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### AICS3 Exercise: AN ACTIVE CHART PARSER

Define the function:

chartparse: cfg X list of atom -> chart

where:

cfg is a context-free grammar (+ lexicon) in some reasonable format

list of atom is a list of words to be parsed (a putative sentence)

chart is a list (or possibly a database, if you are working in Prolog) of partial and complete constituents that can be built from the string of words and that are well-formed according to the grammar. Constituents are triples (dotted rule, start\_position, end\_position) or something equivalent.

### References

'Language as a cognitive process' sections 3.6 T. Winograd, Addison-Wesley 1983

AICS3 NLP Handouts 5 and 6

How to proceed:

- a) understand the limitations and inefficiencies of parsing with definite clause grammars using the prolog interpreter as a top-down parser
- b) study the handout and if necessary the Winograd reference, and understand the chart parsing algorithm
- c) design and implement the basic chart parsing algorithm in the language of your choice, concerning yourself in the first instance with recognition only. This involves (inter alia)
  - i) choosing format for grammar rules and lexical entries ✓
  - ii) choosing format for chart ✓
  - iii) choosing format for agenda
  - iv) coding the algorithm
- d) test your program on a reasonable grammar
- e) if you feel keen, augment your program to allow structures corresponding to successful parses to be extracted from the chart.