve (X); Tatasopoulos, Giannis; Wingerter, Ben)
8. 3-Clique avgRating 9.333,
9. 3-Clique avgRating 9.333,
                                  3 movies (Cox, Chris (II); Kane, Tom (IX); Tatasopoulos, Giannis)
                                  3 movies (Cox, Chris (II); Kane, Tom (IX); Wasserman, Rob)
10. 3-Clique avgRating 9.333,
11. 3-Clique avgRating 9.333,
                                  3 movies (Cox, Chris (II); Kane, Tom (IX); Wingerter, Ben)
12. 3-Clique avgRating
                        9.333,
                                  3 movies (Cox, Chris (II); Wasserman, Rob; Wingerter, Ben)
13. 3-Clique avgRating 9.333,
                                  3 movies (Kane, Tom (IX); Tatasopoulos, Giannis; Wasserman, Rob)
                                  3 movies (Kane, Tom (IX); Tatasopoulos, Giannis; Wingerter, Ben)
14. 3-Clique avgRating 9.333,
15. 3-Clique avgRating 9.333,
                                  3 movies (Kane, Tom (IX); Wasserman, Rob; Wingerter, Ben)
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1. 3-Clique avgRating 0.311, 35 movies (Anderson, Gladstone; Clayton, Martene; Willard, Lee (III))
2. 3-Clique avgRating 0.361,
                               33 movies (Anderson, Gladstone; Potel, Vincent; Todd, Helen (II))
                               32 movies (Ayers, Jeff (V); Johnson, Julie (IX); Wirtz, Stephanie)
3. 3-Clique avgRating 3.028,
4. 3-Clique avgRating 0.000,
                              31 movies (Dog, Pete the Wonder; Trimble, Brett; Turner, Dorian (II))
                              31 movies (Kataine, Kim; Wakabayashi, Hidetoshi; Yamamura, Noriko (I))
5. 3-Clique avgRating 0.000,
6. 3-Clique avgRating 0.000,
                              31 movies (Kataine, Kim; Wakabayashi, Hidetoshi; mura, Masao)
7. 3-Clique avgRating 0.000, 31 movies (Kataine, Kim; Yamamura, Noriko (I); mura, Masao)
8. 3-Clique avgRating 0.000,
                              31 movies (Wakabayashi, Hidetoshi; Yamamura, Noriko (I); mura, Masao)
9. 3-Clique avgRating 3.011,
                              28 movies (Nelson, Kyle (II); Stinson, Chris (III); Wendt, Eckehard)
10. 3-Clique avgRating 3.011, 28 movies (Stinson, Chris (III); Wendt, Eckehard; Wirtz, Stephanie)
11. 3-Clique avgRating 0.000, 28 movies (Kataine, Kim; Miki, Sharon; Wakabayashi, Hidetoshi)
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12. 3-Clique avgRating 0.000, 28 movies (Kataine, Kim; Miki, Sharon; Yamamura, Noriko (I))
13. 3-Clique avgRating 0.000, 28 movies (Kataine, Kim; Miki, Sharon; mura, Masao)
14. 3-Clique avgRating 0.000, 28 movies (Miki, Sharon; Wakabayashi, Hidetoshi; Yamamura, Noriko (I))
15. 3-Clique avgRating 0.000, 28 movies (Miki, Sharon; Wakabayashi, Hidetoshi; mura, Masao)
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Top-15 3-cliques for model imdb-0200000-1004463:

Top-15 by Average Rating

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1. 3-Clique avgRating 9.673, 26 movies (Brewster, Renee-Marie; Cook, Abby; Gibson, Thomas (IV))
2. 3-Clique avgRating 9.673, 26 movies (Brewster, Renee-Marie; Cook, Abby; Gubler, Matthias)
3. 3-Clique avgRating 9.673, 26 movies (Brewster, Renee-Marie; Cook, Abby; Mantei, Matt)
4. 3-Clique avgRating 9.673, 26 movies (Brewster, Renee-Marie; Cook, Abby; Moore, Sherron)
5. 3-Clique avgRating 9.673, 26 movies (Brewster, Renee-Marie; Cook, Abby; Vangsoe, Michaela)
6. 3-Clique avgRating 9.673, 26 movies (Brewster, Renee-Marie; Gibson, Thomas (IV); Gubler, Matthias)
7. 3-Clique avgRating 9.673, 26 movies (Brewster, Renee-Marie; Gibson, Thomas (IV); Mantei, Matt)
8. 3-Clique avgRating 9.673, 26 movies (Brewster, Renee-Marie; Gibson, Thomas (IV); Moore, Sherron)
9. 3-Clique avgRating 9.673, 26 movies (Brewster, Renee-Marie; Gibson, Thomas (IV); Vangsoe, Michaela)
10. 3-Clique avgRating 9.673, 26 movies (Brewster, Renee-Marie; Gubler, Matthias; Mantei, Matt)
11. 3-Clique avgRating 9.673, 26 movies (Brewster, Renee-Marie; Gubler, Matthias; Moore, Sherron)
12. 3-Clique avgRating 9.673, 26 movies (Brewster, Renee-Marie; Gubler, Matthias; Vangsoe, Michaela)
13. 3-Clique avgRating 9.673, 26 movies (Brewster, Renee-Marie; Mantei, Matt; Wangsoe, Michaela)
14. 3-Clique avgRating 9.673, 26 movies (Brewster, Renee-Marie; Mantei, Matt; Vangsoe, Michaela)
15. 3-Clique avgRating 9.673, 26 movies (Brewster, Renee-Marie; Mantei, Matt; Vangsoe, Michaela)
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Top-15 by Number of Common Movies

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1. 3-Clique avgRating 1.374, 35 movies (Mandingo (II); Napier, Jack (III); Steele, Lisa E.)
2. 3-Clique avgRating 0.311,
                               35 movies (Anderson, Gladstone; Clayton, Martene; Willard, Lee (III))
3. 3-Clique avgRating 6.615, 34 movies (Byron, Tom L.; North, Peter (II); Wallice, Vince)
4. 3-Clique avgRating 0.350, 34 movies (Anderson, Gladstone; Potel, Vincent; Todd, Helen (II))
5. 3-Clique avgRating 1.103, 33 movies (Pete, Panhandle; Strong, John (II); Wood, Mark (V))
6. 3-Clique avgRating 0.000, 33 movies (Giottoli, Alessio; Gun, Joe; Muguruma, Yto)
7. 3-Clique avgRating 0.000, 33 movies (Giottoli, Alessio; Lang, Nick (II); Muguruma, Yto)
8. 3-Clique avgRating 3.028,
                               32 movies (Ayers, Jeff (V); Johnson, Julie (IX); Wirtz, Stephanie)
9. 3-Clique avgRating 0.000, 32 movies (Dog, Pete the Wonder; Trimble, Brett; Turner, Dorian (II))
10. 3-Clique avgRating 0.000, 31 movies (Gulak, Max; Markland, Erin; Marrow, Desmond)
11. 3-Clique avgRating 0.000, 31 movies (Kataine, Kim; Wakabayashi, Hidetoshi; Yamamura, Noriko (I))
12. 3-Clique avgRating 0.000,
                               31 movies (Kataine, Kim; Wakabayashi, Hidetoshi; mura, Masao)
13. 3-Clique avgRating 0.000, 31 movies (Kataine, Kim; Yamamura, Noriko (I); mura, Masao)
14. 3-Clique avgRating 0.000, 31 movies (Wakabayashi, Hidetoshi; Yamamura, Noriko (I); mura, Masao)
15. 3-Clique avgRating 3.659,
                               29 movies (Boy, Teddy; Byron, Tom L.; Wallice, Vince)
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Top-15 3-cliques for model imdb-0340000-1505143:

Top-15 by Average Rating

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1. 3-Clique avgRating 9.615, 27 movies (Brewster, Renee-Marie; Cook, Abby; Gibson, Thomas (IV))
2. 3-Clique avgRating 9.615, 27 movies (Brewster, Renee-Marie; Cook, Abby; Gubler, Matthias)
3. 3-Clique avgRating 9.615, 27 movies (Brewster, Renee-Marie; Cook, Abby; Mantei, Matt)
4. 3-Clique avgRating 9.615, 27 movies (Brewster, Renee-Marie; Cook, Abby; Moore, Sherron)
5. 3-Clique avgRating 9.615, 27 movies (Brewster, Renee-Marie; Cook, Abby; Vangsoe, Michaela)
6. 3-Clique avgRating 9.615, 27 movies (Brewster, Renee-Marie; Gibson, Thomas (IV); Gubler, Matthias)
7. 3-Clique avgRating 9.615, 27 movies (Brewster, Renee-Marie; Gibson, Thomas (IV); Mantei, Matt)
8. 3-Clique avgRating 9.615, 27 movies (Brewster, Renee-Marie; Gibson, Thomas (IV); Moore, Sherron)
9. 3-Clique avgRating 9.615, 27 movies (Brewster, Renee-Marie; Gibson, Thomas (IV); Vangsoe, Michaela)
10. 3-Clique avgRating 9.615, 27 movies (Brewster, Renee-Marie; Gubler, Matthias; Moore, Sherron)
11. 3-Clique avgRating 9.615, 27 movies (Brewster, Renee-Marie; Gubler, Matthias; Wangsoe, Michaela)
12. 3-Clique avgRating 9.615, 27 movies (Brewster, Renee-Marie; Mantei, Matt; Vangsoe, Michaela)
13. 3-Clique avgRating 9.615, 27 movies (Brewster, Renee-Marie; Mantei, Matt; Vangsoe, Michaela)
14. 3-Clique avgRating 9.615, 27 movies (Brewster, Renee-Marie; Mantei, Matt; Vangsoe, Michaela)
15. 3-Clique avgRating 9.615, 27 movies (Brewster, Renee-Marie; Mantei, Matt; Vangsoe, Michaela)
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Top-15 by Number of Common Movies

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1. 3-Clique avgRating 6.971, 55 movies (Fine, Larry (II); Howard, Curtis; Howard, Monroe)
 2. 3-Clique avgRating 5.985, 53 movies (Byron, Tom L.; North, Peter (II); Wallice, Vince)
3. 3-Clique avgRating 0.823, 53 movies (Ferrara, Marco; Stefano, Padre; Strong, John (II))
 4. 3-Clique avgRating 1.351, 45 movies (Pete, Panhandle; Strong, John (II); Wood, Mark (V))
5. 3-Clique avgRating
                       3.850, 42 movies (Boy, Teddy; Byron, Tom L.; Wallice, Vince)
6. 3-Clique avgRating 2.862, 42 movies (Daniels, Bernalee; Lloyd, Harold (II); Pollard, Aaron)
7. 3-Clique avgRating 0.562, 42 movies (Holmes, Steve (III); Stefano, Padre; Strong, John (II))
8. 3-Clique avgRating 6.059,
                               39 movies (Byron, Tom L.; North, Peter (II); Silvera, Jonathan)
9. 3-Clique avgRating 6.041, 39 movies (Beck, Jake (I); Mercer, James (II); Questelle, Amy)
10. 3-Clique avgRating 0.397, 39 movies (Anderson, Gladstone; Clayton, Martene; Willard, Lee (III))
11. 3-Clique avgRating 6.505,
                               38 movies (Fine, Larry (II); Howard, Monroe; Howard, Sherman)
12. 3-Clique avgRating 0.603, 38 movies (Everhard, Nick; Ferrara, Marco; Stefano, Padre)
13. 3-Clique avgRating 5.700,
                               37 movies (Everhard, Nick; Marcus, Neil; Steele, Lisa E.)
14. 3-Clique avgRating 0.570,
                               37 movies (Ferrara, Marco; Holmes, Steve (III); Stefano, Padre)
15. 3-Clique avgRating 5.433, 36 movies (Boy, Teddy; North, Peter (II); Wallice, Vince)
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Top-15 3-cliques for model imdb-0495000-2000900:

Top-15 by Average Rating

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1. 3-Clique avgRating 9.615, 27 movies (Brewster, Renee-Marie; Cook, Abby; Gibson, Thomas (IV))
2. 3-Clique avgRating 9.615, 27 movies (Brewster, Renee-Marie; Cook, Abby; Gubler, Matthias)
3. 3-Clique avgRating 9.615, 27 movies (Brewster, Renee-Marie; Cook, Abby; Mantei, Matt)
4. 3-Clique avgRating 9.615, 27 movies (Brewster, Renee-Marie; Cook, Abby; Moore, Sherron)
5. 3-Clique avgRating 9.615, 27 movies (Brewster, Renee-Marie; Cook, Abby; Vangsoe, Michaela)
6. 3-Clique avgRating 9.615, 27 movies (Brewster, Renee-Marie; Gibson, Thomas (IV); Gubler, Matthias)
7. 3-Clique avgRating 9.615, 27 movies (Brewster, Renee-Marie; Gibson, Thomas (IV); Mantei, Matt)
8. 3-Clique avgRating 9.615, 27 movies (Brewster, Renee-Marie; Gibson, Thomas (IV); Moore, Sherron)
9. 3-Clique avgRating 9.615, 27 movies (Brewster, Renee-Marie; Gibson, Thomas (IV); Vangsoe, Michaela)
10. 3-Clique avgRating 9.615, 27 movies (Brewster, Renee-Marie; Gubler, Matthias; Mantei, Matt)
11. 3-Clique avgRating 9.615, 27 movies (Brewster, Renee-Marie; Gubler, Matthias; Wangsoe, Michaela)
12. 3-Clique avgRating 9.615, 27 movies (Brewster, Renee-Marie; Mantei, Matt; Wangsoe, Michaela)
13. 3-Clique avgRating 9.615, 27 movies (Brewster, Renee-Marie; Mantei, Matt; Wangsoe, Michaela)
14. 3-Clique avgRating 9.615, 27 movies (Brewster, Renee-Marie; Mantei, Matt; Wangsoe, Michaela)
15. 3-Clique avgRating 9.615, 27 movies (Brewster, Renee-Marie; Mantei, Matt; Vangsoe, Michaela)
15. 3-Clique avgRating 9.615, 27 movies (Brewster, Renee-Marie; Mantei, Matt; Vangsoe, Michaela)
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Top-15 by Number of Common Movies

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1. 3-Clique avgRating 1.661, 100 movies (Daniels, Bernalee; Lloyd, Harold (II); Pollard, Aaron)
2. 3-Clique avgRating 2.231, 78 movies (Brooks, Sarah (V); Lloyd, Harold (II); Pollard, Aaron)
3. 3-Clique avgRating 2.161, 77 movies (Brooks, Sarah (V); Daniels, Bernalee; Lloyd, Harold (II))
4. 3-Clique avgRating 2.087, 77 movies (Brooks, Sarah (V); Daniels, Bernalee; Pollard, Aaron)
5. 3-Clique avgRating 7.022, 67 movies (Fine, Larry (II); Howard, Curtis; Howard, Monroe)
6. 3-Clique avgRating 5.878, 63 movies (Byron, Tom L.; North, Peter (II); Wallice, Vince)
7. 3-Clique avgRating 0.715, 61 movies (Ferrara, Marco; Stefano, Padre; Strong, John (II))
8. 3-Clique avgRating 1.609, 58 movies (Lloyd, Harold (II); Pollard, Aaron; Stevenson, Charles (III))
9. 3-Clique avgRating 1.179, 58 movies (Pete, Panhandle; Strong, John (II); Wood, Mark (V))
10. 3-Clique avgRating 1.512, 57 movies (Brooks, Sarah (V); Lloyd, Harold (II); Stevenson, Charles (III))
11. 3-Clique avgRating 1.666, 56 movies (Brooks, Sarah (V); Pollard, Aaron; Stevenson, Charles (III))
12. 3-Clique avgRating 1.438, 56 movies (Daniels, Bernalee; Jamison, C.J.; Pollard, Aaron)
14. 3-Clique avgRating 1.438, 56 movies (Daniels, Bernalee; Lloyd, Harold (II); Pollard, Aaron)
15. 3-Clique avgRating 1.429, 56 movies (Daniels, Bernalee; Lloyd, Harold (II); Stevenson, Charles (III))
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Top-15 3-cliques for model imdb-0660000-2501893:

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1. 3-Clique avgRating 9.600, 3 movies (Bunch, W.G.; Hawkins, Jenna (III); Jones, Lee (III))
2. 3-Clique avgRating 9.582, 28 movies (Brewster, Renee-Marie; Cook, Abby; Mantei, Matt)
3. 3-Clique avgRating 9.582, 28 movies (Brewster, Renee-Marie; Gibson, Thomas (IV); Mantei, Matt)
4. 3-Clique avgRating 9.582, 28 movies (Brewster, Renee-Marie; Gubler, Matthias; Mantei, Matt)
5. 3-Clique avgRating 9.582, 28 movies (Brewster, Renee-Marie; Mantei, Matt; Moore, Sherron)
6. 3-Clique avgRating 9.582, 28 movies (Brewster, Renee-Marie; Mantei, Matt; Vangsoe, Michaela)
7. 3-Clique avgRating 9.582, 28 movies (Cook, Abby; Mantei, Matt; Moore, Sherron)
8. 3-Clique avgRating 9.582, 28 movies (Cook, Abby; Mantei, Matt; Vangsoe, Michaela)
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9. 3-Clique avgRating 9.582, 28 movies (Gibson, Thomas (IV); Mantei, Matt; Moore, Sherron)
10. 3-Clique avgRating 9.582, 28 movies (Gibson, Thomas (IV); Mantei, Matt; Vangsoe, Michaela)
11. 3-Clique avgRating 9.582, 28 movies (Gubler, Matthias; Mantei, Matt; Moore, Sherron)
12. 3-Clique avgRating 9.582, 28 movies (Gubler, Matthias; Mantei, Matt; Vangsoe, Michaela)
13. 3-Clique avgRating 9.567, 3 movies (Berlin, Jeff (II); Chavez, Frank (VI); Pearlstein, Rob)
14. 3-Clique avgRating 9.567, 3 movies (Berlin, Jeff (II); Jones, Lee (III); Pearlstein, Rob)
15. 3-Clique avgRating 9.552, 29 movies (Brewster, Renee-Marie; Cook, Abby; Gibson, Thomas (IV))
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1. 3-Clique avgRating 1.867, 117 movies (Daniels, Bernalee; Lloyd, Harold (II); Pollard, Aaron)
2. 3-Clique avgRating 6.814, 95 movies (Fine, Larry (II); Howard, Curtis; Howard, Monroe)
3. 3-Clique avgRating 2.487, 91 movies (Brooks, Sarah (V); Lloyd, Harold (II); Pollard, Aaron)
4. 3-Clique avgRating 2.430, 90 movies (Brooks, Sarah (V); Daniels, Bernalee; Lloyd, Harold (II))
5. 3-Clique avgRating 2.367, 90 movies (Brooks, Sarah (V); Daniels, Bernalee; Pollard, Aaron)
6. 3-Clique avgRating 1.040, 86 movies (Pete, Panhandle; Strong, John (II); Wood, Mark (V))
7. 3-Clique avgRating 5.892, 78 movies (Byron, Tom L.; North, Peter (II); Wallice, Vince)
8. 3-Clique avgRating 0.514, 78 movies (Bhasi, Puthillam; Nair, Udayan; Nazir, Ramin)
9. 3-Clique avgRating 0.692, 74 movies (Ferrara, Marco; Stefano, Padre; Strong, John (II))
11. 3-Clique avgRating 6.139, 72 movies (Beck, Jake (I); Mercer, James (II); Questelle, Amy)
12. 3-Clique avgRating 4.132, 68 movies (Ali (III); Brahmavar; Narayana, P.)
14. 3-Clique avgRating 1.847, 66 movies (Daniels, Bernalee; Jamison, C.J.; Lloyd, Harold (II))
15. 3-Clique avgRating 1.788, 65 movies (Daniels, Bernalee; Jamison, C.J.; Pollard, Aaron)
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Top-15 3-cliques for model imdb-all-3257145:

Top-15 by Average Rating

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1. 3-Clique avgRating 10.000,
                                3 movies (Kutikov, Aleksandr; Podgorski, Leigh (II); Sovagovic, Filip)
2. 3-Clique avgRating 9.900,
                                3 movies (Biggs, Jeff; Deutch, John; Lindhout, Marieke)
3. 3-Clique avgRating 9.900,
                                3 movies (Biggs, Jeff; Deutch, John; Torrence, Osagyefo)
 4. 3-Clique avgRating 9.900,
                                3 movies (Deutch, John; Lindhout, Marieke; Torrence, Osagyefo)
5. 3-Clique avgRating 9.867,
                                3 movies (Berting, Francine; Boche, Herbert; Selleck, Zachary)
6. 3-Clique avgRating 9.700,
                                3 movies (Eikeren, Allison; Rutte, Celia Alida; Selleck, Zachary)
                                3 movies (Hamlin, Jeff; Rutte, Celia Alida; Selleck, Zachary)
7. 3-Clique avgRating 9.700,
8. 3-Clique avgRating 9.700,
                                3 movies (Lee, Misun (I); Lowenthall, Gary; O'Brien, Liam (VI))
9. 3-Clique avgRating 9.700,
                                3 movies (Rutte, Celia Alida; Selleck, Zachary; Tucker, Michael (III))
10. 3-Clique avgRating 9.667,
                                3 movies (Berting, Francine; Gless, Slvia; Principato, Lisa)
                                3 movies (Berting, Francine; Gless, Slvia; Wendt, George (II))
11. 3-Clique avgRating 9.667,
12. 3-Clique avgRating 9.667,
                                3 movies (Berting, Francine; Principato, Lisa; Wendt, George (II))
13. 3-Clique avgRating 9.600,
                                3 movies (Anderson, Kathy (X); Mois, Marianna; Rossi, Dalila)
14. 3-Clique avgRating 9.600,
                                3 movies (Bunch, W.G.; Hawkins, Jenna (III); Jones, Lee (III))
                                3 movies (Crnkovic, Anton; Ficinko, Alexander; Sovagovic, Filip)
15. 3-Clique avgRating 9.600,
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1. 3-Clique avgRating 6.913, 173 movies (Lawler, Jesse; Levesque, Phil; Ross, Jim (V))
2. 3-Clique avgRating 6.855, 152 movies (Calay, Michael; Lawler, Jesse; Ross, Jim (V))
3. 3-Clique avgRating 6.907, 150 movies (Lawler, Jesse; Michaels, Shawn (VII); Ross, Jim (V))
4. 3-Clique avgRating 2.040, 146 movies (Daniels, Bernalee; Lloyd, Harold (II); Pollard, Aaron)
5. 3-Clique avgRating 6.906, 139 movies (Fine, Larry (II); Howard, Curtis; Howard, Monroe)
6. 3-Clique avgRating 6.972, 137 movies (Lawler, Jesse; McMahon, Vincent; Ross, Jim (V))
7. 3-Clique avgRating 6.920, 137 movies (Calay, Michael; Lawler, Jesse; Levesque, Phil)
9. 3-Clique avgRating 6.932, 136 movies (Jacobs, Gordon V.; Lawler, Jesse; Levesque, Phil)
10. 3-Clique avgRating 6.932, 133 movies (Calay, Michael; Lawler, Jesse; Michaels, Shawn (VII))
11. 3-Clique avgRating 6.961, 132 movies (Copeland, Adam (III); Lawler, Jesse; Ross, Jim (V))
12. 3-Clique avgRating 6.983, 126 movies (Levesque, Phil; Michaels, Shawn (VII); Ross, Jim (V))
13. 3-Clique avgRating 6.983, 126 movies (Levesque, Phil; Michaels, Shawn (VII); Ross, Jim (V))
15. 3-Clique avgRating 6.906, 126 movies (Calay, Michael; Lawler, Jesse; McMahon, Vincent)
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