LIBRARY CATALOGUE AUTOMATION FOR A PUBLIC LIBRARY
(L'AUTOMATION DU CATALOGUE POUR UNE BIBLIOTHEQUE PUBLIQUE)

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ABSTRACT

The advantages of a book catalogue printed by a computer system become more evident when a newly formed branch library requires a copy of the main library card catalogue. Consideration of the needs of the library patrons and the staff led to a decision to create a series of 120 character machine readable records covering the needs of all users. These records may be sorted to produce selected or complete catalogues in any of four presentations: by Dewey Class, by Author, by Title or by Subject on paper or microfilm. (Les avantages d'un catalogue imprime par ordinateur devienment plus evidents guand une nouvelle succursale d'une biblitheque demande une exemplaire du catalogue sur cartes de la bibliotheque principale. En considerant les besoins des usagers de la bibliotheque et du personnel, il fut decide de creer une seri de records de 120 characteres lisibles a la machine pour repondre au besoin de tous les usagers. les records peuvent etre arranges de facon a prodire des catalogues choisis ou complets dans une des quatre formes suivantes: par classe Dewey, par auteur ou par sujet sort sur papier ou sur microfilm.)

INTRODUCTION

When the Dartmouth Public Library opened a new branch, a library catalogue was strongly advocated by the staff as a means of giving better service to the users. The Main Library has a card catalogue for about 40,000 titles but the cost estimates for reproduction this for use at the branch were higher than were acceptable. This, with the continuing added cost of preparing an extra set of cards to maintain the catalogue and the clerical effort of interfiling them motivated the staff to consider alternative approaches.

The School of Library Service at Dalhousie University was approached for assistance in proposing and evaluating a form of automation which might meet the objectives of processing a catalogue within

the budget limitations of the library. The first system considered was based on the Keyword in Context (KWIC) approach used at the School in the teaching programs as a means of introducing the handling of words and text in computer systems. This program displays 120 characters on a line with the Keywords of each line arranged in alphabetic sequence down the center of the page. The costs associated with this system were known to be favourable but the content of the line and the effective display for use by the staff and public were questions requiring the experience and judgement of all concerned, especially the Dartmouth Library Staff.

DESIGNING THE RECORD

The starting point for creating the machine readable record was the self-list of the Library. These cards showed the Dewey Decimal Classification, author(s), title(s) and subject(s) chosen from Sears List of Subject Headings with limited imprint and other information. The International Standard Book Number (ISBN) which would have provided a link to the MARC (Machine Readable Catalogue) records of the National Library of Canada and other countries was not available from this source and would have involved a search for each title if it were to be included. In the interests of costs, the data to be included was restricted, to the information available on the Shelf List cards. Single character mnemonic indicators were created for the Reference and Junior Collections as well as for Fiction, Large Print, French Text, Easy Read and Phonograph Records. There would allow separate printed catalogues to be prepared for these items in the collection.

The decision on the maximum number of authors, titles and subjects as well as the maximum numbers of characters in each was made after study of a sample of the items and of other catalogue listings. It was decided that only the date of the imprint would be included in the record. The resulting-fixed length, fixed field format - to use the jargon of data processing - offers cost savings which offset the possible inconvenience which the limitations impose. As far as input is concerned, these limitations have not proved difficult to work with however their acceptance in the basis of the lower cost of input, computer processing and the printed catalogues. Attempts to use the KWIC programs to prepare the catalogues were not acceptable mainly because of the format which, it was felt, would be confusing to the occasional user. It was decided to design a system which retained some of the cost saving features of KWIC but offered a more acceptable presentation of the printed catalogue. The format of the line is shown in Fig. I. It will be seen that in each of the four catalogues the line is the same except that for the subject presentation, the position of the subject and of the title have been interchanged and markers inserted to indicate the start of the title. A separate line is created for each subject assigned to a title. The system allows for up to eight subjects, two added authors and three added titles for any item. This has proved more than adequate for most

titles in the library as shown in the statistical information given in Table I.

		Number	o/o
Prime Records		35806	
Added Subject	Cards 1	1895	5.4
Added Subject	Cards 2	131	0.36
Added Subject	Cards 3	19	0.05
Added Authors	Cards 1	2300	6.7
Added Authors	Cards 2	76	0.21
Added Titles	Cards 1	780	2.2
Added Titles	Cards 2	67	0.19
Added Titles	Cards 3	34	0.09

TABLE I. USE OF ADDED RECORDS

The prime record carries, the title, author, class and indicators and either one or two subject entries as space permits. Added subject cards carry one or two further subject headings. It may be necessary to shorten the title on added subject entries to allow room in the 80 character field for the subject heading. As only 5 out of 10,000 titles used the 3rd card it can be concluded that only a very small number would have used a 4th, had the system provided for this. A similar argument applies to added authors and titles.

INPUT OF DATA

The conversion of a file of 40,000 titles to machine readable records is a formidable task. Alternatives considered were "Key-to-tape" punches, optical character readers and terminals directly connected to a computer. Considering data processing services in Halifax and the facilities available at Dalhousie University, the decision was made to prepare input forms and to keypunch the data, the resulting cards were run through an Edit Program, without verification on the punches. Format errors were identified by the edit program and the "record" was displayed for proofreading. After correction, the cards were run on an update routine which added to the "Master File" and also allowed changes to be made to records on the file. These could be to delete a record or change any of the items of information on a record. The flow chart in Fig. II shows the sequence which allows for the printing of any or all of the four catalogue listings in Author, title, subject or Dewey classified order. Present plans are to prepare 9 copies of the first three listings and three of the classified list. All programs are written in Cobol, a language which allows for easy transfer to other computer installations.

COSTS

Systems design, programming and implementation required about twenty-man-weeks. The transfer of the data from the shelf list cards to the keypunch forms was done, for the most part, by highschool students as summer employment. The library staff organized this part of the work, answered questions as they arose and checked the readability and general format of the input sheets. The library staff also read the listings from the edit program and prepared change records for the update program as required.

The keypunching was done by trained operators, with some help from students of the local technical school. The cost of preparing the completed input was about twenty cents per title, half of which was for preparing the forms, one quarter for keypunching the input and corrections and the remaining quarter for supervision and proofreading. The computer charges for the initial master file including printing copies of the control listings and of the catalogues has been about $800.00. The annual computer charges for new titles and deletions from the catalogues (500/ month additions 200/month deletions) comulated monthly and of a new annual cumulated catalogue is estimated at about $1,000.00. The overall costs compare favourably with the present costs of maintaining the card catalogue in the main library. User acceptance of the printed catalogues will be the real test of the system. This we expect to have next month.

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DEWEY	YEAR	AUTHOR	TITLE AND SUBJECT(S)	
921.H	73	ALBERTS,ROBERT C.	GOOD PROVIDER =HEINZ,HENRY JOHN	100010
335.	74	ALVAREZ DEL VAYO, JULIO	MARCH OF SOCIALISM =SOCIALISM	100066
R634.9	68	ATLANTIC DEVELOPMENT BOARD	FORESTRY IN THE ATLANTIC PROVINCES =FORESTS AND FORESTRY - NOVA SCOTIA	100040
FICT.	66	BENCHLEY,NATHANIEL	MONUMENT	100007
574.994	71	BENNETT, ISOBEL	GREAT BARRIER REEF =CORAL REEFS AND ISLANDS	100063
629.143566		BESTER, ALFRED	LIFE AND DEATH OF A SATTELITE =SPACE VEHICLES =ARTIFICIAL SATELLITES	100037
629.143567		BORDEN, NORMAN E.	JET ENGINE FUNDAMENTALS =JET PROPULSION =GAS TURBINES	100036
FICT.	74	BUNTING,JOSIAH	ADVENT OF FREDERICK GILES	100012
R631.4	69	CANADA. DEPT OF AGRICULTURE	SOIL SURVEY OF ANNAPOLIS COUNTY N.S. =AGRICULTURE - NOVA SCOTIA	100041
R384.	71	CANADA. DEPT OF ENERGY M.& R.	FORESTRY AND WILDLANDS.(RESOURCE SATELLITES .. RPT . NO. 5)	100026
R348.	71	CANADA. DEPT OF ENERGY M.& R.	CARTOGRAPHY AND PHOTOGRAMMETRY. (RESOURCE SATELLITES .. RPT NO.4)	100025
R384.	71	CANADA. DEPT OF ENERGY M.& R.	SATELITE ANG GROUND STATION ENGINEERING. RESOURCE SATELLITES .. RPT. NO. 9.	100024
629.2	72	CENTER FOR AUTO SAFETY	SMALL ON SAFETY: THE DESIGNED-IN DANGERS OF THE VOLKSWAGEN	100033
R629.2	X75	CHILTON	CHILTON'S AUTO REPAIR MANUAL =AUTOMOBILES-REPAIRING	100032
629.2	73	CHILTON	CHILTON'S REPAIR AND TUNE-UP GUIDE (FOR THE) JEEP UNIVERSAL	100034
321.03	73	COHEN, BENJAMIN JERRY	QUESTIONS OF IMPERIALISM: THE POLITICAL ECONOMY OF DOMINANCE AND DEPENDENCE	100054
940.537	41	DAFOE,JOHN,W.	CANADA FIGHTS =WORLD WAR-2 1939-1945 CANADA	100017
133.9	74	DELACOUR, JEAN BATISTE, PSEUD.	GLIMPSES OF THE BEYOND: .. PEOPLE WHO HAVE CROSSED THE BRINK OF DEATH ..	100046
921.D	64	DICKIE,JOHN	UNCOMMON COMMONER: A STUDY OF SIR ALEC DOUGLAS-HOME =DOUGLAS-HOME	100030
FICT.	74	DOBLER,BRUCE	ICEPIC: A NOVEL ABOIT LIFE AND DEATH IN A MAXIMUM SECURITY PRISON	100020
136.3	73	DOBZHANSKY, THEODOSIUS G.	GENETIC DIVERSITY AND HUMAN EQUALITY =GENETICS	100047
329.973	73	DOUGHERTY, RICHARD	GOODBYE, MR. CHRISTIAN; A PERSONAL ACCOUNT OF MCGOVERN'S CAMPAIGN ..	100064
796.	71	DURSO,JOSEPH	ALL AMERICAN DOLLAR =SPORTS	100016
959.7	72	ELLSBERG,DANIEL	PAPERS ON THE WAR =VIETNAM - HISTORY - CIVIL WAR	100028
325.2	73	EPSTEIN, JULIUS	OPERATION KEELHAUL: THE STORY OF FORCED REPATRIATION FROM 1944 TO THE PRESENT	100055
364.244	73	GOLDSTEIN, MICHAEL JOSEPH	PORNOGRAPHY AND SEXUAL DEVIANCE: A REPORT OF THE LEGAL AND BEHAVIOURAL INST.CA.	100061

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DEWEY	YEAR	AUTHOR	TITLE AND SUBJECT(S)	
325.342	74	UZOIGWE,G.	=AFRICA - HISTORY >BRITAIN AND THE CONQUEST OF AFRICA: ..	200056
179.	74	NOUWEN, HENRI J.	=AGED >AGING	100049
R631.4	69	CANADA. DEPT OF AGRICULTURE	=AGRICULTURE - NOVA SCOTIA >SOIL SURVEY OF ANNAPOLIS COUNTY N.S.	100041
629.143567		BORDEN, NORMAN E.	=AIRPLANES - ENGINES >JET ENGINE FUNDAMENTALS	200036
629.131	74	WINTER, WILLIAM JOHN	=AIRPLANES - MODELS >HANDBOOK OF MODEL PLANES, CARS AND BOATS	100039
574.4728		HEWSON,HAROLD ANDREW	=ANIMALS - NEWFOUNDLAND >FOXES OF BEACHY COVE	100023
630.1	72	LISTER-KAYE, JOHN	=ANIMALS - SCOTLAND >WHITE ISLAND	100042
R631.4	69	CANADA. DEPT OF AGRICULTURE	=ANNAPOLIS COUNTY >SOIL SURVEY OF ANNAPOLIS COUNTY N.S.	200041
629.143566		BESTER, ALFRED	=ARTIFICIAL SATELLITES >LIFE AND DEATH OF A SATTELITE	100037
R384.	71	CANADA. DEPT OF ENERGY M.& R.	=ARTIFICIAL SATELLITES IN TELECOMMUN. >SATELITE ANG GROUND STATION ENGINEERING	200024
629.2	X73		=AUTOMOBILES - DESIGN AND CONSTRUCTION >COMPLETE CHEVROLET BOOK	200044
629.2	X73		=AUTOMOBILES - HISTORY >COMPLETE CHEVROLET BOOK	100044
629.131	74	WINTER, WILLIAM JOHN	=AUTOMOBILES - MODELS >HANDBOOK OF MODEL PLANES, CARS AND BOATS	300039
629.2	73	CHILTON	=AUTOMOBILES - REPAIRING >CHILTON'S REPAIR AND TUNE-UP - JEEP UNIVERSAL	200034
629.2	72	CENTER FOR AUTO SAFETY	=AUTOMOBILES - SAFETY MEASURES >SMALL ON SAFETY: ..	200033
R629.2	X75	CHILTON	=AUTOMOBILES-REPAIRING >CHILTON'S AUTO REPAIR MANUAL	100032
221.	73	VAN DOREN, MARC	=BIBLE - O.T. - CRITICISM AND INTREPETATION >IN THE BEGINNING, LOVE: ..	200050
629.131	74	WINTER, WILLIAM JOHN	=BOATS AND BOATING - MODELS >HANDBOOK OF MODEL PLANES, CARS AND BOATS	200039
398.	73	NEWALL,VENETIA ED.	=BRIGGS, KATHERINE M. >WITCH FIGURES: FOLKLORE ESSAYS ..	100062
940.54	72	MUNRO,ROSS	=CANADA ARMY >GAUNTLET TO OVERLORD: ..	200027
311.43	74	HOLT,JOHN CALDWELL	=CHILDREN,MANAGEMENT >ESCAPE FROM CHILDHOOD	100002
325.342	74	UZOIGWE,G.	=COLONIZATION >BRITAIN AND THE CONQUEST OF AFRICA: ..	200056
739.	72	KRAMER,KARL	=COPPERSMITHING >COPPERCRAFT AND SILVER MADE AT HOME	100018
739.	72	KRAMER,KARL	=COPPERWORK >COPPERCRAFT AND SILVER MADE AT HOME	100018
574.994	71	BENNETT, ISOBEL	=CORAL REEFS AND ISLANDS >GREAT BARRIER REEF	100063
343.1	74		=CRIME AND CRIMINALS - CANADA >QUEEN V LOUIS RIEL:	200061
362.71		FIZZO, PEGGY CALY	=DAY NURSERIES >INFANT DAYCARE DEBATE: NOT WHETHER BUT HOW	100061
921.D	64	DICKIE,JOHN	=DOUGLAS-HOME >UNCOMMON COMMONER: A STUDY OF SIR ALEC DOUGLAS-HOME	10003
J743.	39	LOOMIS,ANDREW	=DRAWING >FUN WITH A PENCIL	10000
329.973	73	DOUGHERTY, RICHARD	=ELECTIONS U.S. >GOODBYE, MR. CHRISTIAN: ..	20006

FIG. I Author Catalogue above and Subject Catalogue below. The Title and Dewey catalogues are the same format as the Author catalogue but ordered in alphabetic sequence by the first words of the title and in numeric sequence by the Dewey Decimal Classification number respectively.

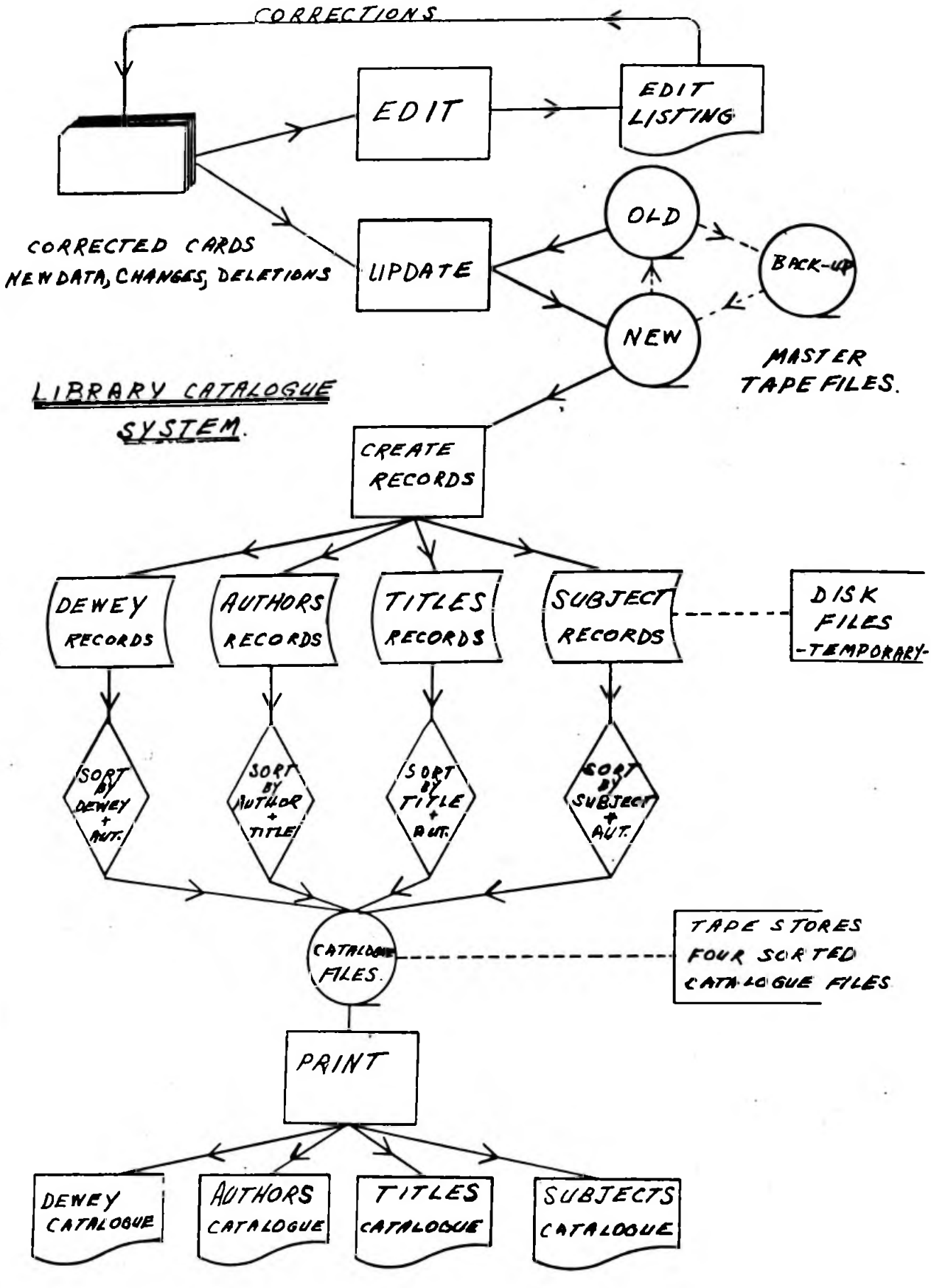

FIG. II Flowchart of the System

The four computer programs shown are EDIT, UPDATE, CREATE RECORDS and PRINT. After edit, the corrected cards go to the update program which creates a new master tape. This becomes the input to Create Records which develops separate catalogue records for each of the four catalogue listings. These when sorted are stored on a catalogue tape from which catalogues can be printed as needed.