
Summary of Chapter 11

A TM is like an FA, but it has an infinite tape. The input starts on tape surrounded by blank cells denoted Δ .

The program of a TM is: depending on the symbol under the head and the state, the machine writes a symbol, moves left or right or stays in place, and/or changes state.

Once a TM enters the accept state, it stops.

Summary of Chapter 12

A normal TM can simulate a TM with a one-way infinite tape, with multiple tapes, etc.

A nondeterministic TM is no more powerful than a normal one.

Church's thesis says that there is an algorithm for a problem if and only if there is a TM for it.

A TM can simulate a normal computer.

A universal TM is one that can execute any other TM as an input.

Summary of Chapter 13

Recursive languages are accepted by TMs that always halt.

R.e. languages are accepted by TMs.

A problem is decidable if the associated language is recursive.

Both recursive and r.e. languages are closed under intersection and union.

If a language is recursive, then so is its complement.

If both a language and its complement are r.e., then the language is recursive.

There is a connection with Printer-TMs.

All problems about FAs and REs are decidable.

Most problems about CFGs and PDAs are decidable.

A computation string is a record of the computation of a machine.