Formula Formats

Serena Booth

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These formatting instructions are summaries of those presented alongside Adnan Darwiche's c2d compiler: http://reasoning.cs.ucla.edu/c2d/

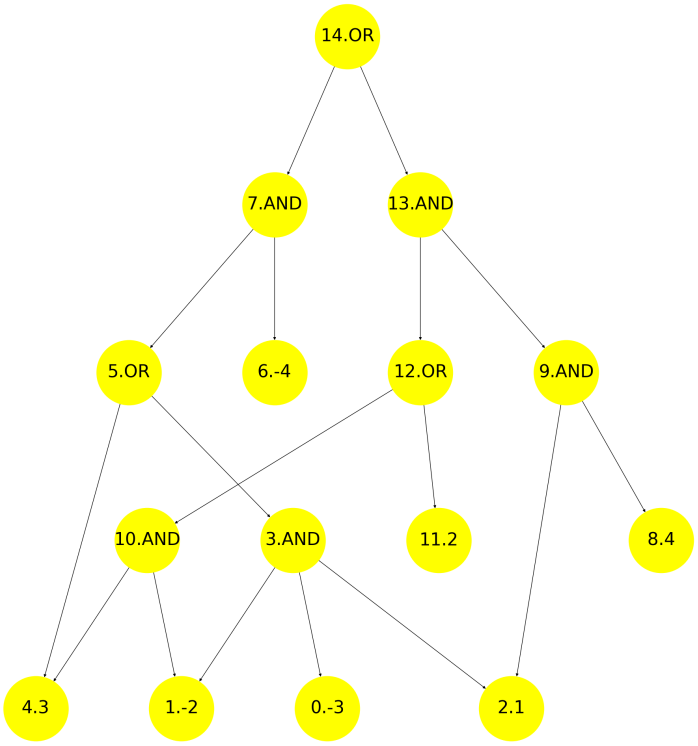
1 .cnf files

```
c this line is a comment
p cnf 4 4
1 2 3 0
-2 3 4 0
1 -4 0
2 3 -4 0
```

- A line beginning with "c" is a human-readable comment
- A line beginning with "p cnf" is of the form "p cnf n m", where n is the number of variables and m is the number of clauses in the CNF sentence.
- Each subsequent line describes a clause. The form is "[−]v_1 [−]v_2 ... [−]v_n 0". Each of v_1 through v_n is a variable. [−] means the variable is negated. For example, the line 1 2 3 0 corresponds to the clause $(1 \vee 2 \vee 3)$.
- The above cnf example is the sentence:

$$(1 \vee 2 \vee 3) \wedge (-2 \vee 3 \vee 4) \wedge (1 \vee -4) \wedge (2 \vee 3 \vee -4)$$

2 .nnf files



Example contents of a .nnf file, which generates the above NNF Sentence:

```
c this is a test nnf sentence
nnf 15 17 4
L -3
L -2
L 1
A 3 2 1 0
L 3
O 3 2 4 3
L -4
A 2 6 5
L 4
A 2 2 8
A 2 1 4
L 2
O 2 2 11 10
A 2 12 9
O 4 2 13 7
```

- A line beginning with "c" is a human-readable comment
- A line beginning with "nnf" is of the form "nnf v e n", where v is the number of nodes, e is the number of edges, and n is the number of variables in the nnf sentence.
- A line beginning with "L" indicates a leaf of the form "L [-]j". j is the variable; -j is the negated variable. j must be ≥ 1
- *The indices of the statements are especially important.* Comments do not have an associated index. The "nnf" line likewise does not have an associated index. Starting with the first "L" "O" or "A" line, each row is indexed from 0.
- "A 0 ..." means True; "O j 0" means False.
- A line beginning with "O" indicates an OR statement of the form "O j c i_1 i_2 ... i_c". c is the number of children of the node. i_1 ... i_c are indices of lines, representing variables, ANDs or ORs. j is a "conflict indicator." If $j == 0$, it is ignored. If $j > 0$, then j represents the **variable** stored as the value of a leaf, c must be equal to 2, and the two children of the or–node are guaranteed to conflict on variable j; that is, one of them must imply j and the other must imply $-j$.
- A line beginning with "A" indicates an AND statement of the form "A c i_1 i_2 ... i_c". c is the number of children of the node. i_1 ... i_c are indices of lines, representing variables, ANDs or ORs.