Dependency parsing is a technique used in the field of Natural Language Processing (NLP) that aims to discover the syntactic structure of a sentence by establishing relationships between "head" words and words that modify those heads. Its goal is to analyze the grammatical structure of a sentence, identifying relationships between "parent" and "child" words in a sentence. These relationships are represented as dependencies, which are directed links connecting a head to its dependents.

The output of a dependency parser is typically a dependency tree (or graph in the case of non-projective sentences). This tree represents the syntactic structure of the sentence, where nodes correspond to the words, and the edges represent the dependencies between them. Each dependency is labeled with the type of grammatical relationship it represents (e.g., subject, object, modifier).

For example, in the sentence "The quick brown fox jumps over the lazy dog," a dependency parser might identify "jumps" as the main verb (root of the tree) and then connect it with its subject ("fox") and the object of the preposition ("dog"), among other relationships. The parser would label these connections with the appropriate grammatical roles, illustrating how the words in the sentence depend on each other to convey meaning.

Dependency parsing is crucial for many NLP tasks, including machine translation, sentiment analysis, information extraction, and question answering, because understanding the grammatical structure of sentences is often essential for these applications to correctly interpret the meaning of text.