

**Министерство науки и высшего образования Российской Федерации**  
федеральное государственное автономное образовательное учреждение высшего  
образования  
**«НАЦИОНАЛЬНЫЙ ИССЛЕДОВАТЕЛЬСКИЙ УНИВЕРСИТЕТ ИТМО»**

**Отчет**

по лабораторной работе по теме: **“Создание представления и индексов в PostgreSQL”**  
по дисциплине **«Проектирование баз данных»**

Автор: Юрпалов С. Н.

Факультет: ИТиП

Группа: М34051



**УНИВЕРСИТЕТ ИТМО**

Санкт-Петербург 2023

## Ход работы

### Создание представления


Create - View ↗ ✕

General Definition Code Security SQL


Name

PostLikes



Owner

 postgres | ▼

Schema

 DatabaseArchitectureLabWorks | ▼

Comment

✕ Close ↺ Reset 💾 Save

Код:

```
SELECT
    p.id AS "postId",
    p.userId AS "userId",
    p.content AS content,
    p.postDate AS "postDate",
    COUNT(l.id) AS "likeCount"
FROM
    "DatabaseArchitectureLabWorks"."Post" as p
LEFT JOIN
    "DatabaseArchitectureLabWorks"."Like" as l ON p.id = l."postId"
GROUP BY
    p.id;
```

SQL запрос:

```
-- View: DatabaseArchitectureLabWorks.PostLikes

-- DROP VIEW "DatabaseArchitectureLabWorks"."PostLikes";

CREATE OR REPLACE VIEW "DatabaseArchitectureLabWorks"."PostLikes"
AS
SELECT p.id AS "postId",
       p."userId",
       p.content,
       p."postDate",
       count(DISTINCT l.id) AS "likeCount"
FROM "DatabaseArchitectureLabWorks"."Post" p
     LEFT JOIN "DatabaseArchitectureLabWorks"."Like" l ON p.id = l."postId"
GROUP BY p.id;

ALTER TABLE "DatabaseArchitectureLabWorks"."PostLikes"
    OWNER TO postgres;
```

Проверка работы:

QueryQuery History

1SELECT "postId", "userId", content, "postDate", "likeCount"

2FROM "DatabaseArchitectureLabWorks"."PostLikes";

Scratch Pad x

Data OutputMessagesNotifications

	postId integer	userId integer	content text	postDate timestamp without time zone	likeCount bigint
1	1	1	Lorem ipsum dolor sit amet, consectetur adipiscing elit. Integer eget urna ac sem tincidunt ullamcorper.	2023-09-26 14:00:00	1
2	2	3	Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Sed sit amet bi...	2023-09-26 14:15:00	1
3	3	4	Vestibulum ante ipsum primis in faucibus orci luctus et ultrices posuere cubilia Curae	2023-09-26 14:30:00	1
4	4	6	Suspendisse potenti. Cras auctor, dolor vel feugiat iaculis, justo nisi hendrerit nunc, ut ultrices libero dolor in lig...	2023-09-26 14:45:00	1
5	5	8	Nullam at nisl vel ante eleifend vehicula vel vel dui. Duis dapibus feugiat justo vel euismod.	2023-09-26 15:00:00	1
6	6	10	Fusce nec libero in nunc finibus vulputate eget at leo. Etiam auctor, ligula non sagittis.	2023-09-26 15:15:00	0
7	7	12	Curabitur scelerisque euismod arcu, non condimentum elit dictum at. Vestibulum in metus eu lectus tincidunt ...	2023-09-26 15:30:00	1
8	8	14	Aenean ut mauris eu quam iaculis semper. Sed sed erat in sapien blandit tempor sit amet non odio.	2023-09-26 15:45:00	2
9	9	16	Sed nec libero ac nunc cursus tincidunt. Proin nec magna in odio dignissim volutpat a sed lorem.	2023-09-26 16:00:00	1
10	10	3	Mauris interdum vehicula augue, non pharetra libero cursus vel. Vivamus nec metus eu enim suscipit hendrerit.	2023-09-26 16:15:00	1
11	11	5	Duis vel justo eu nisl consectetur gravida. Nulla facilisi. Curabitur hendrerit ex in dapibus.	2023-09-26 16:30:00	1
12	12	7	Phasellus ullamcorper, leo vel ultrices tincidunt, leo arcu dictum lorem, ac iaculis turpis libero eu sapien.	2023-09-26 16:45:00	0
13	13	9	In hac habitasse platea dictumst. Nunc viverra orci in ante semper, a consequat lorem posuere.	2023-09-26 17:00:00	2
14	14	11	Aenean euismod, dui et eleifend egestas, odio velit vulputate erat, sit amet consectetur nisl ante vel dolor.	2023-09-26 17:15:00	1
15	15	13	Proin auctor ante in enim tempus, id laoreet velit semper. Curabitur sed orci lacinia, laoreet libero.	2023-09-26 17:30:00	1

Назначение:

Представление PostLikes может быть необходимо для быстрого и удобного получения полной информации для отрисовки фронтенд части приложения.

Запрос будет использован для каждого поста, так что вынести его в представление считаю оптимальным.

### Создание индексов

```
CREATE INDEX "IndexPostUserData"
  ON "DatabaseArchitectureLabWorks"."Post" USING btree
  ("userId" DESC NULLS LAST, "postDate" DESC NULLS LAST)
  WITH (deduplicate_items=True)
  TABLESPACE pg_default;

CREATE INDEX "IndexCommentUserData"
  ON "DatabaseArchitectureLabWorks"."Comment" USING btree
  ("postId" DESC NULLS LAST, "userId" DESC NULLS LAST, "commentDate" DESC NULLS LAST)
  WITH (deduplicate_items=True)
  TABLESPACE pg_default;
```

Тестирование:

SET enable\_seqscan = off;

Query

Query History

1 EXPLAIN SELECT \* FROM "DatabaseArchitectureLabWorks"."Post" WHERE "postDate" < '2023-10-01' AND "userId" = 3;

Data Output

Messages

Notifications

QUERY PLAN

text

1 Index Scan using "IndexPostUserData" on "Post" (cost=0.14..8.17 rows=2 width=120)

2 Index Cond: (("userId" = 3) AND ("postDate" < '2023-10-01 00:00:00':timestamp without time zo...

1 EXPLAIN SELECT \* FROM "DatabaseArchitectureLabWorks"."Comment" WHERE "commentDate" < '2023-10-01' AND "postId" = 15;

Data Output

Messages

Notifications

QUERY PLAN

text

1 Index Scan using "IndexCommentUserData" on "Comment" (cost=0.14..8.15 rows=1 width=52)

2 Index Cond: (("postId" = 15) AND ("commentDate" < '2023-10-01 00:00:00':timestamp without time zo...