

```
SELECT * FROM t
  USE INDEX (index1)
  IGNORE INDEX (index1) FOR ORDER BY
  IGNORE INDEX (index1) FOR GROUP BY
  WHERE ... IN BOOLEAN MODE ... ;

SELECT * FROM t
  USE INDEX (index1)
  WHERE ... IN BOOLEAN MODE ... ;
```

8.9.5 The Optimizer Cost Model

To generate execution plans, the optimizer uses a cost model that is based on estimates of the cost of various operations that occur during query execution. The optimizer has a set of compiled-in default “cost constants” available to it to make decisions regarding execution plans.

The optimizer also has a database of cost estimates to use during execution plan construction. These estimates are stored in the `server_cost` and `engine_cost` tables in the `mysql` system database and are configurable at any time. The intent of these tables is to make it possible to easily adjust the cost estimates that the optimizer uses when it attempts to arrive at query execution plans.

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Cost Model General Operation

The configurable optimizer cost model works like this:

- The server reads the cost model tables into memory at startup and uses the in-memory values at runtime. Any non-`NULL` cost estimate specified in the tables takes precedence over the corresponding compiled-in default cost constant. Any `NULL` estimate indicates to the optimizer to use the compiled-in default.
- At runtime, the server may re-read the cost tables. This occurs when a storage engine is dynamically loaded or when a `FLUSH OPTIMIZER_COSTS` statement is executed.
- Cost tables enable server administrators to easily adjust cost estimates by changing entries in the tables. It is also easy to revert to a default by setting an entry's cost to `NULL`. The optimizer uses the in-memory cost values, so changes to the tables should be followed by `FLUSH OPTIMIZER_COSTS` to take effect.
- The in-memory cost estimates that are current when a client session begins apply throughout that session until it ends. In particular, if the server re-reads the cost tables, any changed estimates apply only to subsequently started sessions. Existing sessions are unaffected.
- Cost tables are specific to a given server instance. The server does not replicate cost table changes to replicas.

The Cost Model Database

The optimizer cost model database consists of two tables in the `mysql` system database that contain cost estimate information for operations that occur during query execution:

- `server_cost`: Optimizer cost estimates for general server operations