1*   Intro.   This quickie outputs clauses that are unsatisfiable because they state that there exists a partial ordering on m elements in which no element is maximal. (All backtrack proofs of this fact are known to require $\Omega(2^m)$ steps.)

Variable $j.k$ means that $j \prec k$ in the partial ordering.

This variant uses only the special cases of transitivity where $i < j$ and $k < j$.

#**include** `<stdio.h>`
#**include** `<stdlib.h>`
  int m;

  $main(\textbf{int } argc, \textbf{char } *argv[\,])$
  {
    register i, j, k;

    $\langle$ Process the command line 2^* $\rangle$;
    $\langle$ Generate the clauses for irreflexivity 3 $\rangle$;
    $\langle$ Generate the clauses for transitivite 4^* $\rangle$;
    $\langle$ Generate the clauses for nonmaximality 5 $\rangle$;
  }

2* $\langle$ Process the command line 2^* $\rangle \equiv$
  if $(argc \neq 2 \vee sscanf(argv[1], \texttt{"\%d"}, \&m) \neq 1)$ {
    $fprintf(stderr, \texttt{"Usage:}_\sqcup\texttt{\%s}_\sqcup\texttt{m\textbackslash n"}, argv[0])$;
    $exit(-1)$;
  }
  $printf(\texttt{"\textasciitilde}_\sqcup\texttt{sat-poset-nomax-a}_\sqcup\texttt{\%d\textbackslash n"}, m)$;
This code is used in section 1*.

3. $\langle$ Generate the clauses for irreflexivity 3 $\rangle \equiv$
  for $(j = 1; \ j \leq m; \ j\texttt{++}) \ printf(\texttt{"\textasciitilde\%d.\%d\textbackslash n"}, j, j)$;
This code is used in section 1*.

4* $\langle$ Generate the clauses for transitivite 4^* $\rangle \equiv$
  for $(i = 1; \ i \leq m; \ i\texttt{++})$
    for $(j = 1; \ j \leq m; \ j\texttt{++})$
      if $(i < j)$ {
        for $(k = 1; \ k \leq m; \ k\texttt{++})$
          if $(k < j)$ {
            $printf(\texttt{"\textasciitilde\%d.\%d}_\sqcup\texttt{\textasciitilde\%d.\%d}_\sqcup\texttt{\%d.\%d\textbackslash n"}, i, j, j, k, i, k)$;
          }
      }
This code is used in section 1*.

5. $\langle$ Generate the clauses for nonmaximality 5 $\rangle \equiv$
  for $(j = 1; \ j \leq m; \ j\texttt{++})$ {
    for $(k = 1; \ k \leq m; \ k\texttt{++}) \ printf(\texttt{"}_\sqcup\texttt{\%d.\%d"}, j, k)$;
    $printf(\texttt{"\textbackslash n"})$;
  }
This code is used in section 1*.

6*. Index.

The following sections were changed by the change file: 1, 2, 4, 6.

⟨ Generate the clauses for irreflexivity 3 ⟩   Used in section 1*.
⟨ Generate the clauses for nonmaximality 5 ⟩   Used in section 1*.
⟨ Generate the clauses for transitivite 4* ⟩   Used in section 1*.
⟨ Process the command line 2* ⟩   Used in section 1*.

SAT-POSET-NOMAX-A