# Chapter 5 Query Compiler

In this Chapter, we introduce the Query Compiler and the architecture of Optimizer. There must have three steps in the Query Optimizer:

1. Proceeding Grammatical Analysis by using SQL, which means we need to convert the Query Statement to the Grammatical Tree which represents the Query Structure by using some kind of Query Statement.

*Explanation:*

*( This step is the subject of Grammatical Analysis. The result of this step is to get a Grammatical Tree from Query Statement. )*

1. Convert the Grammatical Tree to Relational Algebra Expression, which is called Logic Query Plan.

*Explanation:*

*( When we choose the Logical Query Plan, there have several chances to apply several different Algebra Query Plan, then the aim is to choose the best one. )*

1. The Logic Query Plan must be converted to the Physics Query Plan. Here Physics Query Plan includes:

* The Operations that need to be executed.
* The Operation Sequence.
* The Algorithm that operates on each step.
* How to get the stored data.
* How to pass the data from one operation to another.

*Explanation:*

*( When we generate the Physics Query Plan from the Logical Query Plan, we must need to estimate the Cost for each possible option. )*