(Downloaded from https://cs.stanford.edu/~knuth/programs.html and typeset on May 28, 2023)

1. Intro. Pepperdine's method for topswops. [Reference: *Mathematical Gazette* **73** (1989), 131–133.]

```
#define n 15    /* degree of perms; should be less than 16 */
#define maxl 1000    /* max level */
#include <stdio.h>
  typedef struct {
    char p[16];
  } perm;    /* this speeds it up by better than 2 */
  perm a[maxl];
  perm b[maxl];
  char x[maxl];
  main( )
  {
    register int j, k, l, m;
    a[0].p[0] = 1;
    m = l = 0;
  tryit: k = ++x[l];
    if (k < n) {
      if (a[l].p[k] ≡ 0) {
        if (b[l].p[k + 1] ≠ 0) goto tryit;
      } else if (a[l].p[k] ≠ k + 1) goto tryit;
      a[l + 1] = a[l];
      for (j = 1; j ≤ k; j++) a[l + 1].p[j] = a[l].p[k − j];
      b[l + 1] = b[l];
      a[l + 1].p[0] = k + 1, b[l + 1].p[k + 1] = 1;
      if (l ≥ m) {
        m = l;
        printf("%d:", m + 1);
        for (j = 0; j < n; j++) printf("␣%d", a[l + 1].p[j]);
        printf("\n");
      }
      l++;
      x[l] = 0;
      goto tryit;
    }
    l−−;
    if (l ≥ 0) goto tryit;
  }
```

2. Index.

TOPSWOPS