

A6: Indices, triggers, user functions and population

SegFault is a collaborative platform for programmers to learn, discuss different approaches, present ideas and share knowledge in a Q&A style.

To this end, the following sections provide detailed insight into the inner workings of the project's database. The first section depicts the expected workload on the system, the second section specifies and explains the proposed indices to the database, and the third section comprises the database's triggers.

1. Database Workload

A study of the predicted system load (database load), organized in subsections.

1.1. Tuple Estimation

Estimate of tuples at each relation.

Relation reference	Relation Name	Order of magnitude	Estimated growth
R01	Table1	units	dozens
R02	Table2	units	dozens
R03	Table3	units	dozens
R04	Table4	units	dozens

1.2. Frequent Queries

Most important queries (SELECT) and their frequency.

Query reference	SELECT01	Query description	One sentence describing the query goal	Query frequency	magnitude per time		—————
—————		SQL code					

1.3. Frequent Updates

Most important updates (INSERT, UPDATE, DELETE) and their frequency.

Query reference	UPDATE01	Query description	One sentence describing the query goal	Query frequency	magnitude per time		—————
—————		SQL code					

2. Proposed Indices

2.1. Performance Indices

Indices proposed to improve performance of the identified queries.

Index reference	IDX01	Related queries	SELECT01, ...	Index relation
Relation where the index is applied	Index attribute	Attribute where the index is applied	Index type	B-tree, Hash, GiST or GIN
Cardinality	Attribute cardinality: low/medium/high	Clustering	Clustering of the index	
	_____	_____	Justification	Justification for the proposed index
	_____	_____	SQL code	

2.2. Full-text Search Indices

The system being developed must provide full-text search features supported by PostgreSQL. Thus, it is necessary to specify the fields where full-text search will be available and the associated setup, namely all necessary configurations, indexes definitions and other relevant details.

Index reference	IDX01	Related queries	SELECT01, ...	Index relation
Relation where the index is applied	Index attribute	Attribute where the index is applied	Index type	B-tree, Hash, GiST or GIN
Clustering	Clustering of the index		_____	Justification
Justification for the proposed index		_____	_____	
SQL code				

3. Triggers

User-defined functions and trigger procedures that add control structures to the SQL language or perform complex computations, are identified and described to be trusted by the database server. Every kind of function (SQL functions, Stored procedures, Trigger procedures) can take base types, composite types, or combinations of these as arguments (parameters). In addition, every kind of function can return a base type or a composite type. Functions can also be defined to return sets of base or composite values.

Trigger reference	TRIGGER01	Trigger description	Trigger description, including reference to the business rules involved	_____
_____	SQL code			

4. Complete SQL Code

The database script must also include the SQL to populate a database with test data with an amount of tuples suitable for testing and with plausible values for the fields of the database. This code should also be included in the group's github repository as an SQL script, and a link include here.

Revision history

Changes made to the first submission: 1. Item 1 1. Item 2

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