November 24, 2020 at 13:23

1.   Intro.   Given n, generate BDDL to compute a representation of all restricted growth sequences $a_1 \ldots a_n$ (and thus of all set partitions of $\{1, \ldots, n\}$).

#define $maxn$ 500

#include <stdio.h>
#include <stdlib.h>
  int n;
  int $subscr[maxn + 1][maxn]$;   /∗ allocation of variable subscripts ∗/
  $main(\textbf{int } argc, \textbf{char } *argv[\,])$
  {
    register int i, j, k;
    if $(argc \neq 2 \vee sscanf(argv[1], \texttt{"\%d"}, \&n) \neq 1 \vee n \leq 0)$ {
      $fprintf(stderr, \texttt{"Usage:}_\sqcup\texttt{\%s}_\sqcup\texttt{n\\n"}, argv[0])$;
      $exit(-1)$;
    }
    $printf(\texttt{"\#}_\sqcup\texttt{beginning}_\sqcup\texttt{the}_\sqcup\texttt{output}_\sqcup\texttt{of}_\sqcup\texttt{BDDL-RGROWTH}_\sqcup\texttt{\%d\\n"}, n)$;
    for $(i = 0, k = n;\ k;\ k--)$
      for $(j = 0;\ j < k;\ j++)\ subscr[k][j] = i++$;
    for $(j = 1;\ j \leq n;\ j++)\ printf(\texttt{"f\%d=c1\\n"}, j)$;
    for $(k = n;\ k;\ k--)$
      for $(j = 1;\ j < k;\ j++)$ {
        $printf(\texttt{"f0=x\%d?f\%d:c0\\n"}, subscr[k][0], j)$;
        $printf(\texttt{"f\%d=x\%d?c0:f\%d\\n"}, maxn, subscr[k][0], j + 1)$;
        $printf(\texttt{"f\%d=x\%d?c0:f\%d\\n"}, maxn + 1, subscr[k][0], j)$;
        for $(i = 1;\ i < j;\ i++)$ {
          $printf(\texttt{"f0=x\%d?f\%d:f0\\n"}, subscr[k][i], maxn + 1)$;
          $printf(\texttt{"f\%d=x\%d?c0:f\%d\\n"}, maxn, subscr[k][i], maxn)$;
          $printf(\texttt{"f\%d=x\%d?c0:f\%d\\n"}, maxn + 1, subscr[k][i], maxn + 1)$;
        }
        $printf(\texttt{"f0=x\%d?f\%d:f0\\n"}, subscr[k][j], maxn)$;
        for $(i++;\ i < k;\ i++)\ printf(\texttt{"f0=x\%d?c0:f0\\n"}, subscr[k][i], j)$;
        $printf(\texttt{"f\%d=f0\\n"}, j)$;
      }
    $printf(\texttt{"f1=x\%d?f1:c0\\n"}, subscr[1][0])$;
    $printf(\texttt{"!}_\sqcup\texttt{f1}_\sqcup\texttt{represents}_\sqcup\texttt{restricted}_\sqcup\texttt{growth}_\sqcup\texttt{sequences}_\sqcup\texttt{of}_\sqcup\texttt{length}_\sqcup\texttt{\%d\\n"}, n)$;
  }

2. Index.

argc: 1.
argv: 1.
exit: 1.
fprintf: 1.
i: 1.
j: 1.
k: 1.
main: 1.
maxn: 1.
n: 1.
printf: 1.
sscanf: 1.
stderr: 1.
subscr: 1.

BDDL-RGROWTH