R. Roger Cole
January 1, 1990

U_L_T_R_A_F_I_L_E_R_ _-_ _A_ _B_A_S_I_C_ _F_i_l_i_n_g_ _S_y_s_t_e_m

ULTRAFILER is a system to allow you to manage a collection of data records. ULTRAFILER has functions to add new records, change existing records, delete records, and even un-delete records. Reporting functions allow you to print reports or labels.

ULTRAFILER has a few features that even some commercial programs lack. It has the ability to print 1 or 2 or 3 wide labels. The sort option allows a multi-field sort. The reporting function automatically centers columns and column headers within available space. A unique UNDELETE option allows you to re-use space within your database without reorganization. A fairly sophisticated algorithm allows multiple selection conditions.

The first module of ULTRAFILER is MENU. This program does what the name suggests--gives a menu of options. The DEFINE module should be entered to first set up a new database. ADD should be entered to add the first records to a new database or add more records to an existing database. The INQUIRE module produces printed reports, labels, and can update or delete existing records. The REFORMAT module is used to modify field definitions for an existing database. It will allow you to add/delete fields, change field size and change field names. Each of these modules will be examined in depth.

First, however, an explaination of the file structure is in order. ULTRAFILER has two files for each database. The first file has an extension of .DEF and contains the definitions of all fields within the database. It also contains certain other information such as date updated, total record count, deleted records, etc. The other file, with the extension of .DAT, is the actual data itself. Each record is actually 1 character longer than the DEFINE program indicates. The last character of each record is an EOL (decimal 155). The maximum number of fields per record is 15. The maximum number of characters per field is 100. Additionally, the total sum of characters cannot exceed 255 (maximum record length).

The number of records that can be placed upon a diskette can be determined by dividing the free bytes by the record length + 1. Several smaller data files can be placed upon one diskette as can the programs themselves if room permits. For larger data files, the programs should be on a diskette by themselves. Multi-drive systems are supported. If you have a multi-drive system, ULTRAFILER expects the program diskette to be on Drive 1 and the database diskette to be on Drive 2.

The MENU module will transport you to either the DEFINE, ADD, INQUIRE or REFORMAT module. In addition, you have 2 other options. You can enter "F" to get a directory of all files on a diskette without exiting to DOS. By typing "T", you will be shown 3 control fields from the data base definition record. They are: Last Date Database was updated, Total Record Count, and Active Record Count.

The number of deleted records is the difference between the Total and Active Records.

DEFINE is the module used to set up a new database. For each field, you must first enter a field name. A field name consists of 1 to 12 characters. Embedded blanks are allowed, but the first character of the name cannot be blank. You may use inverse characters for field names if you wish. The next question you must answer is the field length. This must be a number from 1 to 100. Make sure the field length is long enough to hold whatever data you want the field to contain. Additionally, you should make sure all your fields fit on one screen.

You will repetitively be asked for the next field. When there are no more fields, enter a "/*". You will then be shown all fields you have defined and be offered a menu. You may save the definition, re-enter the definition, return to the main menu or quit. If you decide to save the definition, you will be asked the same questions as in the beginning of the ADD module.

Once your database has been defined, you will want to add records via the ADD module. Upon entering this module, you will be asked a series of questions. You will be asked the current date. Enter it as month/day/year with no slashes. e.g. 022887. Next, you will be asked if you only have 1 disk drive. After this, you will be asked the database name. This name must start with an alphabetic character and can be up to 8 characters long (no special characters or embedded blanks). You will then be instructed to ready the proper diskette and type RETURN.

Before actually entering data, you will be asked if you want "auto-duplication". This feature, when selected, retains the value of all fields from the previously added record. If you wish the field in the current record to be identical to the same field in the previous record, merely type RETURN; otherwise, enter the data for the field.

Upon filling in all fields for the record, you will be shown the data and given the option of saving the record. To save the record, merely type RETURN; otherwise, type any other key followed by RETURN to be given another chance. As with DEFINE, a "/*" will take you to a wrapup routine. You will be shown record counts and then given a menu selection of where to go next.

The INQUIRE module is the heart of the ULTRAFILER system. With this module, you can select records for extraction, sort them, list them on the screen, print a report, or print labels. This module also allows you to change or delete existing records in the database. If you have deleted records in your database, you can "undelete" a record and reuse the space for a new record. You can, if you wish, merely get a total of records meeting your selection criteria.

Once INQUIRE begins, you will be asked the same questions as in the beginning of ADD. Following this, you must make a decision as to the key or keys to be extracted. A key is nothing more than a portion of each record in the database placed into memory. This key can be used to decide which records to extract or as a field in the sort process. Therefore, every field to be compared for extraction or used

for sorting must be declared as a key. The key field need not be as long as the data field, however. If, for example, you wish to sort a 30 character name field, 10 characters may be quite sufficient. Remember, keys take up memory and there is only a finite amount of same.

You may have several key fields for each record. You can sort on each key field individually. If however, you wish to sort on more than one field at a time, you should enter "Y" when asked "MULTI-KEY SORT?". When entering the sort option, the entire key field will automatically be sorted. For a multi-key sort, the key fields must be named in the order they will be sorted (major to minor sort order). If the multi-key sort option is specified, you will be asked at the end of the list of fields if there are any more key fields. This is to allow you opportunity to place sort fields in order if they don't happen to be needed in the order of their being defined.

Once all key fields are declared, INQUIRE reads each data record and fills in a key record for each one. Once all keys are loaded, multiple selects, reports, labels, etc. may be accomplished until such time as a different key would be needed. If different requests are needed for one database, it would be advantageous to extract keys needed for all requests since the extract process can take a while on large databases. Once the key file has been loaded, you will be presented a menu. Before you get the first menu, the keyfile has already been built.

K - BUILD NEW KEY FILE. This option is for a subsequent regeneration of the key file without having to exit to the menu and rerun the INQUIRE module.

S - SORT KEY FIELD. This option will sort a key field of your choice in ascending order. If a multi-key sort was not specified, you will be asked which key you want to sort; otherwise, the entire key area will be sorted.

F - FIND EQUAL KEY. Many times you will want to find just one specific record, perhaps to update it. You could select the E option, enter your selection criteria, then select the B option & browse for your record. This could take some time especially for a larger database because the selection routines compare using BASIC strings. The F option uses a Machine Language routine to find the record you want by searching the key file in memory. You can only search for one string at a time and only for an equal compare. If more than one record meets your criteria, pressing RETURN will search for the next occurrence.

E - ENTER SELECTION CRITERIA. This option allows you to enter selection specifications to determine which records to display or print. You will be led through a routine which will step you through the key fields and ask if you wish to select based upon that field. If so, you will be asked to enter a number corresponding to the type of comparison desired (equal, less than, etc.). You will then be asked to enter comparison data. The data you enter will be compared with each record in the database and, based upon your comparison number, decide whether or not to select the record for display, print, or whatever. If the length of your comparison data is less than the

full field length, both fields will be compared for the shorter length. If more than one selection item is entered, the items have an 'OR' relationship; i.e., a record will be selected if ANY ONE of the selection criteria is satisfied. If option E is never used, all records are presumed to meet your selection criteria.

B - BROWSE THROUGH RECORDS. This option displays selected records upon your screen. After the record has been displayed, the program will wait for your input. If you merely type RETURN, the next selected record will be displayed. If you enter "M", you will be returned to the INQUIRE menu. If you enter "C", you will go to a routine very similar to the ADD program where you will be prompted through each field of the record. If you don't wish to change the field, type RETURN; otherwise, enter the new data for the field. If you type "D", you will be taken to a delete routine. For safety's sake, you will be asked "ARE YOU SURE?". If you answer "Y", the record will be deleted; otherwise you will be displayed the next selected record.

L - PRODUCE LABELS. This option will produce labels. The routine can print 1, 2 or 3-wide labels. You will be guided through a series of requests for further information. The first is "ENTER COLUMNS PER LABEL". Most labels are 35 print positions wide. The second request is "ENTER LINES ON LABEL". Again, most labels are 6 lines high. The third request is "ENTER # OF LABELS ACROSS". This is a number from 1 to 3 depending upon your forms and your printer capability. You will then be asked for Field 1, Line 1. Enter the number of the field. You will then be asked for a field length. If the full length of the field is OK, just hit RETURN; otherwise, enter the length of the field you want to appear on the label. You will then be asked for the next field number on that line. If there are no more fields for that line, enter a zero for field number. If there are no more fields to go on any lines, hit RETURN. Next, you will be told to turn on the printer and type RETURN. ULTRAFILER will now give a lineup test. You will then be asked "ARE FORMS ALIGNED?". If you enter "Y", the labels wil begin to print; otherwise another lineup test will be printed. At the end of the labels, the total account will appear on the screen. If more than 1 field is placed on a single line, the next field will begin 1 space after the last non-blank character in the prior field.

M - RETURN TO MAIN MENU. This option will return you to the Main Menu module.

P - PRINT REPORT. This option will produce a report on your printer. The first line of each page contains the date, a comment of your choice, and the page number. The next printed line contains the headings for the fields you are going to print. Finally, the detail lines are produced having the fields arranged in columns. You will be guided through a series of requests. The first request is "ENTER MAXIMUM COLUMNS". This tells ULTRAFILER how many columns it has to work with. A valid response is a number from 40 to 132. If you enter a number larger than 80, condensed print control characters will be to the printer; otherwise regular print control characters will be sent. The next request is "ENTER MAXIMUM LINES". This is the number of lines that fill fit on one page. Typically this is 66. Next you are asked to "ENTER SPACING". Enter a "1" for single and a "2" for double

spacing. You will then be asked to "ENTER REPORT HEADING". You may enter a heading of from 1 to 40 characters. It will be centered on line 1 of each page. You will next be asked to "ENTER STARTING PAGE #". Merely entering RETURN will assume page # 1. You may want to enter a higher page number if you had to stop an earlier report before it could finish. Finally, you will be told to turn on the printer and type RETURN. Printing will then commence.

R - REPLACE FIELD. This option will replace a field with a constant value. Which records will have a field replaced depends upon your selection criteria.

T - TOTAL SELECTED RECORDS. If you merely want to see how many records in your database meet your selection criteria, use this option. ULTRAFILER will check each record in the database and show the total on the screen.

U - UNDELETE A DELETED RECORD. This option will, if any deleted records are in your database, allow you to reuse one record's space. You will be led through a series of prompts similar to the ADD routine.

C - CHARACTER SCAN. This option will search every field in a record for a specified character string. Which records get searched depends upon your selection criteria.

W - WRITE SUB FILE. This is an option to write out a subset of your existing data base to a new data base. Which records get selected depends upon your selection criteria. ULTRAFILER will write the subfiles to Drive #1 and name the new files "SUBFILE.DEF" and "SUBFILE.DAT". You may rename your new subfiles with DOS. If you only have a 1 drive system, make sure your data diskette has enough room for both your existing data base and your new subfile.

Q - QUIT. This option ends ULTRAFILER and allows you to exit to DOS or run another program.

REFORMAT is the module used for the following: 1. add a new field, 2. delete a field, 3. increase or decrease the size of a field, 4. change the field name, 5. any or all of the above. Upon entering this module, you will be asked a series of questions. You will be asked the current date. Enter it as month/day/year with no slashes. e.g. 022887. Next, you will be asked if you only have 1 disk drive. After this, you will be asked the database name. This name must start with an alphabetic character and can be up to 8 characters long (no special characters or embedded blanks). You will then be instructed to ready the proper diskette and type RETURN.

The first field's characteristics will be shown on the screen along with a menu of options. You may transfer the field as it is, change the field (field name/length), delete the field, end the field definitions, or add a new field. This module will continue until you enter an 'E'.

ULTRAFILER will write the subfiles to Drive #1 and name the new files "SUBFILE.DEF" and "SUBFILE.DAT". You may rename your new subfiles with DOS. If you only have a 1 drive system, make sure your

data diskette has enough room for both your existing data base and your new subfile.

If you increased the size of an existing field, it will be padded to the right with spaces. If you decreased The size of a field, all data beyond the new field length will be lost.

There are some general rules which you should keep in mind. ULTRAFILER modules are BASIC programs. If you have a 400/800, you must use your trusty BASIC cartridge. If you have one of the many AUTORUN/SYS programs which will automatically run a BASIC program, you can put it on the program disk so that the MENU program will be up and running when you boot the diskette. This program should run on any DOS that supports standard ATARI NOTE and POINT commands. If you have the public domain TURBO BASIC interpreter, using it will greatly speed up the key file selection process. If you decide to do this, you will have to name the MENU program AUTORUN.BAS.

Generally, when a YES/NO question is asked, a "Y" is interpreted as a YES; otherwise anything else is interpreted as a NO. In most cases when you are asked for a field length, just typing RETURN will assume the maximum defined length.

The proper control characters for regular and condensed print should be placed in the variables REG$ and COND$ in line 1045 of the INQUIRE module. The values shown are for the Atari XMM801 printer.

To avoid the annoying delay of having a routine poke in machine language, the ML sort routine and the search routine are included in a string. This, however, makes it rather hard to type in those lines. The SORT and the SEARCH programs will, when run, write out the lines for the ML routines as an ATASCII file. You can then load the INQUIRE module and type ENTER "D:SORT.LST" and ENTER "D:SEARCH.LST. The lines containing the machine language routines will be merged. Both machine language routines were published in older issues of Compute.

Since the INQUIRE needs every character of memory it can get for the key file, REM statements have been eliminated. On a 48K or larger system, you should have about 14500 characters for the keys.

The MENU program has two pokes which disable the BREAK key on REV. B ROM's and later. If you have an early model, you should delete that line.

Finally, when printing and you desire to interrupt the printer, merely press any of the function keys (OPTION, SELECT, or START). Do NOT hit SYSTEM RESET. Depending upon what you were doing, you could cause real problems. Every effort has been made to trap all possible errors. As with any computerized data, make sure you BACK UP your files regularly. Remember, the longer between backups, the longer it will take you to get your database back in shape in case of a catastrophe.

Happy Computing!