**6.1 Return the number of transformers with a given primary voltage by locality:**

In this section, the main goal was to optimize the query that returns the number of transformers with a given primary voltage by locality.

DROP INDEX IF EXISTS t\_p\_idx;  
CREATE INDEX t\_p\_idx ON transformer USING BTREE(pv);

It was created a B+ Tree method to solve this problem. A Balanced Tree is a tree structure that auto-adapts with inserts and deletes to keep balanced ensuring that all (leaf) nodes are at the same depth.

**6.2 List all descriptions of line incidents that start with a given prefix within two points in time:**

In this section, the main goal was to optimize the query that lists all the descriptions of line incidents that start with a given prefix within two points in time. One example of the query can be:

SELECT id, description  
FROM incident  
WHERE instant BETWEEN '2020-10-14 08:39:42.000' AND '2020-10-18 06:36:52.000'  
AND description LIKE 'Burns and Fall';

It was created a composite index on <instant, description> and it was used the B+ Tree method. The index entries are ordered by the search key value kept in a hierarchical search structure. Two separate indexes on instant and description work as well. Although, composite index is faster.