Regular Expressions and Languages

#### Regular Expressions and Languages

We can recursively define **Regular Expression**,  
For each regular Expression , the language it represent is .

**BASIS**: The basis consist of three parts:

* The constant and are regular expressions, denoting the languages and respectively. That is, , and .
* If a is any symbol, then **a** is a regular expression. This expression denotes the language . That is, .
* A variable, usually capitalized and italic, like , is a variable, representing any language.

**INDUCTION**: There are four parts to the inductive step:

* If and are regular expressions, then is a regular expression denoting the union of and . .
* If and are regular expressions, then is a regular expression denoting the concatenation of and . .
* If is a regular expression then is a regular expression, denoting the closure of . .
* If is a regular expression, then , a parenthesized , is also a regular expression, denoting the same language as .

Finite Automata and Regular Expression  
Theory Of Computation