Lecture 2.

Formal language: a symbolic representation of language

Letters: symbols. e.g. $a, b, c, x, y, z, \alpha, \beta, \gamma \dots$

alphabet: the set of letters.

ε : the empty word

$|w|$: length of the word. e.g. $|abc| = 3$, $|\varepsilon| = 0$

$|w|_c$: number of times c appear in w.

e.g. $|caabbba|_a = 2$.

xy : the sequence of all letters in x followed by all letters in y.

e.g. $x = xx$ $y = yxy$ $xy = xxyxy$.

x^i : repetition of x for i times.

$x^0 = \varepsilon$ $x^1 = x$ $x^2 = xx \dots$

given the word $w = xyz$

y is the subword of w.

given the word $w = xy$.

no subword.

x is the suffix of w

y is the prefix of w.

$(xy)^R$: reversal of the word, $(xy)^R = x^R y^R$.