



**Σχεδιασμός Βάσεων Δεδομένων**

**Διδάσκων: Ιωάννης Κωτίδης**

Εαρινό εξάμηνο 2020-2021

**Πρώτη Εργασία**

Ανάθεση: **30-04-2021**

Παράδοση: **18-05-2021 Ώρα (23:55)**

**ΑΡΙΣΤΕΙΔΗΣ ΧΡΟΝΟΠΟΥΛΟΣ 3160194**

**ΖΗΤΗΜΑ ΠΡΩΤΟ**

**1. INDEX →**

**CREATE INDEX movieyear**

**ON moives(title,pyear)**

**WHERE pyear >= 1990 AND pyear <= 2000**

**ΣΚΡΙΝΣΟΤΣ ΑΠΟ ΤΗΝ ΕΚΤΕΛΕΣΗ ΤΩΝ ΕΝΤΟΛΩΝ ΧΩΡΙΣ ΕΥΡΕΤΗΡΙΟ**

```

(75693 rows affected)
Table 'movies'. Scan count 1, logical reads 1918, physical reads 2, read-ahead reads 1917, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.

(2 rows affected)

(1 row affected)

(75693 rows affected)
Table 'movies'. Scan count 1, logical reads 1918, physical reads 0, read-ahead reads 0, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.

(2 rows affected)

(1 row affected)

(75693 rows affected)
Table 'Worktable'. Scan count 0, logical reads 0, physical reads 0, read-ahead reads 0, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.
Table 'movies'. Scan count 5, logical reads 2012, physical reads 0, read-ahead reads 0, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.

(4 rows affected)

(1 row affected)

Completion time: 2021-05-03T12:13:24.5044370+03:00
|

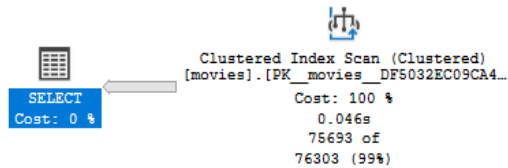
```

Query 1: Query cost (relative to the batch): 20%

```

SELECT [title] FROM [movies] WHERE [pyear]>=@1 AND [pyear]<=@2

```

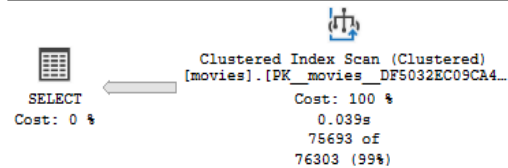


Query 2: Query cost (relative to the batch): 20%

```

SELECT [pyear],[title] FROM [movies] WHERE [pyear]>=@1 AND [pyear]<=@2

```

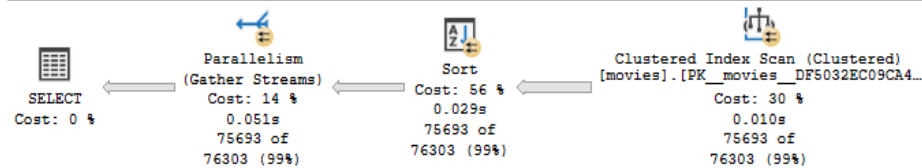


Query 3: Query cost (relative to the batch): 60%

```

SELECT [title],[pyear] FROM [movies] WHERE [pyear]>=@1 AND [pyear]<=@2 ORDER BY [pyear] ASC,[title] ASC

```



ΣΚΡΙΝΣΟΤΣ ΑΠΟ ΤΗΞΝ ΕΚΤΕΛΕΣΗ ΤΩΝ ΕΝΤΟΛΩΝ ΜΕ ΕΥΡΕΤΗΡΙΟ

(75693 rows affected)  
Table 'movies'. Scan count 1, logical reads 353, physical reads 3, read-ahead reads 363, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.

(1 row affected)

(75693 rows affected)  
Table 'movies'. Scan count 1, logical reads 353, physical reads 0, read-ahead reads 0, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.

(1 row affected)

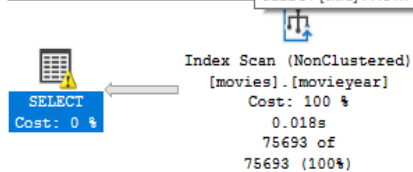
(75693 rows affected)  
Table 'Worktable'. Scan count 0, logical reads 0, physical reads 0, read-ahead reads 0, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.  
Table 'movies'. Scan count 5, logical reads 1396, physical reads 0, read-ahead reads 0, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.

(1 row affected)

Completion time: 2021-05-03T17:37:26.2825679+03:00

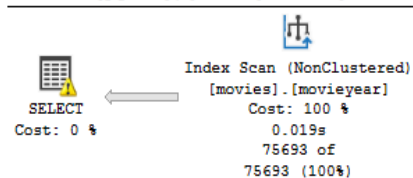
Query 1: Query cost (relative to the batch): 4%

SELECT [title] FROM [movies] WHERE [pyear]>=@1 AND [pyear]<=@2



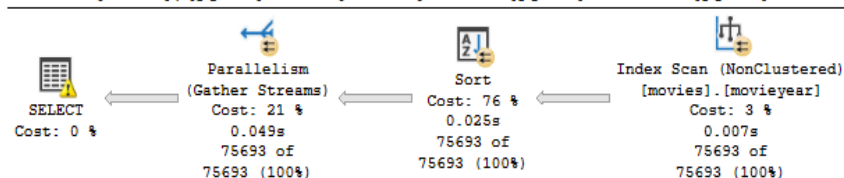
Query 2: Query cost (relative to the batch): 4%

SELECT [pyear],[title] FROM [movies] WHERE [pyear]>=@1 AND [pyear]<=@2



Query 3: Query cost (relative to the batch): 93%

SELECT [title],[pyear] FROM [movies] WHERE [pyear]>=@1 AND [pyear]<=@2 ORDER BY [pyear] ASC,[title] ASC



Βλέπουμε λοιπόν από τις εικόνες ότι με τη χρήση του ευρετηρίου έχει μειωθεί και το κόστος των logical reads αλλά και ο χρόνος εκτέλεσης του query.

## 2.INDEX →

### CREATE Columnstore INDEX zit2

### ON user\_movies(rating)

## ΣΚΡΙΝΣΟΤΣ ΑΠΟ ΤΗΝ ΕΚΤΕΛΕΣΗ ΤΩΝ ΕΝΤΟΛΩΝ ΧΩΡΙΣ ΕΥΡΕΤΗΡΙΟ

```
(3661 rows affected)
Table 'user_movies'. Scan count 1, logical reads 2601, physical reads 2, read-ahead reads 2603, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.

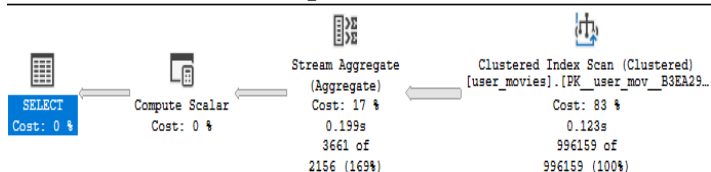
(1 row affected)

(6039 rows affected)
Table 'Worktable'. Scan count 0, logical reads 0, physical reads 0, read-ahead reads 0, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.
Table 'Workfile'. Scan count 0, logical reads 0, physical reads 0, read-ahead reads 0, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.
Table 'user_movies'. Scan count 5, logical reads 2733, physical reads 0, read-ahead reads 0, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.

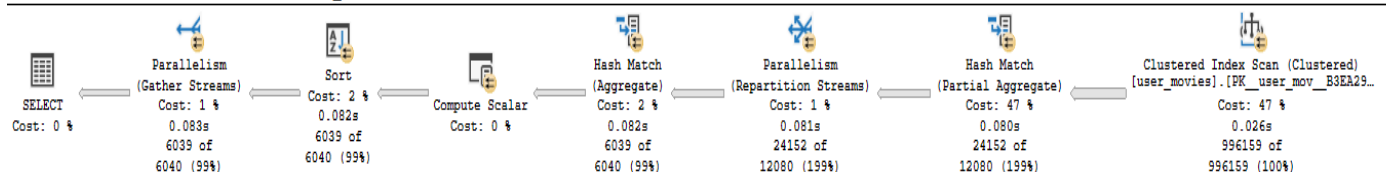
(1 row affected)

Completion time: 2021-05-03T18:11:01.1141369+03:00
```

Query 1: Query cost (relative to the batch): 41%  
select mid, count(rating) from user\_movies group by mid order by mid



Query 2: Query cost (relative to the batch): 59%  
select userid, count(rating) from user\_movies group by userid order by userid



## ΣΚΡΙΝΣΟΤΣ ΑΠΟ ΤΗΝ ΕΚΤΕΛΕΣΗ ΤΩΝ ΕΝΤΟΛΩΝ ΜΕ ΕΥΡΕΤΗΡΙΟ

```
(3661 rows affected)
Table 'user_movies'. Scan count 2, logical reads 0, physical reads 0, read-ahead reads 0, lob logical reads 598, lob physical reads 4, lob read-ahead reads 1335.
Table 'user_movies'. Segment reads 1, segment skipped 0.
Table 'Worktable'. Scan count 0, logical reads 0, physical reads 0, read-ahead reads 0, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.

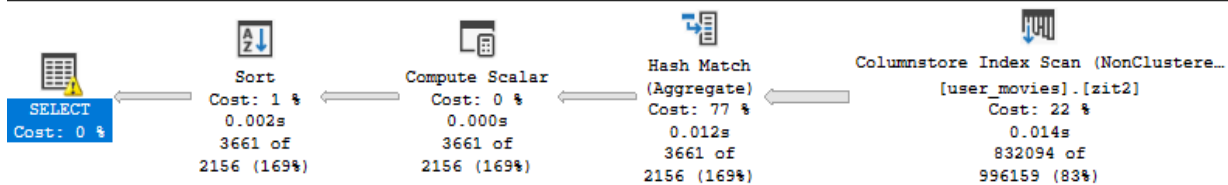
(1 row affected)

(6039 rows affected)
Table 'user_movies'. Scan count 2, logical reads 0, physical reads 0, read-ahead reads 0, lob logical reads 288, lob physical reads 0, lob read-ahead reads 0.
Table 'user_movies'. Segment reads 1, segment skipped 0.
Table 'Worktable'. Scan count 0, logical reads 0, physical reads 0, read-ahead reads 0, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.

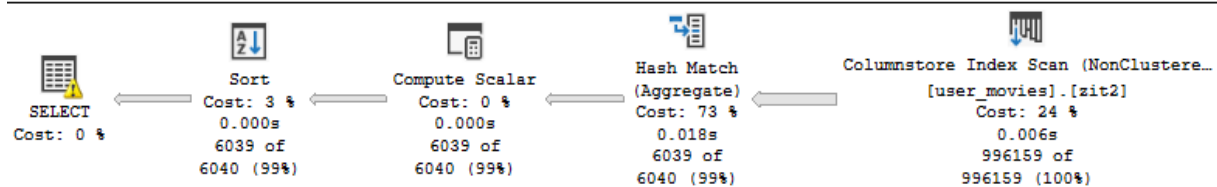
(1 row affected)

Completion time: 2021-05-03T18:20:02.5161583+03:00
```

Query 1: Query cost (relative to the batch): 48%  
select mid, count(rating) from user\_movies group by mid order by mid



Query 2: Query cost (relative to the batch): 52%  
select userid, count(rating) from user\_movies group by userid order by userid



Από τις εικόνες βλέπουμε οτι τα logical reads έχουν εκμηδενιστεί εντελώς καθώς και ο χρόνος του query έχει μειωθεί σημαντικά.

## ΖΗΤΗΜΑ ΔΕΥΤΕΡΟ

## 1.ΕΠΕΡΩΤΗΜΑ →

```
select title from movies,movies_genre  
where movies.mid=movies_genre.mid AND genre IN  
('Adventure','Action')
```

## INDEX →

```
create index zit3  
ON movies_genre(mid,genre)
```

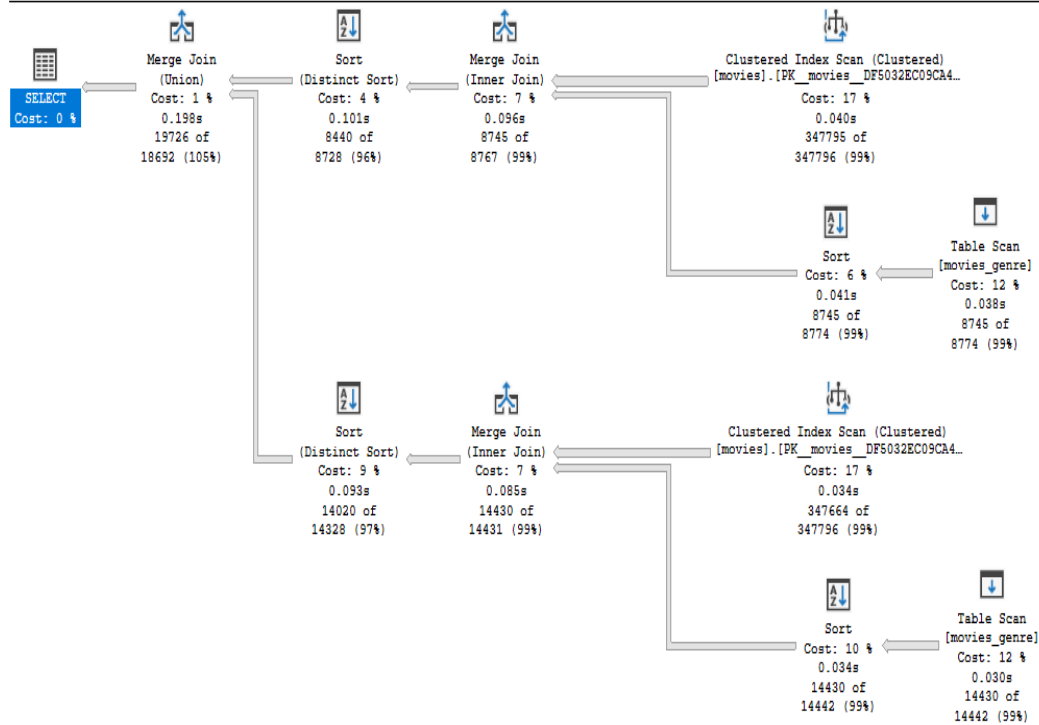
```
create index moviesind  
on movies(mid)  
include(title)
```

ΣΚΡΙΝΣΟΤΣ ΑΠΟ ΤΗΝ ΕΚΤΕΛΕΣΗ ΤΩΝ ΕΝΤΟΛΩΝ ΧΩΡΙΣ ΕΥΡΕΤΗΡΙΟ

UNION

Query 1: Query cost (relative to the batch): 100%

select title from movies, movies\_genre where movies.mid=movies\_genre.mid and genre='Adventure' UNION select title from movies, movies\_genre where a  
Missing Index (Impact 12.0712): CREATE NONCLUSTERED INDEX [<Name of Missing Index, sysname,>] ON [dbo].[movies\_genre] ([genre]) INCLUDE ([mid])



IN

(23175 rows affected)

Table 'Worktable'. Scan count 0, logical reads 0, physical reads 0, read-ahead reads 0, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.

Table 'movies\_genre'. Scan count 1, logical reads 1123, physical reads 0, read-ahead reads 1123, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.

Table 'movies'. Scan count 1, logical reads 1918, physical reads 2, read-ahead reads 1917, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.

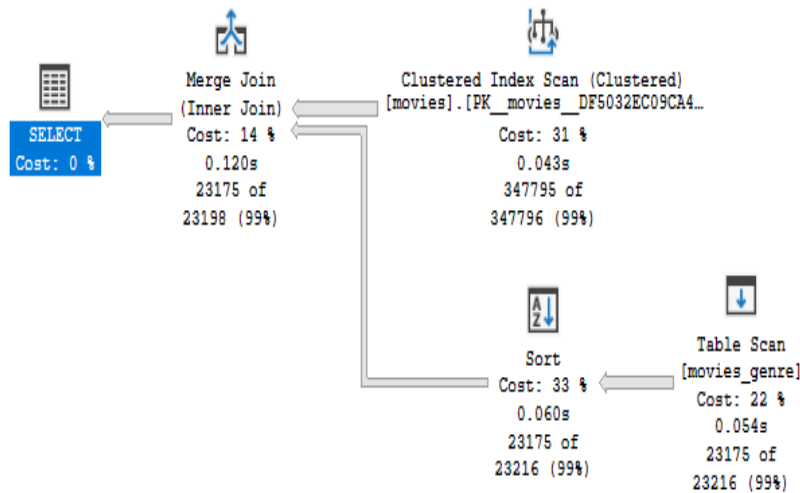
(1 row affected)

Completion time: 2021-05-06T12:07:53.6804577+03:00

Query 1: Query cost (relative to the batch): 100%

select title from movies,movies\_genre where movies.mid=movies\_genre.mid AND genre IN ('Adventure','Action')

Missing Index (Impact 22.6883): CREATE NONCLUSTERED INDEX [<Name of Missing Index, sysname,>] ON [dbo].[movies\_genre]



## ΣΚΡΙΝΣΟΤΣ ΑΠΟ ΤΗΝ ΕΚΤΕΛΕΣΗ ΤΩΝ ΕΝΤΟΛΩΝ ΜΕ ΕΥΡΕΤΗΡΙΟ

(23175 rows affected)

Table 'movies\_genre'. Scan count 1, logical reads 1374, physical reads 1, read-ahead reads 1388, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.

Table 'movies'. Scan count 1, logical reads 1399, physical reads 3, read-ahead reads 1409, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.

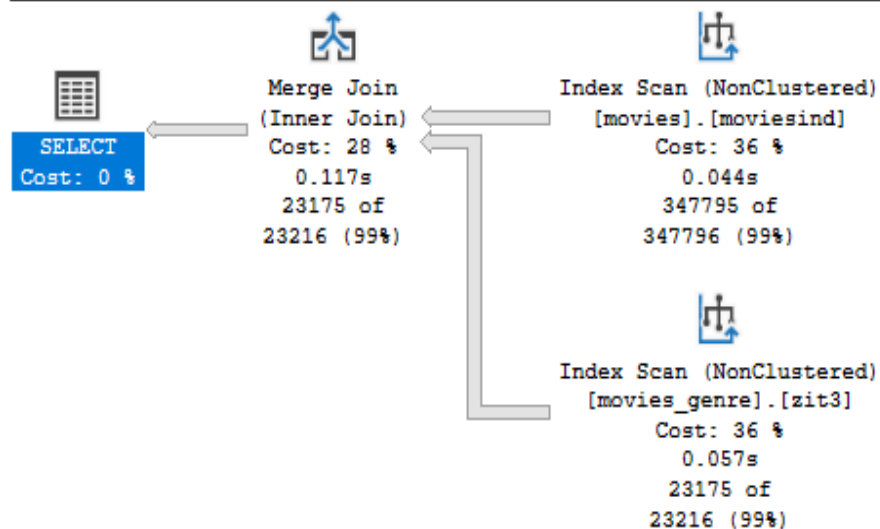
(1 row affected)

Completion time: 2021-05-06T12:11:37.4576854+03:00



Query 1: Query cost (relative to the batch): 100%

```
select title from movies,movies_genre where movies.mid=movies_genre.mid AND genr  
Missing Index (Impact 37.1993): CREATE NONCLUSTERED INDEX [<Name of Missing Inde
```



ΠΑΡΑΤΗΡΟΥΜΕ ΑΠΟ ΤΟ ΠΛΑΝΟ ΟΤΙ ΕΧΟΥΜΕ ΓΛΙΤΩΣΕΙ ΕΝΑ ΣΤΑΔΙΟ  
ΣΤΟ SORT ΚΑΘΩΣ ΕΠΙΣΗΣ ΕΧΕΙ ΜΕΙΩΘΕΙ ΕΛΑΧΙΣΤΟ ΚΑΙ Ο  
ΧΡΟΝΟΣ.ΕΠΙΣΗΣ ΤΑ LOGICAL READS ΕΧΟΥΝ ΜΕΙΩΘΕΙ ΑΡΚΕΤΑ.

## 2.ΕΠΕΡΩΤΗΜΑΤΑ →

**SELECT title**

**FROM movies,actors,roles**

**WHERE movies.mid = roles.mid AND roles.aid = actors.aid AND  
actors.gender = 'M'**

**EXCEPT**

**SELECT title**

**FROM movies,actors,roles**

**WHERE movies.mid = roles.mid AND roles.aid = actors.aid AND  
actors.gender = 'F'**

**SELECT DISTINCT title**

**FROM movies,roles,actors**

**WHERE movies.mid = roles.mid AND roles.aid = actors.aid AND  
actors.gender = 'M' AND movies.title NOT IN (SELECT movies.title  
FROM movies,actors,roles WHERE movies.mid = roles.mid AND  
roles.aid = actors.aid AND actors.gender = 'F')**

**INDEXES →**

**CREATE INDEX zit2ask2**

**ON actors(aid,gender)**

**CREATE INDEX zit2ask21**

**ON movies(mid)**

**INCLUDE(title)**

**CREATE INDEX zit2ask22**

**ON roles(mid,aid)**

**ΣΚΡΙΝΣΟΤΣ ΑΠΟ ΤΗΝ ΕΚΤΕΛΕΣΗ ΤΩΝ ΕΝΤΟΛΩΝ ΧΩΡΙΣ ΕΥΡΕΤΗΡΙΟ**

```
(37846 rows affected)
Table 'actors'. Scan count 10, logical reads 7060, physical reads 2, read-ahead reads 3362, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.
Table 'roles'. Scan count 10, logical reads 8978, physical reads 1, read-ahead reads 4422, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.
Table 'Workfile'. Scan count 16, logical reads 384, physical reads 16, read-ahead reads 368, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.
Table 'Worktable'. Scan count 0, logical reads 0, physical reads 0, read-ahead reads 0, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.
Table 'movies'. Scan count 10, logical reads 4024, physical reads 2, read-ahead reads 1917, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.

(1 row affected)

Completion time: 2021-05-06T11:32:22.2575709+03:00
```

```
(37846 rows affected)
Table 'actors'. Scan count 10, logical reads 7072, physical reads 2, read-ahead reads 3362, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.
Table 'roles'. Scan count 14, logical reads 9002, physical reads 1, read-ahead reads 4422, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.
Table 'Workfile'. Scan count 16, logical reads 384, physical reads 16, read-ahead reads 368, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.
Table 'Worktable'. Scan count 0, logical reads 0, physical reads 0, read-ahead reads 0, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.
Table 'movies'. Scan count 18, logical reads 11708, physical reads 2, read-ahead reads 1917, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.
Table 'Worktable'. Scan count 0, logical reads 0, physical reads 0, read-ahead reads 0, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.

(1 row affected)

Completion time: 2021-05-06T11:31:12.1192666+03:00
|
```

## ΣΚΡΙΝΣΟΤΣ ΑΠΟ ΤΗΝ ΕΚΤΕΛΕΣΗ ΤΩΝ ΕΝΤΟΛΩΝ ΜΕ ΕΥΡΕΤΗΡΙΟ

```
(37846 rows affected)
Table 'actors'. Scan count 10, logical reads 2360, physical reads 3, read-ahead reads 1128, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.
Table 'roles'. Scan count 14, logical reads 3872, physical reads 1, read-ahead reads 1918, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.
Table 'movies'. Scan count 18, logical reads 8542, physical reads 3, read-ahead reads 1409, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.
Table 'Workfile'. Scan count 0, logical reads 0, physical reads 0, read-ahead reads 0, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.
Table 'Worktable'. Scan count 0, logical reads 0, physical reads 0, read-ahead reads 0, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.
Table 'Worktable'. Scan count 0, logical reads 0, physical reads 0, read-ahead reads 0, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.

(1 row affected)

Completion time: 2021-05-06T11:26:56.8381136+03:00
|
```

ΤΑ ΠΛΑΝΑ ΗΤΑΝ ΠΟΛΥ ΜΕΓΑΛΑ ΓΙΑ ΝΑ ΤΑ ΚΑΝΩ CAPTURE ΜΕ ΕΝΑ ΣΚΡΙΝ ΑΛΛΑ ΟΠΩΣ ΦΑΙΝΕΤΑΙ ΚΑΙ ΑΠΟ ΤΑ LOGICAL READS ΕΧΟΥΝ ΜΕΙΩΘΕΙ ΑΡΚΕΤΑ ΚΑΙ ΕΧΟΥΜΕ ΓΛΙΤΩΣΕΙ ΠΟΛΥ ΚΟΣΤΟΣ.

## **ΖΗΤΗΜΑ ΤΡΙΤΟ**

### **1.ΕΠΕΡΩΤΗΜΑ**

**Βρες το firstname, το lastname και το ρόλο των actors που έπαιξαν στην ταινία 'We Never Sleep'**

```
SELECT firstName,lastName,a_role  
  
FROM actors  
  
JOIN roles ON actors.aid=roles.aid  
  
JOIN movies ON roles.mid=movies.mid  
  
AND movies.title='We Never Sleep';
```

**INDEX →**

```
CREATE INDEX zit3first  
  
ON movies(title)
```

```
CREATE INDEX zit3first1  
  
ON actors(firstName,lastName)
```

**ΣΚΡΙΝΣΟΤ ΑΠΟ ΤΗΝ ΕΚΤΕΛΕΣΗ ΤΩΝ ΕΝΤΟΛΩΝ ΧΩΡΙΣ ΕΥΡΕΤΗΡΙΟ**

(2 rows affected)

Table 'actors'. Scan count 0, logical reads 10, physical reads 1, read-ahead reads 16, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.

Table 'roles'. Scan count 2, logical reads 6, physical reads 3, read-ahead reads 0, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.

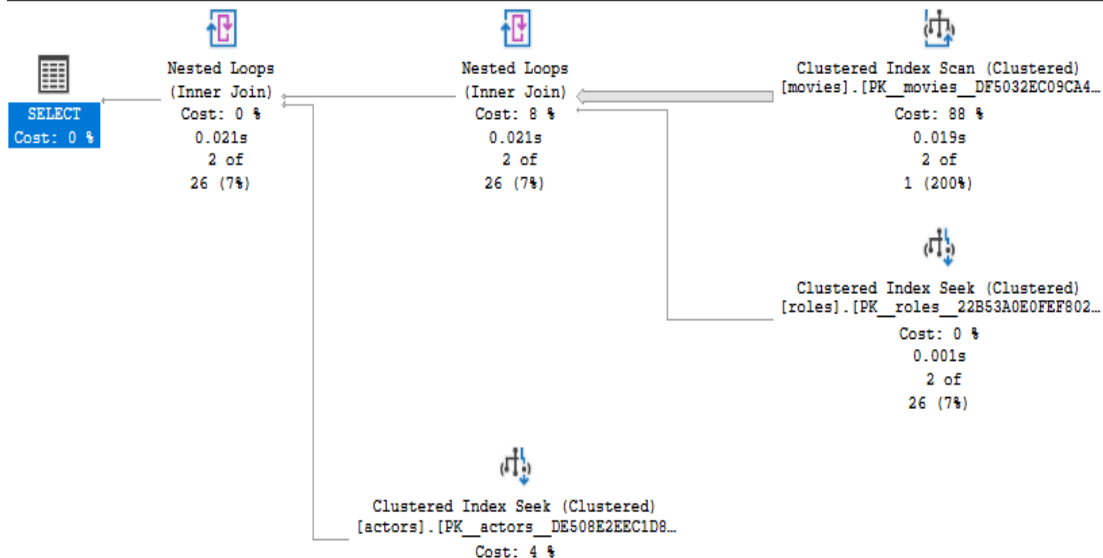
Table 'movies'. Scan count 1, logical reads 1918, physical reads 0, read-ahead reads 0, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.

(1 row affected)

Completion time: 2021-05-05T11:58:49.3592883+03:00

Query 1: Query cost (relative to the batch): 100%

SELECT firstName,lastName,a\_role FROM actors JOIN roles ON actors.aid=roles.aid JOIN movies ON roles.mid=movies.mid AND m<br/>Missing Index (Impact 95.6504): CREATE NONCLUSTERED INDEX [<Name of Missing Index, sysname,>] ON [dbo].[movies] ([title])



ΣΚΡΙΝΣΟΤΣ ΑΠΟ ΤΗΝ ΕΚΤΕΛΕΣΗ ΤΩΝ ΕΝΤΟΛΩΝ ΜΕ ΕΥΡΕΤΗΡΙΟ

(2 rows affected)

Table 'actors'. Scan count 0, logical reads 10, physical reads 1, read-ahead reads 16, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.

Table 'roles'. Scan count 2, logical reads 6, physical reads 3, read-ahead reads 0, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.

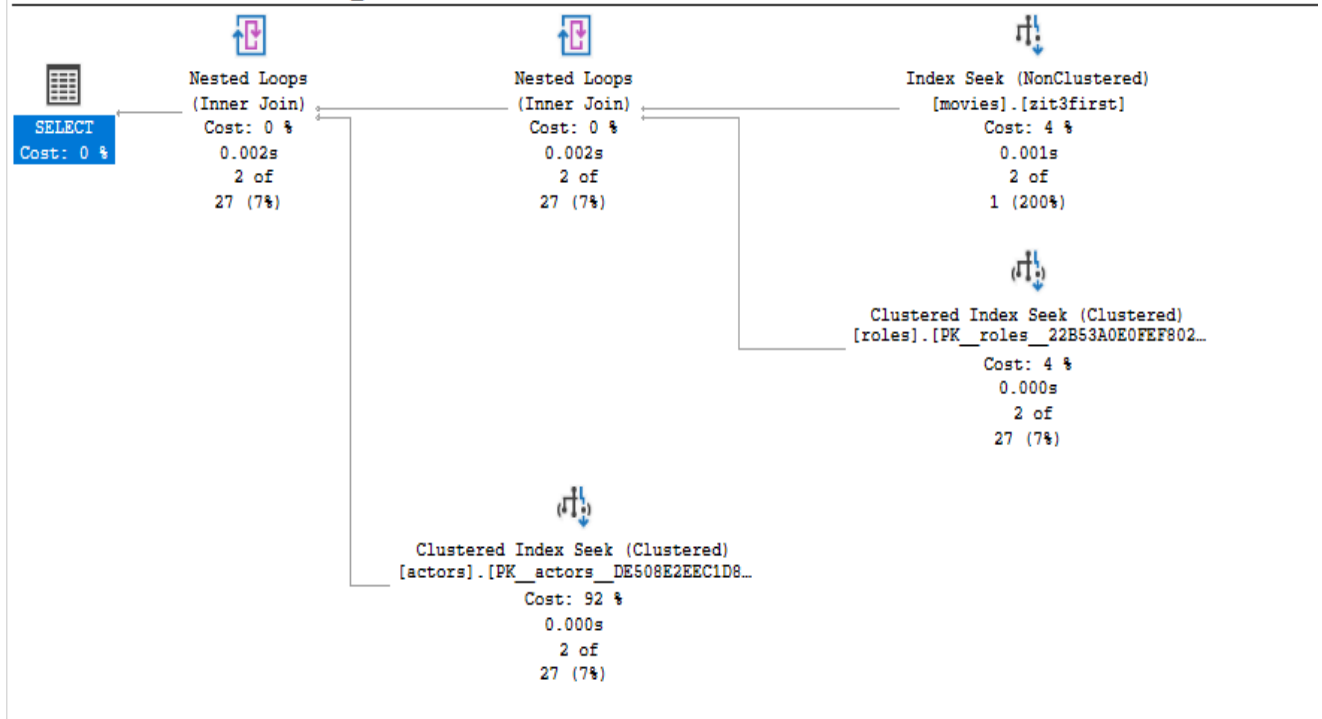
Table 'movies'. Scan count 1, logical reads 3, physical reads 3, read-ahead reads 0, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.

(1 row affected)

Completion time: 2021-05-06T12:48:37.0652037+03:00

Query 1: Query cost (relative to the batch): 100%

SELECT firstName,lastName,a\_role FROM actors JOIN roles ON actors.aid=roles.aid JOIN movies ON roles.mid=r



ΠΑΡΑΤΗΡΟΥΜΕ ΑΠΟ ΤΙ ΕΙΚΟΝΕΣ ΟΤΙ ΚΑΙ Ο ΧΡΟΝΟΣ ΕΚΤΕΛΕΣΗΣ ΕΧΕΙ ΜΕΙΩΘΕΙ ΑΡΚΕΤΑ ΑΛΛΑ ΚΑΙ ΤΑ LOGICAL READS ΕΧΟΥΝ ΕΛΑΧΙΣΤΟΠΟΙΗΘΕΙ ΣΤΟΝ ΠΙΝΑΚΑ MOVIES.

## 2.ΕΠΕΡΩΤΗΜΑ →

Βρες όλες τις χρονιές που κυκλοφόρησαν ταινίες που πήραν βαθμολογία 8 ή 9 στην κατηγορία Comedy και κάντες sort σε αύξουσα σειρά.

```
SELECT DISTINCT pyear
FROM movies,movies_genre
WHERE movies.mid = movies_genre.mid
AND genre = 'Comedy'
AND movies.mrank IN (8.0, 9.0)
ORDER BY pyear;
```

## INDEX →

```
CREATE INDEX zit3sec
ON movies(mid,pyear,mrank)
```

```
CREATE INDEX zit3sec1
ON movies_genre(genre)
```

## ΣΚΡΙΝΣΟΤΣ ΑΠΟ ΤΗΝ ΕΚΤΕΛΕΣΗ ΤΩΝ ΕΝΤΟΛΩΝ ΧΩΡΙΣ ΕΥΡΕΤΗΡΙΟ

(83 rows affected)

Table 'Worktable'. Scan count 0, logical reads 0, physical reads 0, read-ahead reads 0, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.

Table 'Workfile'. Scan count 0, logical reads 0, physical reads 0, read-ahead reads 0, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.

Table 'movies\_genre'. Scan count 1, logical reads 1123, physical reads 0, read-ahead reads 1123, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.

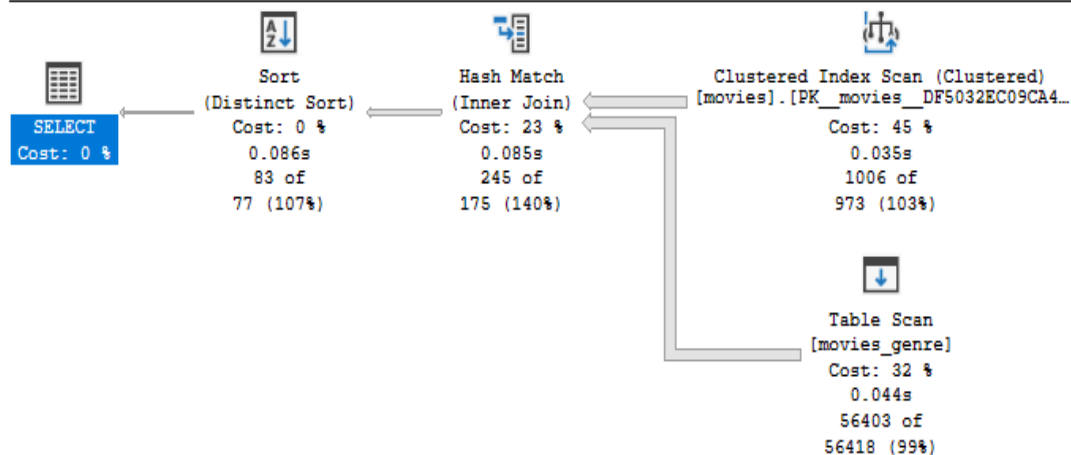
Table 'movies'. Scan count 1, logical reads 1918, physical reads 2, read-ahead reads 1917, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.

(1 row affected)

Completion time: 2021-05-05T12:35:12.0248259+03:00

Query 1: Query cost (relative to the batch): 100%

SELECT DISTINCT pyear FROM movies,movies\_genre WHERE movies.mid = movies\_genre.mid AND genre = 'Com  
Missing Index (Impact 35.2482): CREATE NONCLUSTERED INDEX [<Name of Missing Index, sysname,>] ON [d



## ΣΚΡΙΝΣΟΤΣ ΑΠΟ ΤΗΝ ΕΚΤΕΛΕΣΗ ΤΩΝ ΕΝΤΟΛΩΝ ΜΕ ΕΥΡΕΤΗΡΙΟ



(83 rows affected)

Table 'Worktable'. Scan count 0, logical reads 0, physical reads 0, read-ahead reads 0, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.

Table 'Workfile'. Scan count 0, logical reads 0, physical reads 0, read-ahead reads 0, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.

Table 'movies\_genre'. Scan count 1, logical reads 1123, physical reads 0, read-ahead reads 0, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.

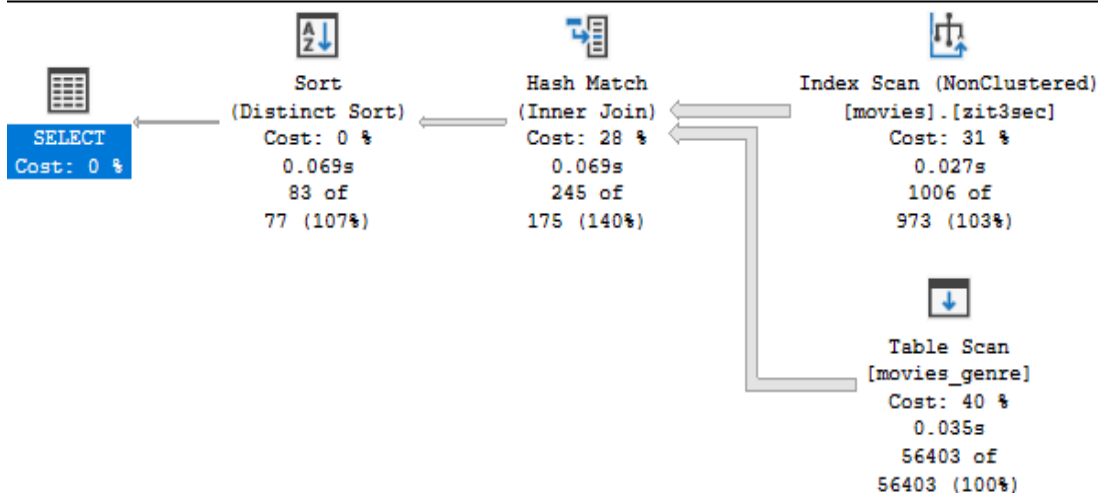
Table 'movies'. Scan count 1, logical reads 824, physical reads 0, read-ahead reads 0, lob logical reads 0, lob physical reads 0, lob read-ahead reads 0.

(1 row affected)

Completion time: 2021-05-05T12:39:34.4125743+03:00

Query 1: Query cost (relative to the batch): 100%

SELECT DISTINCT pyear FROM movies,movies\_genre WHERE movies.mid = movies\_genre.mid AND c  
Missing Index (Impact 44.2729): CREATE NONCLUSTERED INDEX [<Name of Missing Index, sysn



ΑΠΟ ΤΙΣ ΕΙΚΟΝΕΣ ΒΛΕΠΟΥΜΕ ΟΤΙ ΤΑ READS ΕΧΟΥΝ ΜΕΙΩΘΕΙ ΣΤΟΝ ΠΙΝΑΚΑ MOVIES ΚΑΘΩΣ ΚΑΙ Ο ΧΡΟΝΟΣ ΕΚΤΕΛΕΣΗΣ ΕΧΕΙ ΜΕΙΩΘΕΙ.