Happy Valentine’s Day!

Have a chocolate.

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Undergraduate Research Scholarship
- $1000
- Do a research project with a faculty member and enroll for 3 research credits
- google: regelson scholarship

Example Ambiguous Grammars: SableCC errors

Plan for Today

Debugging shift/reduce errors

Recursive descent or predictive parsing
- example predictive parser
- FIRST and FOLLOW sets revisited
- constructing a predictive parser table

Example Predictive Parser
nullable(X)
- X is a nonterminal
- nullable(X) is true if X can derive the empty string

FIRST
- FIRST(ε) = {ε}, where ε is a terminal
- FIRST(X) = U FIRST(rhs_i), where X is a nonterminal and X -> rhs_i
  - union all of FIRST(sym) on rhs up to and including first nonnullable

FOLLOW(Y), only relevant when Y is a nonterminal
- look for Y in rhs of rules (lhs -> rhs) and union all FIRST sets for symbols after Y up to and including first nonnullable
- if all symbols after Y are nullable then also union in FOLLOW(lhs)

Constructing the Predictive Parser Table
Algorithm
for each X -> gamma
  for each T in FIRST(gamma)
    table[X,T] = X->gamma
  if gamma is nullable
    for each T in FOLLOW(X)
      table[X,T] = X->gamma

S -> Mesh EOF
Mesh -> num NodeList num ElemList
NodeList -> ε | Node NodeList
Node -> node num real real // node_id, x, y
ElemList -> ε | Elem ElemList
Elem -> tri num num num num // elem_id, 3 node ids
Elem -> sqr num num num num // elem_id, 4 node ids