The boolean satisfaction problem (SAT) is one of the most important and most studied problems of artificial intelligence. Many theoretical and real life problems are transformed to SAT and solved using a SAT solver. During the research for this thesis two SAT solvers were developed. They are described and compared with several of today's state-of-art SAT solvers. The presented solvers in many cases outperform the 2007's SAT competition winner R-sat and other famous SAT solvers. These two new solvers thank their speed to the implementation techniques used and to their decision heuristic, which is very efficient while absolutely costless.