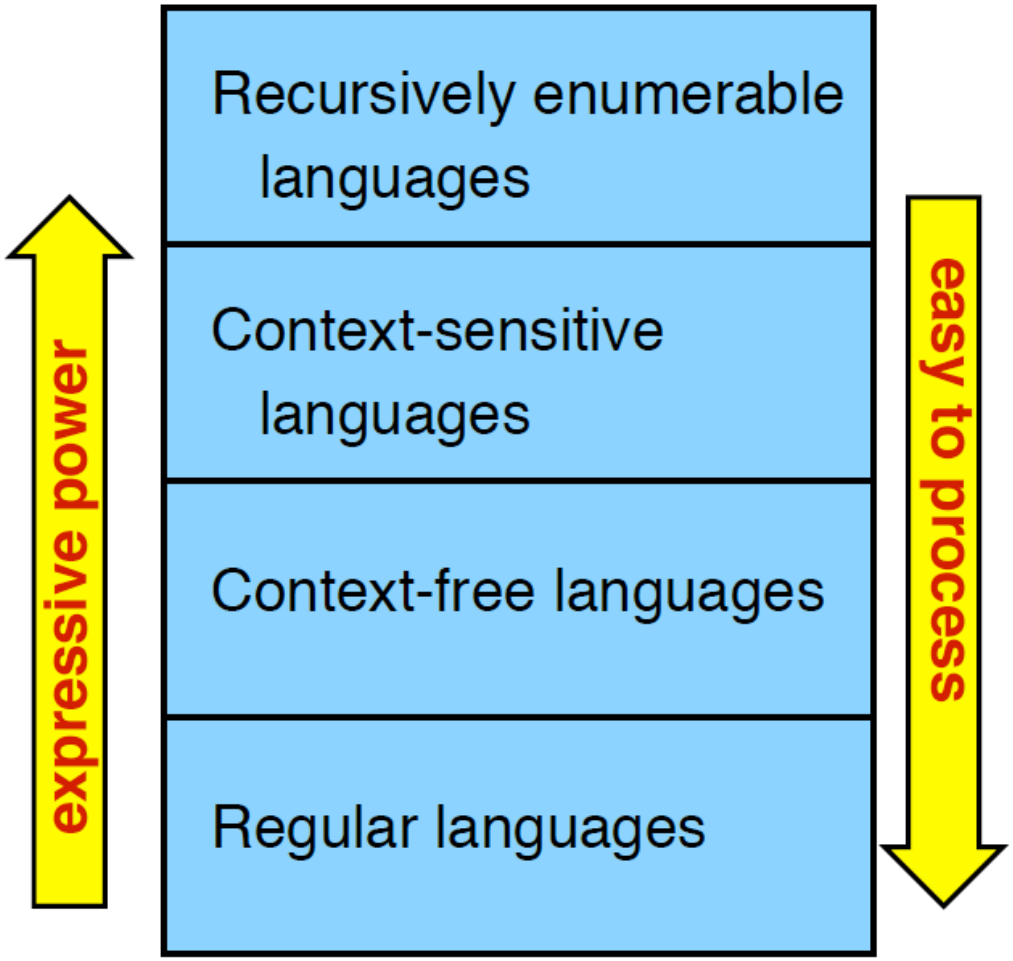
Recursively enumerable languages
Context-sensitive languages
Context-free languages
Regular languages
expressive power
easy to process

General* grammars

Productions: u → v

where u, v are strings of variables and terminals

Ex:

S → aBc

aB →cA

Ac →d

A language generated by a unrestricted grammar is *recursively enumerable*

* Or Unrestricted or Phrase structure grammars

Context-Dependent* grammars

Productions: u → v

where u, v are strings of variables and terminals and

|u| < |v|

Ex: S→abc | aAbc

Ab → bA

Ac →Bbcc

bB →Bb

aB →aa | aaA

$L = \{a^n b^n c^n\}$

*or contenxt-sensitive

Context-Free grammars

Productions: $A \rightarrow v$

Where A is a variable and v is a strings of variables and terminals

Ex: $S \rightarrow ab \mid aSb$ $\quad\quad$ $L = \{a^n b^n\}$

Regular grammars

Productions: $A \rightarrow v$

Where A is a variable and v is a strings of variables and terminals

Ex: $S \rightarrow aS$ $\quad\quad$ $L = \{a^n\}$