Structure of the presentation

[Cornelia Kempa]

1) Building the recognition table
    1.1)   Building the recognition table using a CF grammar which is NOT in CNF
        1.1.1) *informally (blue background)*
        1.1.2) *formally (pink background)*
    1.2)   Building the recognition table using a CF grammar which IS in CNF
          (green background)
    1.3)   General thing

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2) Undoing the effect of the CNF transformation.
    2.1)   Overview
    2.2)   Adding removed elements
    2.3)   Parsing
        2.3.1) Methodology
        2.3.2) Left-most derivation
3) A short retrospective of CYK
4) Chart Parsing

Terminology

- i index we are starting at
- l length of this substring
- R s i,l set of Non-Terminals deriving the substring s i, l
- S i, 0 = ε
- Set of Non-Terminals that derive ε :
  R s i,0 = R ε

Example Grammars

A) OUR SAMPLE GRAMMAR

```
Number_S  ->  Integer | Real
Integer   ->  Digit | Integer Digit
   Real   ->  Integer Fraction Scale
Fraction  ->  . Integer
  Scale   ->  e Sign Integer | Empty
  Digit   ->  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9
  Empty   ->  ε
   Sign   ->  + | -
```

B) OUR SAMPLE GRAMMAR IN CNF

```
Number_S   ->  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9
Number_S   ->  Integer Digit
Number_S   ->  N1 Scale' | Integer Fraction
     N1    ->  Integer Fraction
Integer    ->  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9
Integer    ->  Integer Digit
Fraction   ->  T1 Integer
     T1    ->  .
  Scale'   ->  N2 Integer
     N2    ->  T2 Sign
     T2    ->  e
  Digit    ->  0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9
   Sign    ->  + | -
```

Recognition table 1

l	3/1	2/2	./3	5/4	e/5	+/6	1/7
7	Number						
6	Ø	Number					
5	Ø	Ø	Ø				
4	Number, N1	Ø	Ø	Ø			
3	Ø	Number, N1	Ø	Ø	Scale'		
2	Number, Integer	Ø	Fraction	Ø	N2	Ø	
1	Number, Integer, Digit	Number, Integer, Digit	T1	Number, Integer, Digit	T2	Sign	Number, Integer, Digit

$i \longrightarrow$

Recognition table 2

l	3/1	2/2	./3	5/4	e/5	+/6	1/7	8
7	Number, Real							
6	Ø	Number, Real						
5	Ø	Ø	Ø					
4	Number, Real, N1	Ø	Ø	Ø				
3	Ø	Number, Real, N1	Ø	Ø	Scale', Scale			
2	Number, Integer	Ø	Fraction	Ø	N2	Ø		
1	Number, Integer, Digit	Number, Integer, Digit	T1	Number, Integer, Digit	T2	Sign	Number, Integer, Digit	
0	Scale, Empty	Scale, Empty	Scale, Empty	Scale, Empty	Scale, Empty	Scale, Empty	Scale, Empty	Scale, Empty

$i \longrightarrow$

Recognition table 3

Number — Number — Number — N1 — Number — N1 — Number Integer — Fraction — Scale' — N2 — Number Integer Digit — Number Integer Digit — T1 — Number Integer Digit — T2 — Sign — Number Integer Digit

3 2 . 5 e + 1