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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PRICE LIST AND INFORMATION ON MACHINE READABLE OUTPUT FORMATS

1. ON PROGRAMMING, AN INTERIM REPORT ON THE SETL PROJECT,
   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,
   J. MULLISH
   A STEP-BY-STEP TUTORIAL WITH OVER 100 ILLUSTRATIVE PROGRAMMETTES.
   JUNE 1973 V+201 PP  PRICE $5.25

3. THE SETL RUN-TIME LIBRARY.

   THIS IS THE RUN-TIME SUPPORT SYSTEM FOR SETL. IT IS
   WRITTEN IN LITTLE AND IS WELL DOCUMENTED INTERNALLY.
   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.
   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 -
   BALMSETL 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 SETLBTESTPACKAGES; ARCHIVE ITEM 37 -
   THE SETLB TEST PACKAGES DESCRIBED IN PART 7 OF THIS CATALOG.

FILE ALGORITHM'SPL -
   THE SETL ALGORITHMS LIBRARY ITEMIZED IN PART 6 OF THIS CATALOG.

ARCHIVE ITEMS 16, 12, 13 -
   BALM PRIMER
   BALM REFERENCE MANUAL
   BALM SYSTEM LISTING
PART 2 - SETL NEWSLETTERS.

1. BALM-SETL -- A SIMPLE IMPLEMENTATION OF SETL.
   NOVEMBER 1970  8 PP  M. HARRISON

2. NO LONGER AVAILABLE.

3. MODIFICATIONS AND EXTENSIONS FOR SETL, PART 1.
   NOVEMBER 1970  6 PP  D. SHIELDS

4. AN APL VERSION OF PETER MARKSTEIN'S MCKEEMAN TABLE ROUTINE.
   NOVEMBER 1970  2 PP  P. MARKSTEIN

5. MISCELLANEOUS ALGORITHMS WRITTEN IN SETL.
   NOVEMBER 1970  7 PP  J. SCHWARTZ

6. A REvised SETL VERSION OF THE MCKEEMAN PARSE.
   NOVEMBER 1970  3 PP  P. MARKSTEIN

7. MODIFICATIONS AND EXTENSIONS FOR SETL, PART 2.
   NOVEMBER 1970  8 PP  J. SHIELDS

8. ADDITIONAL MISCELLANEOUS SETL ALGORITHMS.
   NOVEMBER 1970  4 PP  J. SCHWARTZ

9. IMPLEMENTATION AND LANGUAGE DESIGN.
   DECEMBER 1970  5 PP  N. HAPRISON

10. A SORTING ALGORITHM.
    DECEMBER 1970  3 PP  K. NALY
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 64-CHARACTER SET / 029 KEYPUNCH.
   FEBRUARY 1971        2 PP   K. MALY

17. NO LONGER AVAILABLE.

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

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

20. RAMSETL 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  
    J. SCHWARTZ
31. AN ADDITIONAL PRELIMINARY REMARK ON THE IMPORTANCE OF \textit{OBJECT TYPES} FOR \textsc{setl}, WITH SOME REFLECTIONS ON THE MOTION OF \textit{DATA STRUCTURE LANGUAGES}.
   \textsc{setl} NEWSLETTERS, MAY 1971 12 PP
   J. Schwartz

32. HYPER-\textsc{setl} PROCEDURAL LANGUAGES.
   \textsc{setl} NEWSLETTERS, MAY 1971 5 PP
   J. Schwartz

33. WHAT IS PROGRAMMING.
   \textsc{setl} NEWSLETTERS, MAY 1971 9 PP
   J. Schwartz

34. SYNTAX REVISIONS IN PREPARATION FOR IMPLEMENTATION.
   \textsc{setl} NEWSLETTERS, MAY 1971 12 PP
   J. Schwartz

35. A NEW FORM FOR THE \textsc{iff}-STATEMENT.
   \textsc{setl} NEWSLETTERS, MAY 1971 7 PP
   J. Shields

36. NO LONGER AVAILABLE.

37. INITIAL DESCRIPTION OF AN ALGORITHM FOR USE-DEFINITION CHAINING IN OPTIMIZATION.
   \textsc{setl} NEWSLETTERS, JULY 1971 6 PP
   P. Owens, K. Kennedy

38. AN ALGORITHM FOR LIVE-DEAD ANALYSIS INCLUDING NODE-SPLITTING FOR IRREDUCIBLE PROGRAM GRAPHS.
   \textsc{setl} NEWSLETTERS, JANUARY 1972 10 PP
   K. Kennedy

39. MORE DETAILED SUGGESTIONS CONCERNING \textit{DATA STRATEGY} ELABORATIONS FOR \textsc{setl}.
   \textsc{setl} NEWSLETTERS, 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.

SEPTEMBER 1971 26 PP  H. WARREN

54. CURRENT STATUS OF BALISETL.

SEPTEMBER 1971 5 PP  S. CRUBER

55. SETL SUGGESTIONS AND QUESTIONS.

SEPTEMBER 1971 5 PP  S. FINKELSTEIN

56. ADDITIONAL COMMENTS ON SOME BASIC SETL OPERATIONS.

SEPTEMBER 1971 4 PP  J. FARLEY

56A. MORE COMMENTS ON SETL.

OCTOBER 1971 5 PP  J. FARLEY

56B. MORE SETL COMMENTS.

OCTOBER 1971 10 PP  J. FARLEY

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.

OCTOBER 1971 25 PP  R. KRUTAR

60. SETL COMPILED CODE: CALLS TO SETL PROCEDURES.

NOVEMBER 1971 48 PP  H. WARREN
61. SYNTACTIC STRUCTURE OF SETL.
   NOVEMBER 1971 14 PP  K. Maly

62. FINAL SPECIFICATION OF SETL AND PARSER.
   DECEMBER 1971 20 PP  K. Maly

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. BALMSETL USERS MANUAL VERSION 1.0.
   FEBRUARY 1972 71 PP  E. Milgeon

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  S. Brown

69. THE SETL PROJECT - MASTER CATALOG (REVISED 10/73).
   FEBRUARY 1973 37 PP  R. Ahfs

70. SETL3 USERS MANUAL.
   FEBRUARY 1972 66 PP  J. Schwartz
71. DEDUCING THE LOGICAL STRUCTURE OF OBJECTS OCCURRING IN SETL PROGRAMS.  
   APRL 1972  14 PP  
   J. SCHWARTZ

72. AN INTRODUCTORY EXPLANATION OF SETL: A STATUS REVIEW AND PROFILE OF THE SETL USER GROUP.  
   APRIL 1972  13 PP  
   J. SHIELDS

73. USERS GUIDE TO THE SETL RUN-TIME LIBRARY.  
   APRIL 1972  33 PP  
   K. WALKER

74. PROJECT PLAN FOR FIRST STAGE OF IMPLEMENTATION.  
   (PARTIAL TRANSLATION FROM THE RUSSIAN)  
   MAY 1972  3 PP  
   V. CHERNOROD

75. SOME THOUGHTS ON THE USE OF BAIM TO IMPLEMENT SETL.  
   (THIS IS ALSO BAIM BULLETIN NO. 13)  
   JUNE 1972  7 PP  
   E. MILGROM

76. SEMANTIC DEFINITION MATTERS.  
   MAY 1973  91 PP  
   J. SCHWARTZ

77. TRANSFERING SETL TO OTHER MACHINES.  
   SEPTEMBER 1972  1 PP  
   J. SCHWARTZ

78. EXECUTING BAIM AND SETL AT N.Y.L. COURANT.  
   SEPTEMBER 1972  2 PP  
   R. PAIGE

79. NO LONGER AVAILABLE.

80. ALGORITHMS IN THE SETL TEST PACKAGE.  
   SEPTEMBER 1972  3 PP  
   K. CURTIS
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81. MEMORY SIZE OF SETL RUNS.
   September 1972  1 pp  J. Schwartz

82. TIMING COMPARISON BETWEEN SETL AND FORTRAN.
   October 1972  2 pp  E. Desautels

83. USER EXPERIENCE AND HUMAN FACTORS.
   November 1972  16 pp  J. Schwartz

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).
   April 1973  6 pp  H. Warren

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.
   December 1972  18 pp  J. Schwartz
91. A GRAMMARLESS PARSE AND A RELATED METHOD OF RETRIEVAL BY SIMILARITY.  
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J. SCHWARTZ

92. SOME EXPERIMENTS WITH SETL 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 NODAL SPAN PARSE ROUTINE, CORRECTED VERSION.  
JANUARY 1973  10 PP  
Y. FEINROTH

96. POINTERS AND VERY HIGH LEVEL LANGUAGES.  
JANUARY 1973  3 PP  
M. HINSKY

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 B A L M B U L L E T I N NO. 21)  
JANUARY 1973  4 PP  
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100. MAKING SETL DEBUGGING RUNS.  
FEBRUARY 1973  11 PP  
J. WABREN
101. HOW TO PROGRAM IF YOU MUST (THE SETL STYLE).
MARCH 1973 15 PP

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

103. PRELIMINARY PLAN FOR BALSAM-LITTLE TRANSLATOR.
APRIL 1973 8 PP

104. AN ALGORITHM TO REPRESENT A COLLECTION OF SETS AS A DIRECT
PRODUCT OF INTERVALS ON THE LINE.
MARCH 1973 9 PP

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

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

107. LINEAR FUNCTION TEST REPLACEMENT.
MAY 1973 5 PP

108. APL - SETL: AN EXTENSION OF SETL ACHIEVED FROM USER VARIED
SEMANTICS.
MAY 1973 34 PP

109. FASTER EXECUTION FOR THE LITTLE BASED BALM SYSTEM.
JULY 1973 4 PP

110. MORE ON SEMANTIC DEFINITION MATTERS.
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111. GLOBAL DEAD COMPUTATION ELIMINATION.
    K. KENNEDY
    AUGUST 1973     2 PP

112. AN ALGORITHM TO COMPUTE COMPACTED USE-DEFINITION CHAINS.
    K. KENNEDY
    AUGUST 1973     6 PP

113. LITTLE CODE GENERATION FROM THE BALM COMPILER.
    S. BROWN
    AUGUST 1973     10 PP

114. A SETL3 TO PUBLICATION SETL TRANSLATOR.
    A. GETZLER
    AUGUST 1973     7 PP

115. A SETL REPRESENTATION OF THE MARYLAND GRAAL GRAPH-MANIPULATION
    LANGUAGE.
    G. WEINPERGER
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    AUGUST 1973     32 PP

    (THIS IS ALSO SETL(C) NEWSLETTER 11.)
    A. FRESHOV ET AL
    AUGUST 1973     5 PP
    (NOVOSIBIRSK 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, APRIL 1972 21 PP
   R. ABES
   H. WARREN
   E. MILGROM

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

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

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

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

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

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

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

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

20. REMARKS ON THE STRUCTURE OF THE LITTLE RUN TIME LIBRARY, NOVEMBER 1972 5 PP
    J. SHIELDS
21. SOME PROPOSALS FOR IMPROVING THE ACCESSIBILITY OF THE LITTLE COMPILER.
   J. SHIELDS
   DECEMBER 1972    9 PP

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

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

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

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

   L. CHERNOBROD
   AUGUST 1973      3 PP

29. A MEDIUM-LEVEL SEMANTIC ENVIRONMENT BASED ON LITTLE.
    J. SCHWARTZ
    SEPTEMBER 1973   20 PP
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
PART 5 - BALM NEWSLETTERS.

1. INTRODUCTION.
   JUNE 1971  3 PP  I. HARRISON
2. THE BALM MACHINE.
   JUNE 1971  11 PP  I. HARRISON
3. THE BALM SIMULATOR ON THE CDC 6600.
   JUNE 1971  5 PP  S. 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 BALM INSTRUCTIONS
   JULY 1971  1 PP  I. HARRISON
   AUGUST 1971  3 PP  S. 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  J. BROWN

13. SOME THOUGHTS ON THE USE OF BALM TO IMPLEMENT SETL.
   JUNE 1972  7 PP  E. 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  J. BROWN

17. PAGING WITHIN BALM.
   OCTOBER 1972  4 PP  I. HARRISON

18. PAGING PRIMITIVES.
   NOVEMBER 1972  2 PP  J. BROWN

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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.

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

2. A CONCEPTUAL REVIEW OF THE SET-THEORETIC LANGUAGE SETL.
   J. LEVIN
   41 PP

3. LISPSETL USER'S MANUAL, VERSION 1.
   J. LEVIN
   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 SETL/BALM SYSTEM AND A PRELIMINARY IMPLEMENTATION OF SETL.
   J. LEVIN
   10 PP
PART 6 - THE SETL(CYRILLIC) NEWSLETTERS.

9. DECOMPOSITION OF SETL PROGRAMS.
   15 pp
   O. 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
    (NOVOSIRIJSK GROUP)

12. PARALLEL PROGRAMMING AND HIGH LEVEL LANGUAGES.
    6 pp
    A. MARINYANI
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) DECK HYPRES (133 CARDS) CODER: E. SCHONBERG AN AUTOMATIC THEOREM PROVER 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) CODER: K. ABDALI 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) CODER: G. WHITEHEAD A MODIFICATION OF MARSHALL HALL'S ALGORITHM FOR THE MARRIAGE PROBLEM WHICH WILL YIELD A MAXIMAL SYSTEM OF DISTINCT REPRESENTATIVES (MAXIMAL MATCHING).

4. DECK TOPDATA (112 CARDS) DECK TOPDOWNA (236 CARDS) DECK TOPDOWNP (248 CARDS) CODER: S. MARATECK S. BROWN A TOP DOWN PARSER AND ITS INPUT DATA; COMPLETE WITH A BOOTSTRAPPING META-COMPIILER THAT OPERATES ON AN EXTENDED BACKUS NORMAL FORM DESCRIPTION OF THE LANGUAGE.
5. DECK MCKEMAN (531 CARDS)  GENERATES THE MCKEMAN TABLES (A SERIES OF GENERALIZED PRECEDENCE TABLES) USING BACKUS NORMAL FORM GRAMMAR AS ITS INPUT. SAMPLE INPUT DATA IS INCLUDED.
CODER: I. KAYE

6. DECK CHOMSNF (164 CARDS)  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.
CODER: H. ANTHONY

7. DECK GENISPF (478 CARDS)  A GENERALIZED NODAL SPAN PARSER, WITH ATTRIBUTES. SAMPLE INPUT DATA IS INCLUDED.
DECK GENNSHPD (7 CARDS)
CODER: Y. FEINROTH

8. DECK EJLERUP (117 CARDS)  A SETL8 CODING OF L. EULER'S GRAPH TRACING ALGORITHM USUALLY ASSOCIATED WITH THE BRIDGES OF KÖNIGSBERG.
CODER: H. MULLISH

9. DECK LEXGENA (477 CARDS)  THE INPUTS TO THIS MINI-SYSTEM APE TABLES DESCRIBING THE CHARACTER SET, CHARACTER TYPES, AND ACTIONS TO BE TAKEN DURING THE LEXICAL SCAN OF AN ARBITRARY LANGUAGE. THE OUTPUT IS A WORKING LEXICAL SCANNER FOR THE DESCRIBED LANGUAGE, COMPLETE WITH TOKEN FILE AND ERROR MESSAGE GENERATORS.
DECK LEXGENP (65 CARDS)
DECK LEXGENC (43 CARDS)
CODER: T. POLACZY

10. DECK HEURMAC (29 CARDS)  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.
DECK HEURA (202 CARDS)
DECK HEURS (376 CARDS)
DECK HEURC (91 CARDS)
DECK HEURD (92 CARDS)
DECK HEURE (82 CARDS)
CODER: L. WELLEER
11. DECK GPS (439 CARDS)  
CODER: A. GETZLEP  
A STRIPPED DOWN VERSION OF ERNST, 
NEVELL AND SHAW'S GENERAL PROBLEM 
 SOLUTION PROGRAM, WITH A SAMPLE SPECI- 
FICATION FOR THE MONKEY AND BANANAS PROBLEM.

17. DECK SGGRAPH (100 CARDS) 
DECK PARTREE (124 CARDS)  
DECK BALANCE (289 CARDS)  
CODER: W. TSUI  
TWO SEPARATE ALGORITHMS TO FIND THE 
STRONGLY CONNECTED REGIONS OF A DI- 
RECTED 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. GUTCH  
A COLLECTION OF ROUTINES FOR THE 
STANDARD ALGEBRAIC MANIPULATIONS OF 
POLYNOMIALS. TEST INPUT IS INCLUDED.

14. DECK GRAAL (651 CARDS)  
CODER: G. WEINBERGER  
A SETL REPRESENTATION OF THE UNIVERSI- 
ITY OF MARYLAND GRAPH MANIPULATION 
LANGUAGE (GRAAL) OF BHFELHOLD, BASIL 
AND HESZTENYI AS EXPLAINED IN SETL 
NEWSLETTER 115. SAMPLE INPUT DATA IS INCLUDED.
A library of test programs, coded in SETL, currently resides on the file SETLTESTPACKAGES. 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 (139 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 USetUp (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 SEIVE 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 NODAL SPAN PARSE ROUTINE WHICH CAN APPLY
    ANY PRODUCTION GRAMMAR IN CHOMSKY NORMAL FORM TO AN INPUT STRI

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 ORDERED
    GRAPH; DETERMINE THE MAXIMUM FLOW IN A NETWORK; AND APPLY
    THE MAXIMUM FLOW ALGORITHM TO THE MATCHING PROBLEM.
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 DESCRIBED 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. MÄLY IN MINNEAPOLIS.

***

1. CATSUM=2243      PFN=SETLNSALG   JY=13
    SETL6 PROGRAM = FRONT END FOR NAME SCOPING ALGORITHMS.

2. CATSUM=37372      PFN=SRC1203    JY=61
    BULK SETL SOURCE = CODE AND MANUAL.

3. CATSUM=13651      PFN=STOLCOMPL   JY=1
    SAME AS CYCLE 2 BEFORE RESEQUENCING.

4. CATSUM=137562      PFN=STOLCOMPL   JY=2
    SETL COMPILER IN LITTLE + SETL COMPILER IN SETL.

5. CATSUM=137566      PFN=STOLCOMPL   JY=1
    SAME AS CYCLE 2 BEFORE RESEQUENCING

6. CATSUM=53751      PFN=STOLCOMPL   JY=2
    SETL COMPILER IN LITTLE.
7. CATSUM=30015 PFN=TESTPL
   MISCELLANEOUS COMPLETE TEST PLGRAMS  $Y=1$

8. CATSUM=3065 PFN=THEOREMPL
   THEOREM PROVER IN SETL.  $Y=1$

9. CATSUM=562 PFN=TOPDOWNPL
   TOP DOWN PARSER IN SETL.  $Y=10$

10. CATSUM=54543 PFN=LDSLTLPL
    SHOR TED LITTLE COMPILER IN FORTRAN.  $Y=7$

11. CATSUM=20167 PFN=4SOURCE
    SOURCE CODE FOR SIMULATOR SYSTEM.  $Y=4$

12. CATSUM=43240 PFN=4SOURCE
    SOURCE CODE FOR TRANSLATOR SYSTEM.  $Y=12$

13. CATSUM=11316 PFN=HLM4BINARY
    MBALM FILE OF THE BALM COMPILER SYSTEM.  $Y=1$

14. CATSUM=122135 CILLIB
    SETL COMPILER IN FORTRAN. SET1174

15. CATSUM=77431 CILLIB
    SUPPORT LIBRARY FOR SETL (INCLUDING METACOMPIILER). SLB1174

16. CATSUM=67250 CILLIB
    BALM SOURCE FILE FOR BALM SYSTEM. BL14SRC

17. CATSUM=302175 TAPE 776
    LITTLE TO FORTRAN TRANSLATOR. FILE 1

18. CATSUM=3084 PFN=ASSGNV1
    FORTRAN UTILITY PROGRAM.  $Y=8$

19. CATSUM=41247 PFN=CLEANLLEXL
    LITTLE LEXICAL SCANNER IN LITTLE - REFORMATTED.  $Y=28$

20. CATSUM=2705 PFN=EDITSETUP
    SETL PROGRAM YIELDING LEX SCANNER IN FORTRAN FOR ANY LANGUAGE.  $Y=3$
21. CATSUM=45155  PFN=GENZZZZZ1174  JY=37
LITTLE TO SETL ARCHIVES, FORTRAN FOR OPTIMIZER USE.

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

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

24. CATSUM=5625  PFN=LITTLELIRSOUPCF  JY=6
ASSEMBLER LANGUAGE UTILITY ROUTINES USED BY LITTLE COMPILER.

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

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

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

28. CATSUM=146455  PFN=LTLCMPPLF  JY=10
LITTLE COMPILER PROPER IN FORTRAN.

29. CATSUM=72750  PFN=LITLLEXPLF  JY=16
LITTLE LEXICAL SCANNER AND MACRO PROCESSOR IN FORTRAN.

30. CATSUM=20566  PFN=LITLOPTPL  JY=5
OPTIMIZATION ROUTINES FOR LITTLE IN SETL8.
31. CATSUM=120223 PFN=LTLP1
LITTLE PARSER, CODE GENERATORS, PRINT UTILITY; ALL IN LITTLE.

32. CATSUM=126046 PFN=MANUALSPL
VARIOUS SETL AND LITTLE NEWSLETTERS, AND THE MANUALMAKE? PROGR

33. CATSUM=566 PFN=NEWS78
GENESIS OF SETL NEWSLETTER 78.

34. CATSUM=235 PFN=NEWS79
GENESIS OF SETL NEWSLETTER 79.

35. CATSUM=360 PFN=NEW1YP
TYPE FINDING ALGORITHM IN SETL.

36. CATSUM=1176 PFN=PAP
TOP DOWN PARSER IN SETL.

37. CATSUM=20265 PFN=SETLTSTEFLACKAGES
SEE PART 7 OF THIS DOCUMENT.

38. CATSUM=130623 PFN=SETLLIPPL
SETL PJN TIME LIBRARY IN LITTLE.
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.

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<td>10415 THE BALM4 SYSTEM.</td>
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<td>39226 THE BALM SETL SAVED FILE.</td>
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<td>63443 SETL AND LITTLE MACHINE READABLE NEWSLETTERS.</td>
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<td><strong>PART 9 - THE SETL ARCHIVES.</strong></td>
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<td>20. LDSPL</td>
<td>VARIOUS SYSTEMS PROGRAMS OF D. SHIELDS.</td>
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<td>21. LTLLEXF</td>
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<td>CONTINUATION OF ITEM 26.</td>
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