Courant Institute of Mathematical Sciences
Computer Science Department

The SETL Project Master Catalog

A Comprehensive Listing of Reports, Working Papers, and Computer Readable Document and Program Files Pertaining to Work at New York University on the SETL Set-Theoretic Programming Language

Compiled by Robert Abes

Prepared under Grant # NSF-GJ-1202X with the National Science Foundation

New York University
COMPUTER SCIENCE DEPARTMENT
COURANT INSTITUTE OF MATHEMATICAL SCIENCES
NEW YORK UNIVERSITY

THE SETL PROJECT MASTER CATALOG

A Comprehensive Listing of Reports, Working Papers, and Computer Readable Document and Program Files Pertaining to Work at New York University on the SETL Set-Theoretic Programming Language

(Complete as of September 1973)

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WITH THE NATIONAL SCIENCE FOUNDATION
THE SETL PROJECT - MASTER CATALOG

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   J. SCHWARTZ

   INSTALLMENT 1, GENERALITIES,
   JANUARY 1973     VIII+160 PP      PRICE $4.25

   INSTALLMENT 2, THE SETL LANGUAGE, AND EXAMPLES OF ITS USE,
   OCTOBER 1973     VIII+520 PP      PRICE $13.00

   INSTALLMENT 3, EXTENDED FACILITIES OF THE SETL LANGUAGE,
   TO APPEAR

2. A SETL PRIMER,
   A. MULLISH
   JUNE 1973        V+201 PP         PRICE $5.25

   1. GOLDSTEIN
   A STEP-BY-STEP TUTORIAL WITH OVER 100 ILLUSTRATIVE
   PROGRAMMETTES,

3. THE SETL RUN-TIME LIBRARY,
   THIS IS THE RUN-TIME SUPPORT SYSTEM FOR SETL. IT IS
   WRITTEN IN LITTLE AND IS WELL DOCUMENTED INTERPNALLY.
   IT SUPPORTS ALL OF THE MAIN SET-THEORETIC PRIMITIVES
   OF SETL AND IS OF PRIME INTEREST TO THOSE WISHING TO
   DEVELOP OR MODIFY THE SETL SYSTEM. THE RUN-TIME
   LIBRARY IS AVAILABLE IN MACHINE READABLE FORM,
PART 1 - MAJOR DOCUMENTS.

4. ASL: A PROPOSED VARIANT OF SETL.

4.1. H. WARREN

A PRELIMINARY DESCRIPTION OF AN ALGORITHM SPECIFICATION LANGUAGE, GENERATED AS AN EXTENDED RESPONSE TO A REQUEST FOR CRITICISMS OF SETL. AVAILABLE FREE ON REQUEST.

MAY 1973 XI+326 PP IMM 307

5. OTHER MACHINE READABLE INFORMATION.

THOSE INTERESTED IN ACQUIRING ANY OF THE FOLLOWING DOCUMENTS IN MACHINE READABLE FORM SHOULD ADDRESS AN INQUIRY CONCERNING PRICE TO MISS LENORA GREENE AT THE ADDRESS GIVEN ABOVE.

SETL NEWSLETTER 49 -
DETAILED SPECIFICATIONS OF CERTAIN SETL OPERATIONS.

SETL NEWSLETTER 66 -
BALSSETL USER'S MANUAL VERSION 1.0.

SETL NEWSLETTER 70 -
SETL USER'S MANUAL.

SETL NEWSLETTER 73 -
USER'S GUIDE TO THE SETL RUN-TIME LIBRARY.

FILE SETLTESTPACKAGES; ARCHIVE ITEM 37 -
THE SETLB TEST PACKAGES DESCRIBED IN PART 7 OF THIS CATALOG.

FILE ALGORITHMSPL -
THE SETL ALGORITHMS LIBRARY ITEMS IN PART 6 OF THIS CATALOG.

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<td>BALM-SETL -- A SIMPLE IMPLEMENTATION OF SETL.</td>
<td>M. Harrison</td>
<td>November 1970</td>
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<td>D. Shields</td>
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11. MODIFICATIONS AND EXTENSIONS FOR SETL. PART 3.  
   DECEMBER 1970  4 PP  J. SHIELDS  

12. RECAPITULATION OF THE BASIC PARTS OF THE SETL LANGUAGE.  
   JANUARY 1971  14 PP  J. SCHWARTZ  

13. ADDITIONAL MISCELLANEOUS ALGORITHMS.  
   JANUARY 1971  7 PP  J. SCHWARTZ  

14. ADDITIONAL SYNTACTIC EXTENSIONS.  
   JANUARY 1971  3 PP  J. SCHWARTZ  

15. A PROPOSED SETL IMPLEMENTATION PLAN THROUGH THE END OF THE  
    BOOTSTRAP PHASE.  
   FEBRUARY 1971  2 PP  J. SCHWARTZ  

16. SETL 64-CHARACTER SET -- 48-CHARACTER SET / 029 KEYPUNCH --  
    CDC 6600 44-CHARACTER SET / 029 KEYPUNCH.  
   FEBRUARY 1971  2 PP  K. Maly  

17. NO LONGER AVAILABLE.  

18. PRELIMINARY SPECIFICATION OF BALSAMSETL CONVENTIONS.  
   FEBRUARY 1971  2 PP  J. SHIELDS  

19. LEXICAL DESCRIPTION OF SETL.  
   FEBRUARY 1971  5 PP  K. Maly  

20. BALSAMSETL USER'S GUIDE (IN BRIEF).  
   MARCH 1971  4 PP  J. SHIELDS
21. **AN OUTSIDE REVIEW: Comments on the SETL Draft.**
   **April 1971**
   8 pp
   Anon. (Publisher?)

22. **SOME SMALL AND LARGE LANGUAGE EXTENSIONS FOR CONSIDERATION.**
   **April 1971**
   4 pp
   J. Schwartz

23. **CURRENT STATUS OF BALI/SETL IMPLEMENTATION.**
   **April 1971**
   3 pp
   J. Shields

24. **DESCRIPTION OF A REGISTER ALLOCATION ALGORITHM.**
   **April 1971**
   8 pp
   K. Kennedy

25. **A PRINT ROUTINE.**
   **April 1971**
   3 pp
   J. Loering

26. **THE CURRENTLY SPECIFIED FORM OF SETL FROM A MORE FUNDAMENTAL POINT OF VIEW.**
   **May 1971**
   8 pp
   J. Schwartz

27. **CODE FOR THE POSTPARSE SETUP PROCEDURE (POSTPARSE METALANGUAGE ANALYSIS).**
   **May 1971**
   15 pp
   J. Schwartz

28. **AN ALGORITHM FOR COMMON SUBEXPRESSION ELIMINATION AND CODE MOTION.**
   **May 1971**
   10 pp
   K. Kennedy

29. **SOME ISSUES CONNECTED WITH SUBROUTINE LINKAGE.**
   **May 1971**
   3 pp
   J. Schwartz

30. **SINISTER CALLS.**
    **May 1971**
    32 pp
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31. AN ADDITIONAL PRELIMINARY REMARK ON THE IMPORTANCE OF SUBJECT TYPES FOR SETL, WITH SOME REFLECTIONS ON THE MOTION OF DATA STRUCTURE LANGUAGES.  
MAY 1971  12 PP  
J. SCHWARTZ

32. HYPER-SETL PROCEDURAL LANGUAGES.  
MAY 1971  5 PP  
J. SCHWARTZ

33. WHAT IS PROGRAMMING.  
MAY 1971  9 PP  
J. SCHWARTZ

34. SYNTAX REVISIONS IN PREPARATION FOR IMPLEMENTATION.  
MAY 1971  12 PP  
J. SCHWARTZ

35. A NEW FORM FOR THE IFF-STATEMENT.  
MAY 1971  7 PP  
J. SHIELDS

36. NO LONGER AVAILABLE.

37. INITIAL DESCRIPTION OF AN ALGORITHM FOR USE-DEFINITION CHAINING IN OPTIMIZATION.  
JULY 1971  6 PP  
K. KENNEDY

38. AN ALGORITHM FOR LIVE-DEAD ANALYSIS INCLUDING NODE-SPLITTING FOR IRREDUCIBLE PROGRAM GRAPHS.  
JANUARY 1972  10 PP  
K. KENNEDY

39. MORE DETAILED SUGESTIONS CONCERNING DATA STRATEGY ELABORATIONS FOR SETL.  
MAY 1971  54 PP  
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52. COMMENTS ON SETL.

SEPTEMBER 1971 6 PP  J. FARLEY

53. SETL TO LITTLE TRANSLATOR: A FIRST LOOK.

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54. CURRENT STATUS OF BASESETL++.

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55. SETL SUGGESTIONS AND QUESTIONS.

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56. ADDITIONAL COMMENTS ON SOME BASIC SETL OPERATIONS.

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56A. MORE COMMENTS ON SETL.

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56B. MORE SETL COMMENTS.

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57. MINIMIZING COPYING IN SETL: PRELIMINARY OBSERVATIONS.

OCTOBER 1971 3 PP  H. WARREN

58. PHASE ONE OF THE SETL COMPILER.

OCTOBER 1971 21 PP  K. MALY

59. AN ALGEBRA OF ASSIGNMENT.

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60. SETL COMPILED CODE: CALLS TO SETL PROCEDURES.

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61. SYNTACTIC STRUCTURE OF SETL.
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62. FINAL SPECIFICATION OF SETL AND PARSER.
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63. THE SETL PRINT ROUTINE.
   JANUARY 1972        5 PP
   J. Fisher

64. SETL COMPILER WITH ELABORATED DATA STRUCTURES.
   JANUARY 1972        33 PP
   K. Maly

65. SOME NOTATIONAL SUGGESTIONS.
   FEBRUARY 1972       2 PP
   R. Donic

66. JALMSETL USER'S MANUAL VERSION 1.0.
   FEBRUARY 1972       71 PP
   E. Milgrom

67. DATA STRUCTURES OF THE SETL COMPILER FROM THE LITTLE VERSION.
   FEBRUARY 1972       16 PP
   K. Maly

68. SOME THOUGHTS ON EFFICIENT PROGRAMMING IN SETL.
   OCTOBER 1972        5 PP
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69. THE SETL PROJECT - MASTER CATALOG (REVISED 10/73).
   FEBRUARY 1973       37 PP
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70. SETL3 USER'S MANUAL.
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82. TIMING COMPARISON BETWEEN SETL® AND FORTRAN.

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83. USER EXPERIENCE AND HUMAN FACTORS.

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84. PLAN FOR A LIBRARY OF ALGORITHMS.

NOVEMBER 1972  16 PP  J. SCHWARTZ

85. ESTIMATE OF MINIMUM RUNNING SIZE FOR THE NEXT SETL® SYSTEM (REVISION 1).

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86. PROPOSAL FOR A TEMPORARY, BUT EASILY IMPLEMENTED, SOFTWARE PAGING SYSTEM.

NOVEMBER 1972  7 PP  J. SCHWARTZ

87. WORKPLAN FOR THE NEXT PHASE OF SETL® IMPLEMENTATION.

NOVEMBER 1972  7 PP  J. SCHWARTZ

88. A SCHEME FOR BALKSETL® MEASUREMENTS.

NOVEMBER 1972  2 PP  J. SCHWARTZ

89. USER INFORMATION FOR LEXICAL SCAN SETUP PACKAGE.

NOVEMBER 1972  2 PP  E. GUTH

90. PRELIMINARY REFLECTIONS ON THE USE OF SETL® IN A DATA-BASE CONTEXT.

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91. A GRAMMARLESS PARSE AND A RELATED METHOD OF RETRIEVAL BY SIMILARITY.  
   DECEMBER 1972  24 PP  J. SCHWARTZ
92. SOME EXPERIMENTS WITH SETL L PROGRAMS.  
   JANUARY 1973  9 PP  K. CURTIS
93. A NOTE ON OPTIMIZATION AND PROGRAMMING STYLE IN SETL.  
   JANUARY 1973  2 PP  K. CURTIS
94. AN ALGORITHM TO REPRESENT A COLLECTION OF SETS AS INTERVALS ON A LINE.  
   JANUARY 1973  9 PP  J. JENNINGS
95. GENERALIZED NOCAL SPAN PARSE ROUTINE, CORRECTED VERSION.  
   JANUARY 1973  10 PP  Y. FEINROTH
96. POINTERS AND VERY HIGH LEVEL LANGUAGES.  
   JANUARY 1973  3 PP  M. MINSKY
97. SETL EXTENSIONS FOR OPERATING SYSTEM DESCRIPTION.  
   FEBRUARY 1973  24 PP  P. MARKSTEIN
98. REFLECTIONS ON P. MARKSTEIN'S NEWSLETTER ON SETL EXTENSIONS FOR OPERATING SYSTEM DESCRIPTION.  
   JANUARY 1973  9 PP  J. SCHWARTZ
99. PAGING, THE QUICK AND DIRTY WAY.  
   (THIS IS ALSO BailM BULLETIN NO. 21)  
   JANUARY 1973  4 PP  S. DROWN
100. MAKING SETL DEBUGGING RUNS.  
    FEBRUARY 1973  11 PP  J. WAPREN
101. HOW TO PROGRAM IF YOU MUST (THE SETL STYLE).  
MARCH 1973  15 PP  
R. RONIC

102. REDUCTION IN STRENGTH USING HASHED TEMPORARIES.  
MARCH 1973  12 PP  
K. KENNEDY

103. PRELIMINARY PLAN FOR HALM-TO-LITTLE TRANSLATOR.  
APRIL 1973  8 PP  
J. SCHWARTZ

104. AN ALGORITHM TO REPRESENT A COLLECTION OF SETS AS A DIRECT  
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G. JENNINGS

105. A SETL PROGRAM FOR A BASIC BLOCK OPTIMIZER AND AN EXTENDED BASIC  
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APRIL 1973  11 PP  
J. SCHWARTZ

106. USER VARIATION OF THE SEMANTICS OF FUNCTION AND SUBROUTINE  
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MAY 1973  3 PP  
G. JENNINGS

107. LINEAR FUNCTION TEST REPLACEMENT.  
MAY 1973  5 PP  
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108. APL - SETL, AN EXTENSION OF SETL ACHIEVED FROM USER VARIED  
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MAY 1973  34 PP  
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109. FASTER EXECUTION FOR THE LITTLE BASED BALM SYSTEM.  
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110. MORE ON SEMANTIC DEFINITION MATTERS.  
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111. GLOBAL DEAD COMPUTATION ELIMINATION.
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112. AN ALGORITHM TO COMPUTE COMPACTED USE-DEFINITION CHAINS.
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113. LITTLE CODE GENERATION FROM THE BALM COMPILER.
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114. A SETL TO PUBLICATION SETL TRANSLATOR.
A. GETZLER
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115. A SETL REPRESENTATION OF THE MARYLAND GRAPHS-MANIPULATION
LANGUAGE.
S. WEINPERGER
AUGUST 1973 32 PP

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(NOVO SIBIRSK GROUP)
PART 3 - LITTLE NEWSLETTERS.

1. I/O CONVENTIONS AND PROPOSAL; QUOTED STRINGS; OCTAL CONSTANTS; USER INFORMATION FOR IMPROVED MACROPROCESSOR.
   OCTOBER 1971  8 PP  J. SCHWARTZ

2. FILES FOR THE LITTLE PROJECT.
   OCTOBER 1971  3 PP  D. GOLDBERG

3. POSSIBLE FUTURE EXTENSIONS TO LITTLE.
   NOVEMBER 1971  16 PP  J. SCHWARTZ

4. A LITTLE MACHINE.
   NOVEMBER 1971  11 PP  J. SCHWARTZ

5. USER INFORMATION CONCERNING THE LITTLE-TO-FORTRAN TRANSLATOR.
   NOVEMBER 1971  3 PP  J. SCHWARTZ

6. EXTENSION TO LITTLE TO IMPROVE CHARACTER STRING PROCESSING.
   JANUARY 1972  3 PP  J. SHIELDS

7. LITTLE FOR MINICOMPUTERS.
   MARCH 1972  26 PP  T. STUART

8. USE OF COMMENTS IN LITTLE.
   MARCH 1972  2 PP  J. SHIELDS

9. SOME SUGGESTIONS FOR SIMPLIFYING THE PREPARATION OF SETL AND LITTLE TEXT: KEYBOARD AND LEXICAL MACROS.
   MARCH 1972  6 PP  J. SHIELDS

10. INTERSPERSING MACROS.
    APRIL 1972  9 PP  J. SCHWARTZ
11. INPUT / OUTPUT STATEMENTS FOR LITTLE.  
R. ABES  
APRIL 1972  21 PP  
H. WARREN  
E. MILGROM

12. NEW CONVENTIONS FOR LITTLE: COMMENTS, USE OF SEMICOLON AS A STATEMENT TERMINATOR.  
J. SHIELDS  
JUNE 1972  2 PP

13. MACRO CAPABILITIES FOR STRUCTURED PROGRAMMING.  
R. ABES  
JULY 1971  15 PP  
H. WARREN

14. MASS STORAGE UTILIZATION IN LITTLE.  
P. MACLEAN  
JULY 1972  9 PP

15. PARTIAL MULTI-WORD FACILITY FOR THE FORTRAN VERSION OF LITTLE.  
A. STEIN  
JULY 1972  2 PP

16. SOME TIMING STATISTICS FOR LITTLE.  
J. SHIELDS  
OCTOBER 1972  10 PP

17. TEST PACKAGES FOR THE LITTLE COMPILER.  
R. ABES  
NOVEMBER 1972  1 PP

18. A NEW ARRAY OPTIMIZATION FOR BASIC BLOCKS.  
J. SCHWARTZ  
NOVEMBER 1972  4 PP

19. LITTLE USERS GUIDE  
I. BRENNER  
MAY 1973  21 PP

20. REMARKS ON THE STRUCTURE OF THE SITL RUN TIME LIBRARY.  
J. SHIELDS  
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21. SOME PROPOSALS FOR IMPROVING THE ACCESSIBILITY OF THE LITTLE COMPILER.
   DECEMBER 1972    9 PP
   J. SHIELDS

22. EXAMPLES OF LITTLE-GENERATED CODE.
   DECEMBER 1972    5 PP
   J. SHIELDS

23. NAMESETS: A NEW WAY TO HANDLE GLOBAL VARIABLES IN LITTLE.
   JANUARY 1973     6 PP
   J. SHIELDS

24. PROPOSALS FOR THE NEXT STAGE OF LITTLE DEVELOPMENT.
   MARCH 1973       6 PP
   J. SHIELDS

25. PROPOSED EXTENSIONS TO LITTLE.
   JUNE 1973        25 PP
   J. SHIELDS

   AUGUST 1973      3 PP
   L. CHERNOBROD

29. A MEDIUM-LEVEL SEMANTIC ENVIRONMENT BASED ON LITTLE.
    SEPTEMBER 1973   20 PP
    J. SCHWARTZ
PART 4 - ADDITIONAL SETL DOCUMENTATION.

1. SET THEORY AS A LANGUAGE FOR PROGRAM SPECIFICATION AND PROGRAMMING, J. SCHWARTZ
   SEPTEMBER 1970 97 PP

2. ABSTRACT ALGORITHMS, AND A SET-THEORETIC LANGUAGE FOR THEIR EXPRESSION, (THE SETL MANUSCRIPT), J. SCHWARTZ
   DECEMBER 1970 296 PP
1. INTRODUCTION.
   JUNE 1971 3 PP
   I. HARRISON

2. THE MBALM MACHINE.
   JUNE 1971 11 PP
   I. HARRISON

3. THE MBALM SIMULATOR ON THE CDC 6600.
   JUNE 1971 5 PP
   3. BROWN

4. STATUS OF BALM4.0.
   JUNE 1971 3 PP
   I. HARRISON

5. BALM4.0 SYSTEM LISTING.
   JUNE 1971 18 PP
   I. HARRISON

6. ONGOING IMPROVEMENTS, MODIFICATIONS AND ASSOCIATED PROJECTS.
   JULY 1971 2 PP
   I. HARRISON

7. SUGGESTIONS FOR NEW MBALM INSTRUCTIONS.
   JULY 1971 1 PP
   I. HARRISON

   AUGUST 1971 3 PP
   3. BROWN

9. CHANGES WHICH ARE IN BALM4.1.
   OCTOBER 1971 3 PP
   I. HARRISON

10. FASTER EXECUTION.
    NOVEMBER 1971 10 PP
    I. HARRISON
11. FACILITIES FOR NON-SEQUENTIAL PROCESSING.

NOVEMBER 1971 8 PP  I. HARRISON

12. BALM EDITOR.

MARCH 1972   3 PP  I. HARRISON

13. SOME THOUGHTS ON THE USE OF BALM TO IMPLEMENT SETL.

JUNE 1972   7 PP  S. MILGROM

14. COMMENTS ON BULLETIN 13.

JUNE 1972   5 PP  I. HARRISON

15. PROBLEMS IN BALM4.

JULY 1972   3 PP  I. HARRISON

16. REAL NUMBERS IN BALM.

SEPTEMBER 1972   5 PP  S. BROWN

17. PAGING WITHIN BALM.

OCTOBER 1972  4 PP  I. HARRISON

18. PAGING PRIMITIVES.

NOVEMBER 1972  2 PP  S. BROWN


NOVEMBER 1972  2 PP  S. BROWN

20. NO LONGER AVAILABLE.
<table>
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PART 6 - THE SETL (CYRILLIC) NEWSLETTERS.

***

THE SERIES OF NEWSLETTERS IN RUSSIAN CONCERNING SETL, BEING WRITTEN AT THE "NOVOSIBIRSK COMPUTING CENTER, IS DESIGNATED IN THIS CATALOG AS THE SETL (CYRILLIC) OR SETL (C) SERIES.

***

1. PHASE 1 IMPLEMENTATION PROJECT.
   J. LEVIN
   9 PP

2. A CONCEPTUAL REVIEW OF THE SET-THEORETIC LANGUAGE SETL.
   S. CHERNOBROD
   41 PP

3. LISPSETL USER'S MANUAL, VERSION 1.
   S. CHERNOBROD
   25+21 PP

   J. LEVIN
   29 PP

5. THE SYSTEM BALM-BERM/6.
   J. LEVIN
   19+37 PP

6. SETL: SOURCE LANGUAGE OF AN EXPERIMENTAL IMPLEMENTATION.
   J. LEVIN
   22 PP

7. INTERNAL REPRESENTATION OF SETS AND AN EXPERIMENTAL IMPLEMENTATION OF SET-THEORETIC OPERATIONS.
   J. LEVIN
   34 PP

8. THE SETLBALM SYSTEM AND A PRELIMINARY IMPLEMENTATION OF SETL.
   J. LEVIN
   10 PP
9. DECOMPOSITION OF SETL PROGRAMS.
   15 PP
   D. LEVIN

10. INTERACTION OF DATA TYPES.
    30 PP
    L. GORODNAYA

11. CATALOG OF SETL(C) NEWSLETTERS 1 - 12.
    (THIS IS ALSO SETL NEWSLETTER 116.)
    3 PP
    A. FRESHOV ET AL
    (NOVOSIRIIESK GROUP)

12. PARALLEL PROGRAMMING AND HIGH LEVEL LANGUAGES.
    6 PP
    A. MARINYANI
PART 7 - THE SETL ALGORITHMS LIBRARY.

A LIBRARY OF SUBSTANTIAL, IMPORTANT ALGORITHMS CODED IN SETL3 CURRENTLY RESIDES ON THE FILE ALGORITHMSPL. THE ADDITION OF OTHER ALGORITHMS TO THIS LIBRARY, AND THE IMPROVEMENT OF THE DOCUMENTATION AND PERFORMANCE OF THE ALGORITHMS THAT HAVE BEEN ESTABLISHED, IS AN ONGOING PROJECT. CONTENTS ARE AS FOLLOWS.

1. DECK BINRES (413 CARDS) AN AUTOMATIC THEOREM PROOF OPERATING ON STATEMENTS IN THE SENTENTIAL CALCULUS, PRODUCES SHORTEST PROOFS VIA A BREADTH FIRST TREE SEARCH WHEN THE BINARY RESOLUTION PRINCIPLE IS USED, OR LONGER PROOFS IN LESS TIME WHEN HYPER-RESOLUTION IS EMPLOYED.

2. DECK TYPEVAR (543 CARDS) GIVEN THE GRAPH OF A PROGRAM AND SOME INFORMATION ABOUT ITS ASSIGNMENT STATEMENTS, THIS ALGORITHM FINDS THE TYPES THAT A VARIABLE CAN ASSUME DURING THE EXECUTION OF THE PROGRAM. ONE OF THE MORE IMPORTANT SETL COMPILER OPTIMIZATIONS WILL BE BASED ON EXPERIMENTATION WITH THIS ALGORITHM.

3. DECK MATCHUP (147 CARDS) A MODIFICATION OF MARSHALL HALLS' ALGORITHM FOR THE MARRIAGE PROBLEM WHICH WILL YIELD A MAXIMAL SYSTEM OF DISTINCT REPRESENTATIVES (MAXIMAL MATCHING).

4. DECK TOPDATA (112 CARDS) TOPDOWN (236 CARDS) TOPDOWNP (248 CARDS) A TCP DOWN PARSE AND ITS INPUT DATA; COMPLETE WITH A BOOTSTRAPPING META-COMPILER THAT OPERATES ON AN EXTENDED BACKUS NORMAL FORM DESCRIPTION OF THE LANGUAGE.

CODER: G. WHITEHEAD

CODER: S. MARATECK

CODER: E. SCHONBERG

CODER: S. BROOK

CODER: K. ABDALI
5. Deck McKeman (531 cards) coder: I. Kaye
Generates the McKeman Tables (a series of generalized precedence tables) using Backus Normal Form grammar as its input. Sample input data is included.

6. Deck Chomsnf (164 cards) coder: H. Anthony
Removes null variables from a context free input grammar (described by its productions) and puts it into Chomsky normal form. Sample input data is included.

7. Deck Genispf (478 cards) Deck Genissph (7 cards) coder: Y. Feinroth
A generalized nodal span parser, with attributes. Sample input data is included.

8. Deck EulerGP (117 cards) coder: H. Mullish
A SETLB coding of L. Euler's graph tracing algorithm usually associated with the bridges of Koenigsberg.

The inputs to this mini-system are tables describing the character set, character types, and actions to be taken during the lexical scan of an arbitrary language. The output is a FORTRAN program which is a working lexical scanner for the described language, complete with token file and error message generators.

Five complete independent heuristic search procedures, mostly due to Nilsson, preceded by a deck of macros which they all use. The algorithms are: a general path finder, a tree search, a uniform cost search, a breadth first search, and a depth first search.
11. DECK GPS (439 CARDS)  
CODER: A. GETZLEP  
A STRIPPED DOWN VERSION OF ERNST, NEVELL AND SHAWS GENERAL PROBLEM SOLVER PROGRAM, WITH A SAMPLE SPECIFICATION FOR THE "MONKEY AND BANANAS" PROBLEM.

12. DECK SCGRAPH (100 CARDS)  
DECK PARTREE (124 CARDS)  
DECK BALANCE (239 CARDS)  
CODER: W. TSUI  
TWO SEPARATE ALGORITHMS TO FIND THE STRONGLY CONNECTED REGIONS OF A DIRECTED GRAPH. A PROGRAM TO GENERATE THE PARTITIONS OF A NUMBER; A PROGRAM TO GENERATE ALL BINARY TREES. TWO SEPARATE ALGORITHMS FOR ASSEMBLY LINE BALANCING.

13. DECK POLY (283 CARDS)  
CODER: E. GUTH  
A COLLECTION OF ROUTINES FOR THE STANDARD ALGEBRAIC MANIPULATIONS OF POLYNOMIALS. TEST INPUT IS INCLUDED.

14. DECK GRAAL (651 CARDS)  
CODER: G. WEINBERGER  
A. TENENBAUM  
A SETL REPRESENTATION OF THE UNIVERSITY OF MARYLAND GRAPH MANIPULATION LANGUAGE (GRAAL) OF RHEINHOLD, BASIL AND NESZTENYI AS EXPLAINED IN SETL NEWSLETTER 115. SAMPLE INPUT DATA IS INCLUDED.
A library of test programs, coded in setl.b, currently resides on the file setlbtestpackages. This library was established to spot bugs in compiler modifications, and to provide some standards for timing studies. The algorithms vary widely in size, content, and coding style.

1. Huffman (75 cards) - Produces a Huffman tree and table for unique bit string encoding given a set of characters and a frequency of use function over that set.

2. Miscperm (50 cards) - Contains short programs to make a sequence out of a tuple; compose two functions into one; obtain the inverse of a function; obtain the cycle form of a permutation; obtain the inverse of a permutation; obtain the inverse of a permutation given in cycle form.

3. Perm (49 cards) - Generates all permutations of n objects in lexicographic order.

4. Median (132 cards) - Finds the k-th number (in ascending order) of a given set of numbers. This algorithm, due to Floyd, et al in 1971, runs in linear time as a function of the number of items in the given set.

5. Pocksort (59 cards) - A radix sort in which the items to be sorted and the radix are input parameters.

6. Treeprint (193 cards) - Prints binary or ordered trees in a tree-like format.

7. Fordj (157 cards) - The Ford-Johnson tournament sort algorithm (a complicated minimum comparison sort).

8. Setup and jsetlp (190 cards) - Reads setl code, and prepares a string and some tables for the lexical scanner.
9. **INTPRINT (290 CARDS)** - PRINTS THE FLOW-GRAPH OF A PROGRAM IN FLOWCHART-LIKE FORMAT GIVEN A SET OF PATHS AND A SET DEFINING THE ORDER IN WHICH TO PRINT THE NODES.

10. **TWERGE (35 CARDS)** - THE NATURAL TWO-WAY MERGE FOR FAST IN-CORE SORTING.

11. **PRIMES (72 CARDS)** - CONTAINS SHORT PROGRAMS TO GENERATE PRIMES BY THE SIEVE METHOD; GENERATE PRIMES DIRECTLY FROM THEIR DEFINITION; FIND THE PRIME FACTORS OF A GIVEN NUMBER.

12. **PIGLATIN (27 CARDS)** - STRING BREAKUP AND TRANSLATION VIA TABLE LOOKUP OR A PROGRAMMED ENGLISH-PIGLATIN DICTIONARY.

13. **INSANITY (29 CARDS)** - A BACKTRACKING ALGORITHM TO SOLVE THE INSTANT INSANITY (COLORED CUBES) PUZZLE.

14. **NODSPAN (91 CARDS)** - A NODEAL SPAN PARSE ROUTINE WHICH CAN APPLY ANY PRODUCTION GRAMMAR IN CHOMSKY NORMAL FORM TO AN INPUT STRING.

15. **PASCAL (16 CARDS)** - A STRING MANIPULATION AND FORMATTING PROGRAM WHICH PRINTS PASCAL'S TRIANGLE NEATLY.

16. **ERRAUT (104 CARDS)** - CALCULATES THE STRUCTURE OF THE AUTOMATON ASSOCIATED WITH ERROR DETECTION IN VRV PARSING.

17. **SPLASH (138 CARDS)** - SOLVES ALL THE OLD BUCKET PROBLEMS (E.G., HOW TO GET 4 GALLONS OF WATER GIVEN A 3 AND A 5 GALLON BUCKET)

18. **MAXFLOW (103 CARDS)** - A PACKAGE TO FIND A PATH IN AN ORIENTED GRAPH; DETERMINE THE MAXIMUM FLOW IN A NETWORK; AND APPLY THE MAXIMUM FLOW ALGORITHM TO THE MATCHING PROBLEM.
PART 9 - THE SETL ARCHIVES.

***

THE SETL ARCHIVES WERE CREATED 1/73 TO PROVIDE BACKUP FILES IN CASE OF PHYSICAL DISASTER. TO THIS END: TAPE 781 IS IN NEW JERSEY AND AVAILABLE FROM H. WARREN. TAPE 782 IS IN WESTCHESTER AND AVAILABLE FROM F. ALLEN. TAPES 2025 AND 2026 ARE IN THE TAPE VAULT HERE AT COURANT. THE ARCHIVES ARE DESIGNED HERE FOR THOSE WHO ARE CLOSELY INVOLVED IN ACTUAL IMPLEMENTATION WORK.

THE 38 ITEMS LISTED BELOW ARE FILES 1 - 38 ON TAPE 781 AND FILES 1 - 38 ON TAPE 782. ITEMS 1 - 17 ARE FILES 1 - 17 ON TAPE 2025. ITEMS 18 - 38 ARE FILES 1 - 21 ON TAPE 2026. EACH ITEM IS DESCRIBED BELOW IN A TWO LINE FORMAT. THE FIRST LINE GIVES THE ITEM NUMBER, THE CATALOG PROGRAM CHECKSUM, AND THE SOURCE OF THE ITEM (USUALLY, PERMANENT FILE NAME AND CYCLE NUMBER). THE SECOND LINE IS A QUICK VERBAL HANDLE TO WHAT THE ITEM IS. THE FILE SETLCODE3 IS AVAILABLE AS FILE 3 OF TAPE 694 AT COURANT, AND ALSO FROM K. MALY IN MINNEAPOLIS.

***

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<td>SETL PROGRAM = FRONT END FOR NAME SCOPECING ALGORITHMS</td>
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<td>BULK SETL SOURCE = CODE AND MANUAL.</td>
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7. CATSUM=30015 PFN=TESTPL
   MISCELLANEOUS ABSOLUTE TEST PROGRAMS
   CY=1
8. CATSUM=3065 PFN=THEOREMPL
   THEOREM PROVER IN SETL.
   CY=1
9. CATSUM=5562 PFN=TOPDOWNPL
   TOP DOWN PARSER IN SETL.
   CY=10
10. CATSUM=54543 PFN=LDSLTLPL
    SHORTENED LITTLE COMPILER IN FORTRAN.
    CY=7
11. CATSUM=20167 PFN=SOURCE
    SOURCE CODE FOR SIMULATOR SYSTEM.
    CY=4
12. CATSUM=43240 PFN=SOURCE
    SOURCE CODE FOR TRANSLATOR SYSTEM.
    CY=12
13. CATSUM=11316 PFN=HALM4BINARY
    MBALM FILE OF THE B/LM COMPILER SYSTEM.
    CY=1
14. CATSUM=122135 CILLIB
    SETL COMPILER IN FORTRAN.
    SET1174
15. CATSUM=77431 CILLIB
    SUPPORT LIBRARY FOR SETL (INCLUDING METACOMPILER).
    SLB1174
16. CATSUM=67250 CILLIB
    B/LM SOURCE FILE FOR B/LM SYSTEM.
    BLM4SRC
17. CATSUM=302175 TAPE 776
    LITTLE TO FORTRAN TRANSLATOR.
    FILE 1
18. CATSUM=3064 PFN=ASSGNV1
    FORTRAN UTILITY PROGRAM.
    CY=8
19. CATSUM=41247 PFN=CLEANLLEXL
    LITTLE LEXICAL SCANNER IN LITTLE - REFORMATTED.
    CY=28
20. CATSUM=3705 PFN=EDITSETUP
    SETL PROGRAM YIELDING LEX SCANNER IN FORTRAN FOR ANY LANGUAGE.
21. CATSUM=45155  PFN=GENZZZZZ1174  SY=37
   LITTLE TO SETL COMPLIER IN FORTRAN FOR OPTIMIZER USE.

22. CATSUM=64003  PFN=LDSPL  SY=6
   MISCELLANEOUS SUPPORT AND UTILITY PROGRAMS.

23. CATSUM=27733  PFN=LITLITDOC1175  SY=22
   DOCUMENTATION FOR LITTLE COMPILER IN LITTLE.

24. CATSUM=5625  PFN=LITTLELIPSOLPCF  SY=6
   ASSEMBLER LANGUAGE UTILITY ROUTINES USED BY LITTLE COMPILER.

25. CATSUM=143672  PFN=LITTLEPL  SY=1
   OLD VERSION OF LITTLE COMPILER PROPER IN FORTRAN

26. CATSUM=26702  PFN=LITTLETESTPL  SY=9
   TEST PROGRAMS FOR THE LITTLE COMPILER.

27. CATSUM=36342  PFN=LTLASPLF  SY=11
   LITTLE ASSEMBLER IN FORTRAN

28. CATSUM=46455  PFN=LTLGEPNFLF  SY=10
   LITTLE COMPILER PROPER IN FORTRAN.

29. CATSUM=72750  PFN=LTLEXPLF  SY=16
   LITTLE LEXICAL SCANNER AND MACRO PROCESSOR IN FORTRAN.

30. CATSUM=20566  PFN=LTLOPTPL  SY=5
   OPTIMIZATION ROUTINES FOR LITTLE IN SETL.
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<td>126046</td>
<td>MANUALSPL</td>
<td>Various SETL and Little Newsletters, and the ManualMake? Program</td>
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<td>Genesis of SETL Newsletter 78.</td>
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<td>NEWS79</td>
<td>Genesis of SETL Newsletter 79.</td>
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<td>Type Finding Algorithm In SETL.</td>
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<td>SETL PJN Time Library In Little.</td>
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Part 9 - The SETL Archives.

Fresh Archives were created 9/73. Tape 5 is in Westchester and available from F. Allen. Tape 6 is in Los Alamos and available from J. Morris. Another tape is in the vault here at Courant. The 40 items listed below are files 1-40 on each of these tapes. The first of the two lines describing each item gives the item number, CMLIB name, last CMLIB mod date, and number of words.

***

1. TBAI\(\text{LM4} \quad 09/11/73 \quad 10415
    \text{THE BALM4 SYSTEM.}

2. SAVESETL \quad 09/11/73 \quad 39226
    \text{THE BALM SETL SA\(\text{VED FILE.}

3. SRC1208 \quad 09/11/73 \quad 10305
    \text{THE BALM SETL SOURCE FILE.}

4. SNEWSP\(\text{L} \quad 09/14/73 \quad 63443
    \text{SETL AND LITTLE MACHINE READABLE NEWSLETTERS.}

5. SLIBPL \quad 09/14/73 \quad 90708
    \text{THE SETL RUN TIME LIBRARY.}

6. LEXPL \quad 09/17/73 \quad 21135
    \text{LITTLE LEXICAL SCANNER IN LITTLE - SOURCE.}

7. GENPL \quad 09/17/73 \quad 24263
    \text{LITTLE COMPILER IN LITTLE - SOURCE.}

***
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<td>VARIOUS SYSTEMS PROGRAMS OF R. PAIGE.</td>
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