Algorithms in the SETLB Test Package   Kent Curtis

1. Huffman Coding Algorithm   (SETL Notes, Page 249)
    Produces a Huffman tree and code table given a set of
characters and a frequency of use function over that set.

2. Huffman decoding algorithm   (SETL Notes, P. 251)
    Produces a string of characters from an input Huffman
binary string given a Huffman code tree.

3. Make sequence of tuple
Produces sequence of form $\langle\langle n, x_n \rangle\rangle$ from tuple $\langle x_1, \ldots, x_n \rangle$.

4. Function composition
    Forms $G(F(x))$ given $F(x)$ and $G(y)$.

5. Function inversion
    Produces $F^{-1}(x)$ given $F(x)$

6. Cycle form of Permutation   (SETL notes, P.239)
    Produces cycle form of permutation given as map

7. Inverse of Permutation   (SETL notes, p. 239)
    Inverts a Permutation given as map

8. Inverse of a Permutation in cycle form   (SETL notes, P.240)
    Inverts a Permutation given in cycle form

9. Permutation generator   (SETL notes, P. 140)
    Generates all permutations of n objects in lexical order.

10. <u>Linear Time Median finding algorithm</u>
    Finds k <u>th</u> number, in ascending order, of a set of numbers. This algorithm, due to Floyd, el al. in 1971, runs in linear time.

11. <u>Write elapsed CP time as a message in output file.</u>
    Utility routine

12. <u>Pocket sorting Algorithm</u>   (SETL notes, p. 115)
    Sorts sequence of integers using p pockets.

13. <u>Tree Printing Routines</u>
    Prints binary or ordered tree in tree-like format.

14. <u>Ford-Johnson Tournament Sort</u>   (SETL notes, p. 116)
    Sorts by a minimum-comparison method

15. <u>Alphabetic Sort</u>   (ALPHSORT)
    Compares two character strings and returns true if they are not in normal alphabetic order.

16. <u>Interval Print Package</u>
    Prints flow graph given set of paths and a set defining order in which to print nodes.

17. <u>Natural two-way merge</u>   (SETL notes, P. 113)
    A fast internal sorting algorithm using two buffers.

18. <u>Lexical Scan Setup Routine</u>   (SETL notes, P. 128)
    Reads input string of SETL code, checks lexical accuracy and completeness of data and prepares input tables and string for lexical scanner.

19. Several programs to generate primes and prime factors.
By Sieves, etc.

20. Piglatin

A table lookup "translator" routine with an auxiliary
string breakup routine. Also, a 4-word "English to German"
dictionary and programmed "piglatin" dictionary.

21. Instant Insanity

Solves the "Instant Insanity" puzzle using a backtracking
algorithm.

Some Other Algorithms in Progress

1. Nodal span parsing algorithm   - Sam Marateck

2. Top-down parse generator routine   - Sam Marateck
   Generates a parsing routine given a formal grammar in
Backus normal form

3. Table compaction algorithm   - Lynn Jaffe
   Algorithms for compressing tables used in the generalised
precedence parsing method.