



Navigating INFO

presented by:

Tim Haithcoat

**University of Missouri
Columbia**



with materials from:

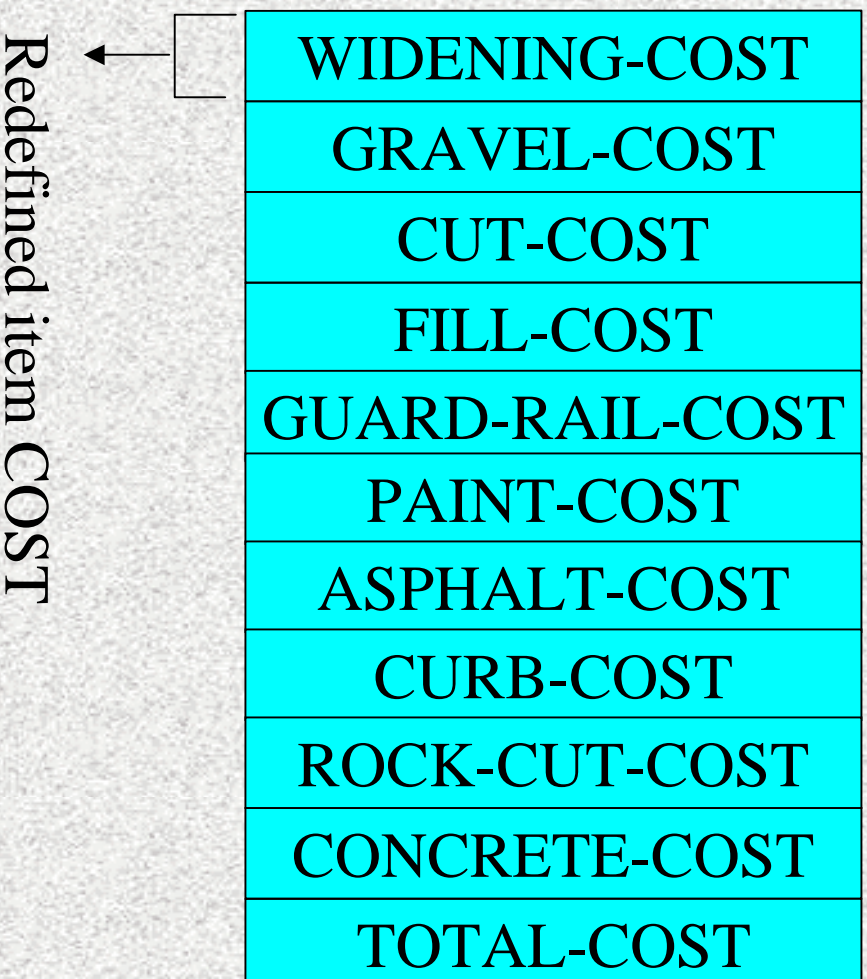
**Environmental Systems Research
Institute**

Section Seven

Additional Concepts

ARRAYS

EXAMPLE:

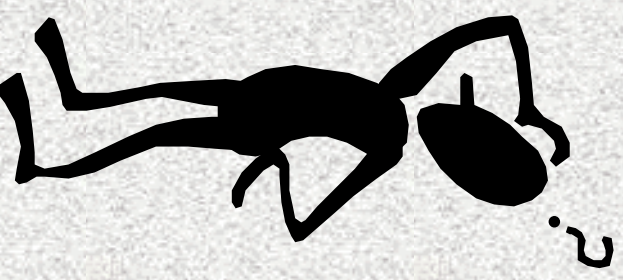


PROBLEM:

Calculate

TOTAL-COST

as the sum of the
10 costs.



CREATING the ARRAY

ENTER COMMAND>REDEFINE

ENTER DATAFILE DEFINITION

ITEM STATITNG COLUMN>1

ITEM NAME>COST

ITEM WIDTH>4,12,F,2

ENTER STARTING COLUMN><CR>

ENTER COMMAND>ALTER COST

WIDENING-COST
GRAVEL-COST
CUT-COST
FILL-COST
GUARD-RAIL-COST
PAINT-COST
ASPHALT-COST
CURB-COST
ROCK-CUT-COST
CONCRETE-COST
TOTAL-COST

ARRAY "COST" ~ ELEMENTS 1-10

ITEM NAME>

ITEM STARTING COLUMN>

ITEM WIDTH>

ITEM OUTPUT WIDTH>

ITEM TYPE>

ITEM DECIMAL PLACES>

ITEM PROTECTION LEVEL>

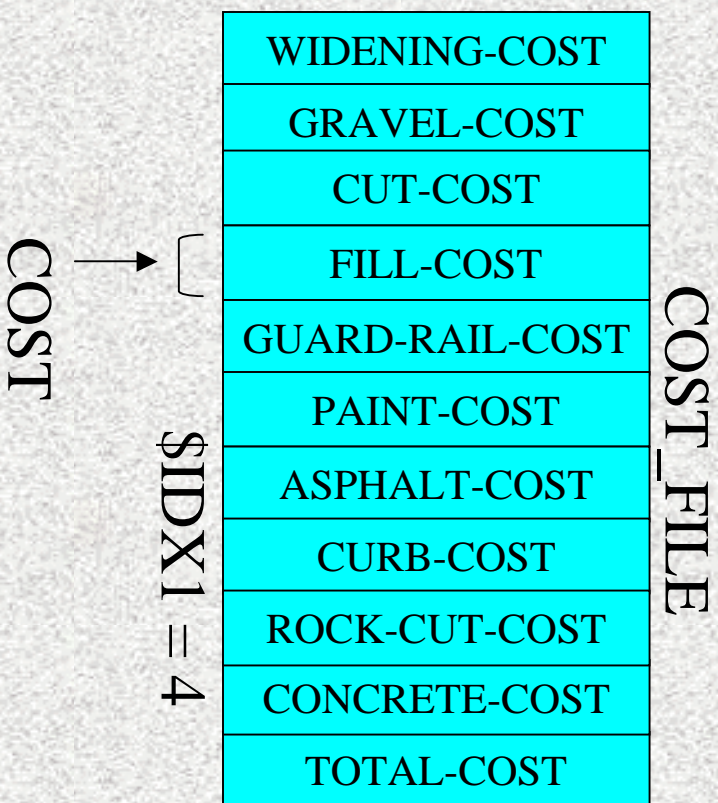
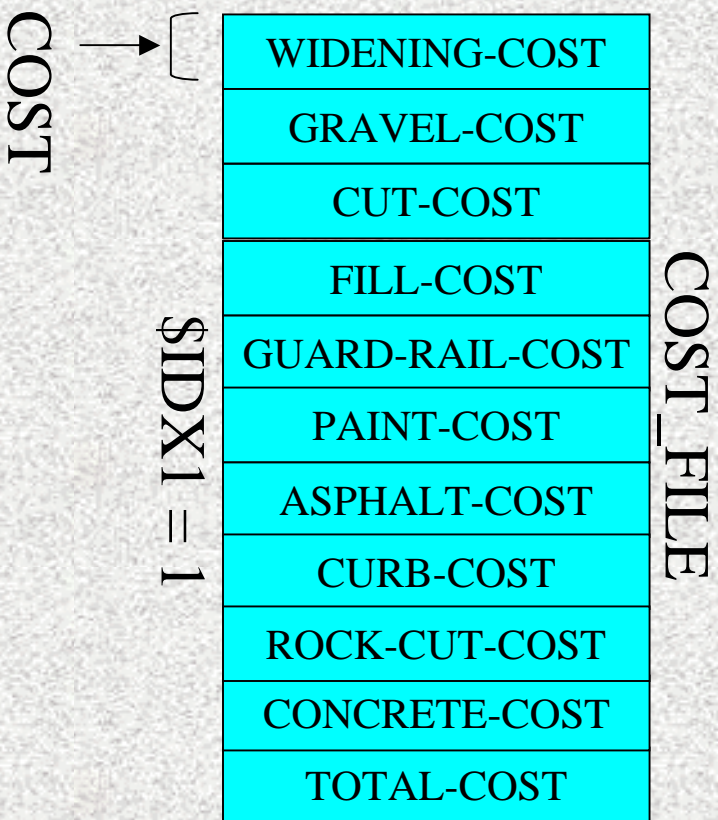
ALTERNATE ITEM NAME>

ENTER KEY E LEVEL>

ENTER INDEX NUMBER>1

ENTER NUMBER OF
OCCURRENCENCES>10

USING the ARRAY



Cross Tabulation of Arrays

COVER.AAT



Objective:
Build a two-dimensional matrix of total length of road by ROAD-CLASS and WIDTH, as follows:

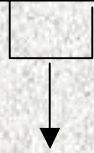
ROAD-CLASS \	12	14	16	18	20	22
1						
2		.	.			
3	.	.	.			
4	.					
5	.					
6	.					

1='length'

Cross-Tabulation

STATS

ROAD-CLASS
W12
W14
W16
W18
W20
W22



Redefined item TLENGTH, INDEX of 1 with 6 occurrences

ARRAYS

Define an INDEX table for WIDTH

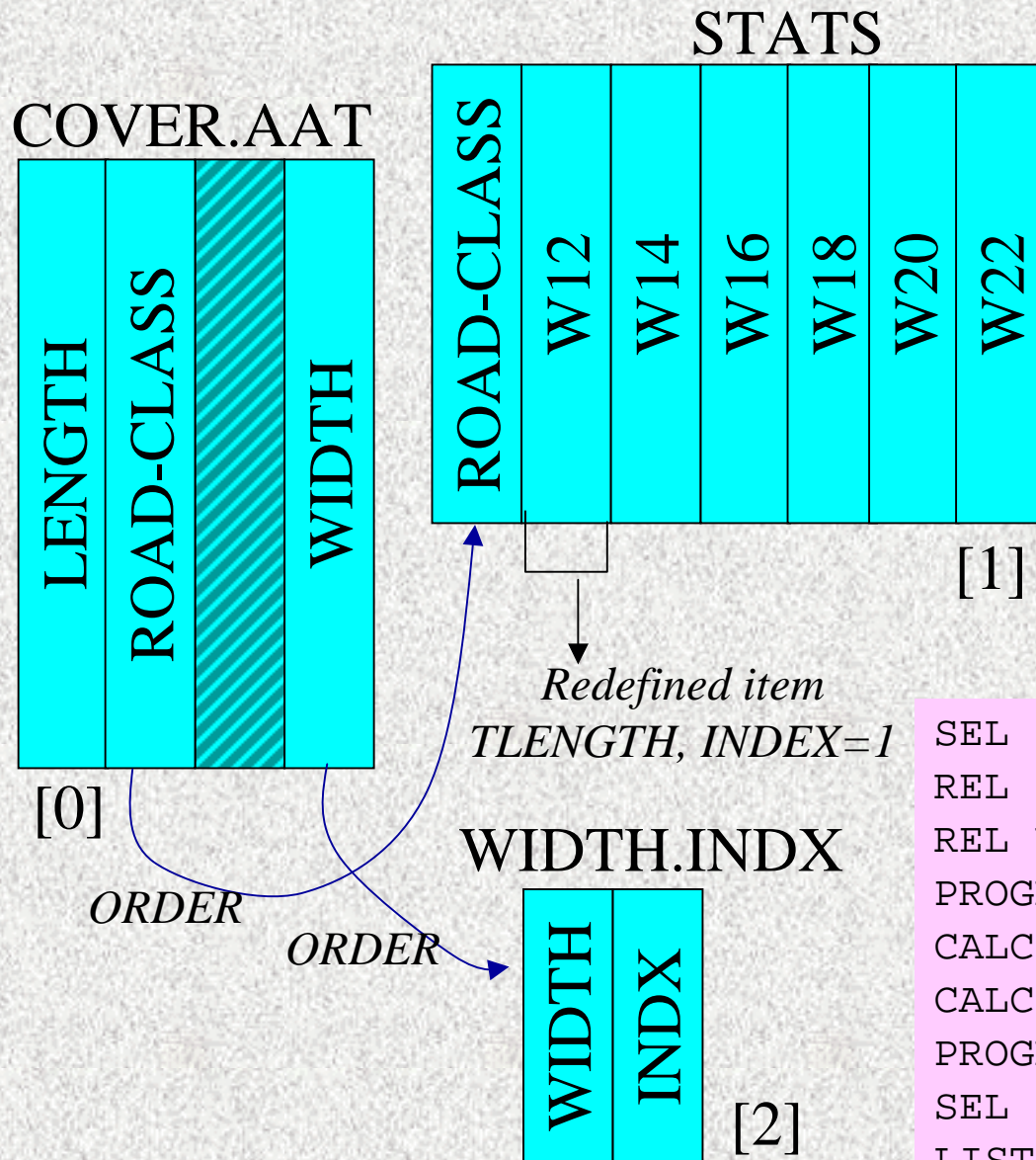
WIDTH	INDEX
-------	-------

WIDTH is 2,2,I
INDEX is 4,5,B

Its contents would be:

<u>WIDTH</u>	<u>INDEX</u>
12	1
14	2
16	3
18	4
20	5
22	6

Cross-Tabulation of Arrays



- STATS must contain records, 1 for each road class.
- The values of W12, W14, etc., must be zero before starting calculation

```

SEL COVER.AAT
REL STATS 1 BY ROAD-CLASS
REL WIDTH.INDX 2 BY WIDTH or RO
PROGRAM SECTION EVENT
CALC $IDX1 = $2INDX
CALC $1TLENGTH = $1TLENGTH + LENGTH
PROGRAM SECTION ODD
SEL STATS
LIST
    
```

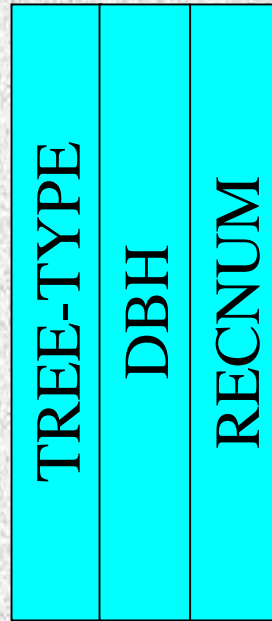
REDEFINED KEYS

COVER.PAT



KEY, 4,4,C
TREE-TYPE, 2,2,C
DBH, 2,4,B

COVER.KEY



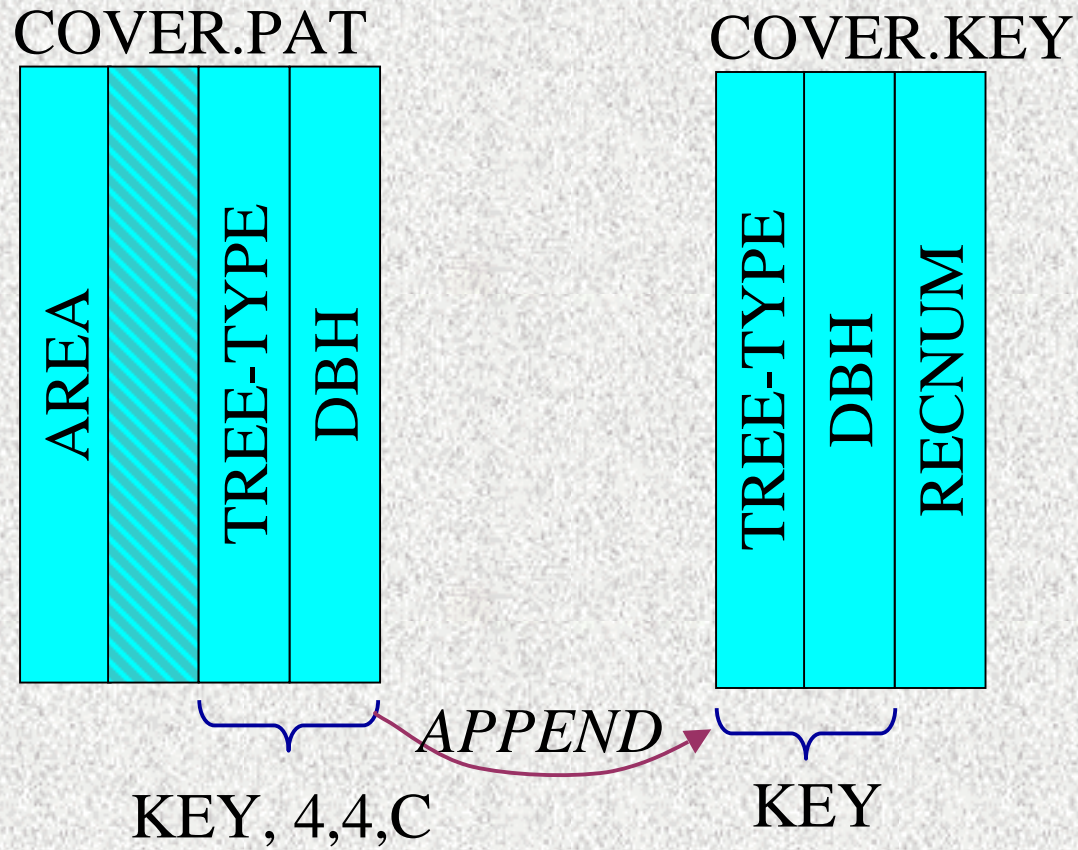
KEY

TREE/DBH.TBL



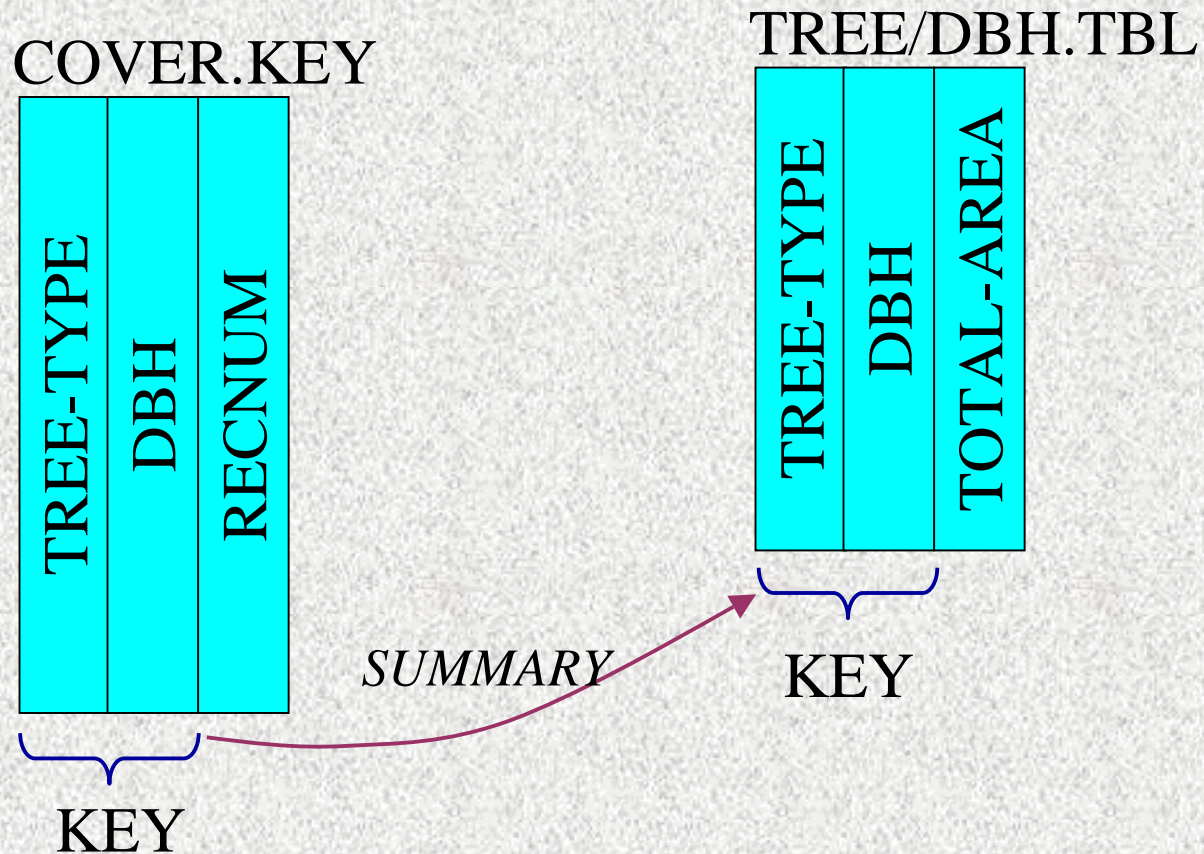
KEY

REDEFINED KEYS
Build the Key File:



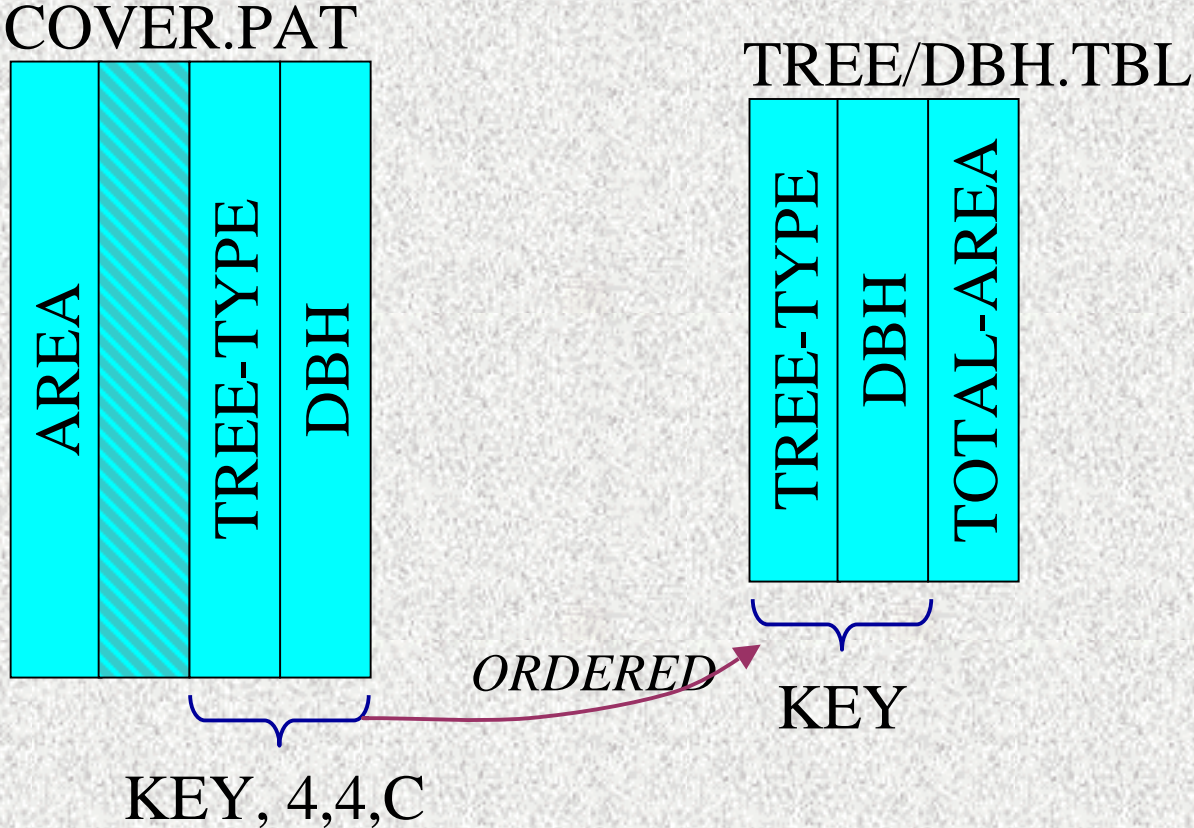
REDEFINED KEYS

Populate the Summary File:



REDEFINED KEYS

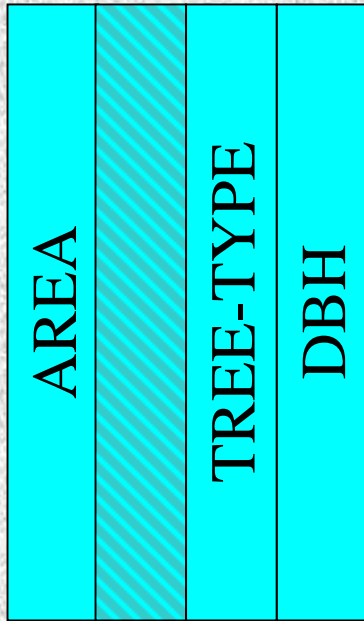
Summarize:



REDEFINED KEYS (non-adjacent)

Build the Key File:

COVER.PAT



COVER.KEY



```
SEL COVER.PAT
REL COVER.KEY 1 BY
    TREE-TYPE APPEND
CALC $1DBH = DBH
SEL COVER.KEY
CALC RECNUM =RECNO
SORT.KEY
```

REDEFINED KEYS (non-adjacent)

Populate the Summary File:

COVER.KEY

TREE-TYPE	DBH	RECNUM
-----------	-----	--------

KEY

SUMMARY

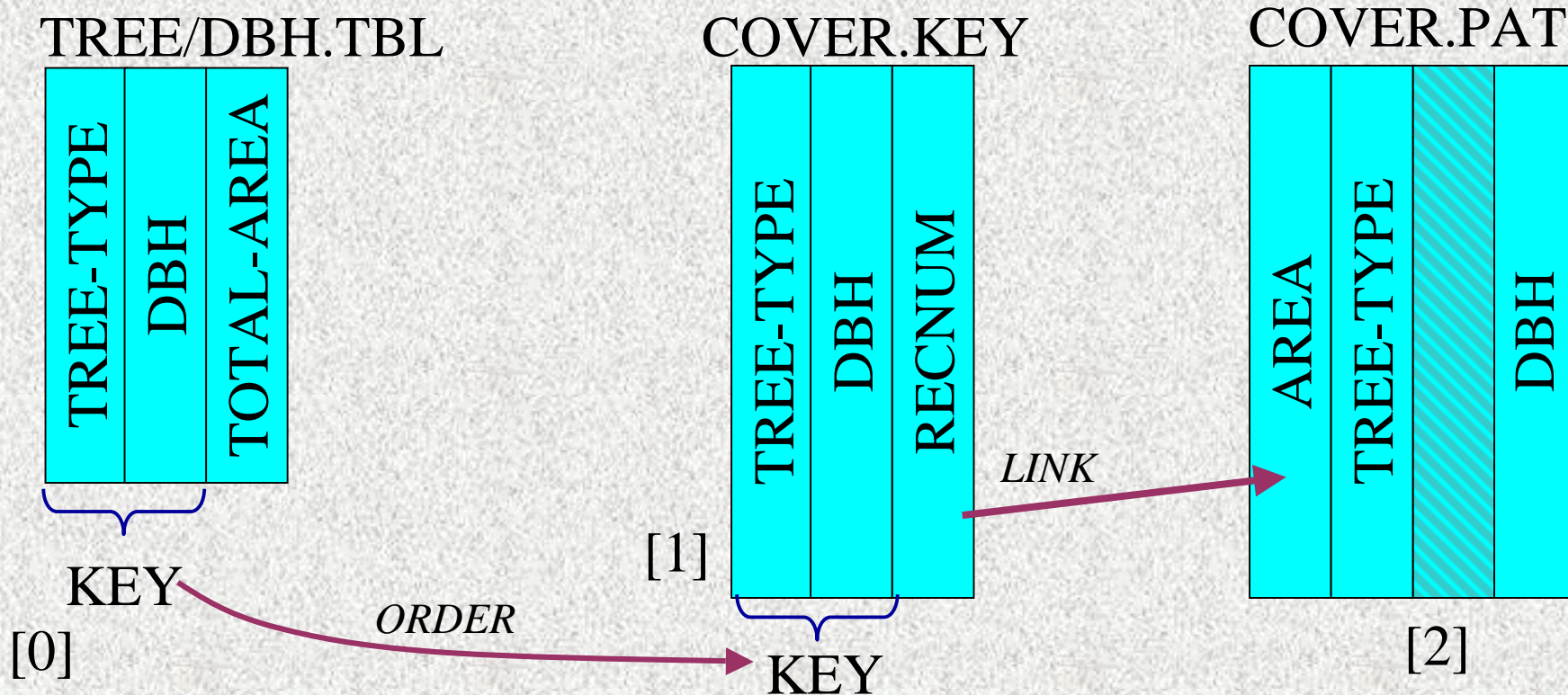
TREE/DBH.TBL

TREE-TYPE	DBH	TOTAL-AREA
-----------	-----	------------

KEY

```
SEL COVER.PAT
REL TREE/DBH.TBL 1 BY
  .KEY. SUMMARY
CALC $NUM1= $NUM1 + 1
SEL TREE/DBH.TBL
CALC TOTAL-AREA = 0.0
```

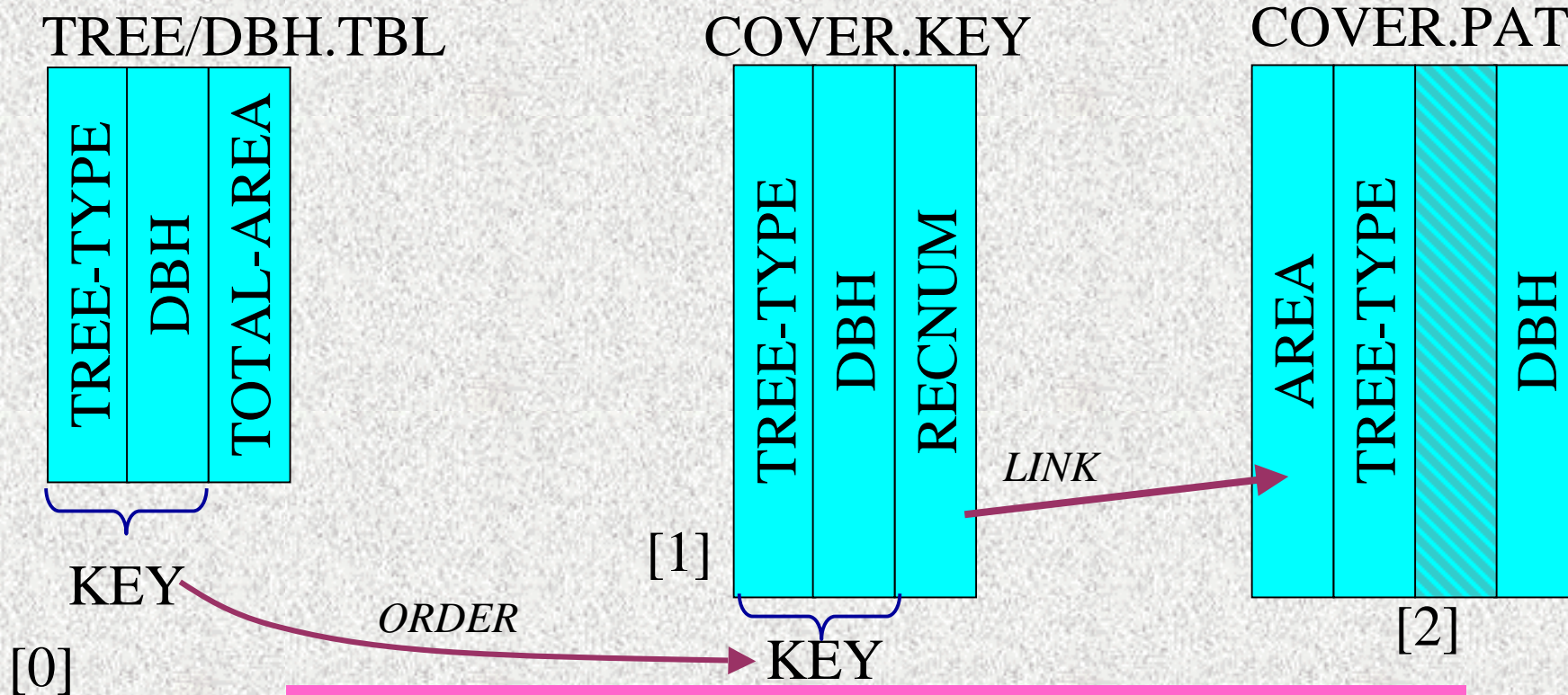
REDEFINED KEYS (non-adjacent)



To calculate total area of TREE-TYPE by DBH:

```
SEL TREE/DBH.TBL
REL COVER.KEY 1 BY .KEY. OR RO
REL COVER.PAT 2 BY $1RECNUM LINK RO
CALC TOTAL-AREA = TOTAL-AREA + $2AREA
```


REDEFINED KEYS (non-adjacent)

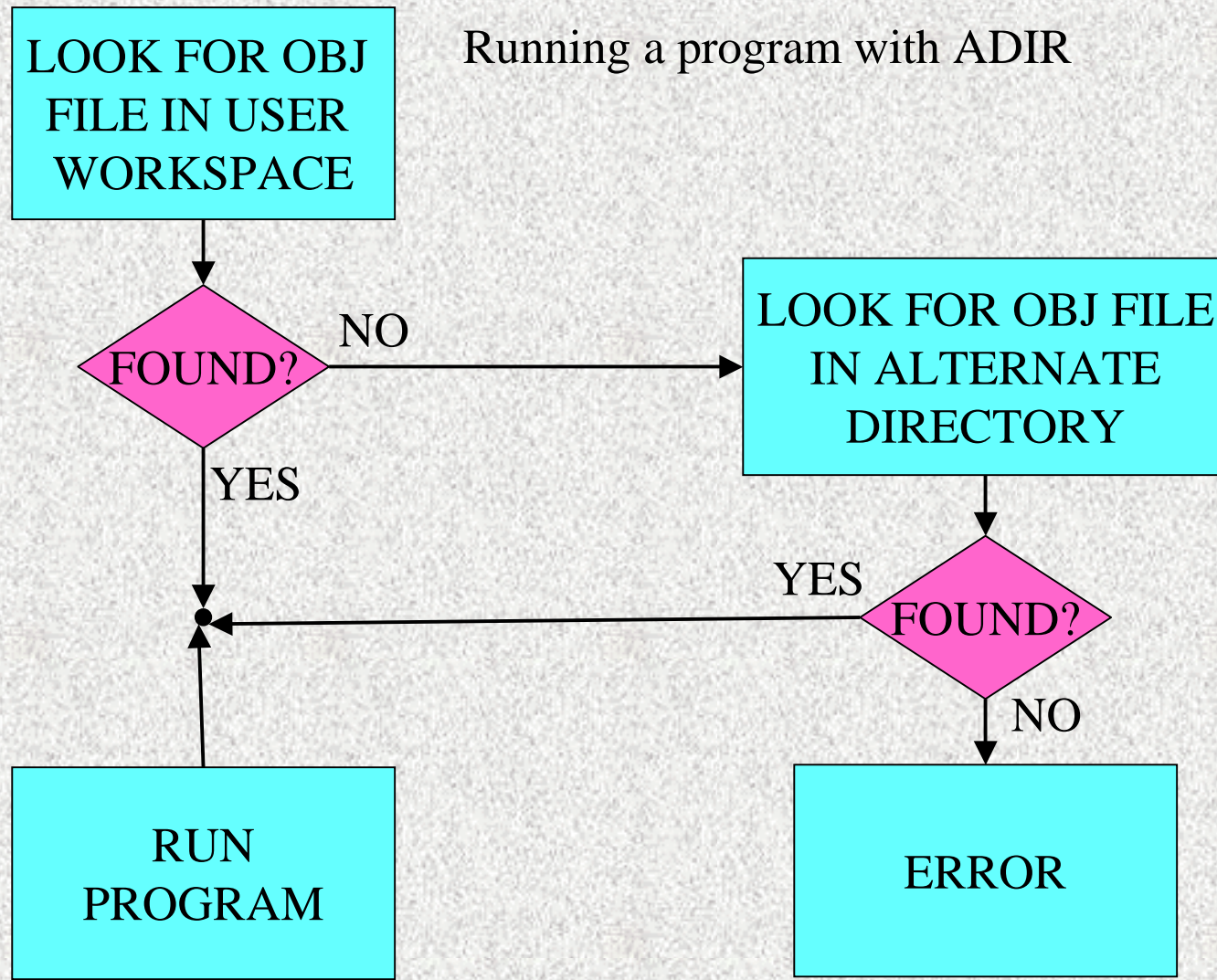


To calculate total area of TREE-TYPE by DBH:

```
SEL TREE/DBH.TBL
REL COVER.KEY 1 BY .KEY. OR RO
REL COVER.PAT 2 BY $1RECNUM LINK RO
NEXT 1
CALC TOTAL-AREA = TOTAL-AREA + $2AREA
```

Alternate Directories

Running a program with ADIR

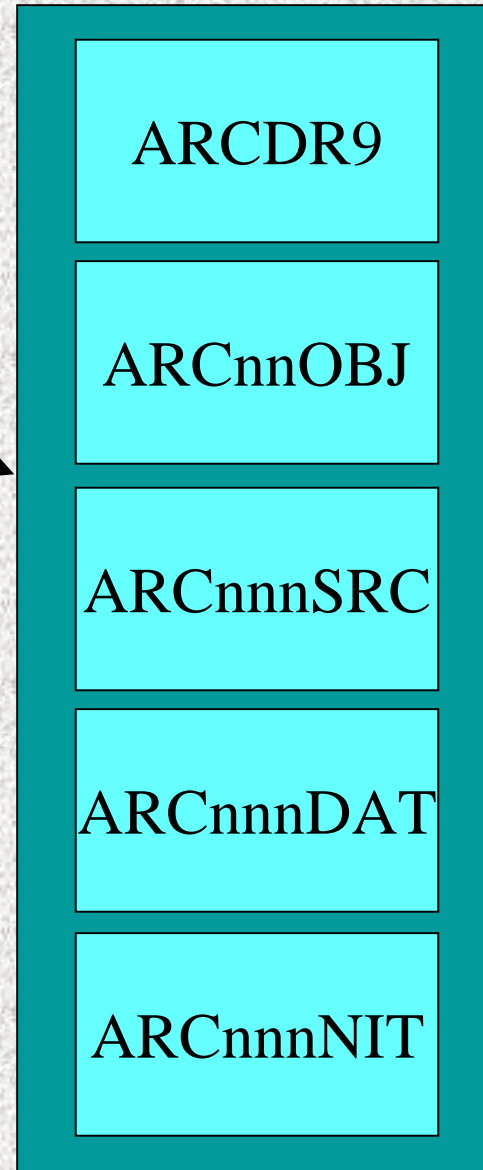


Alternate Directories

USER DIRECTORY

ARCDR9

PROGRAM DIRECTORY



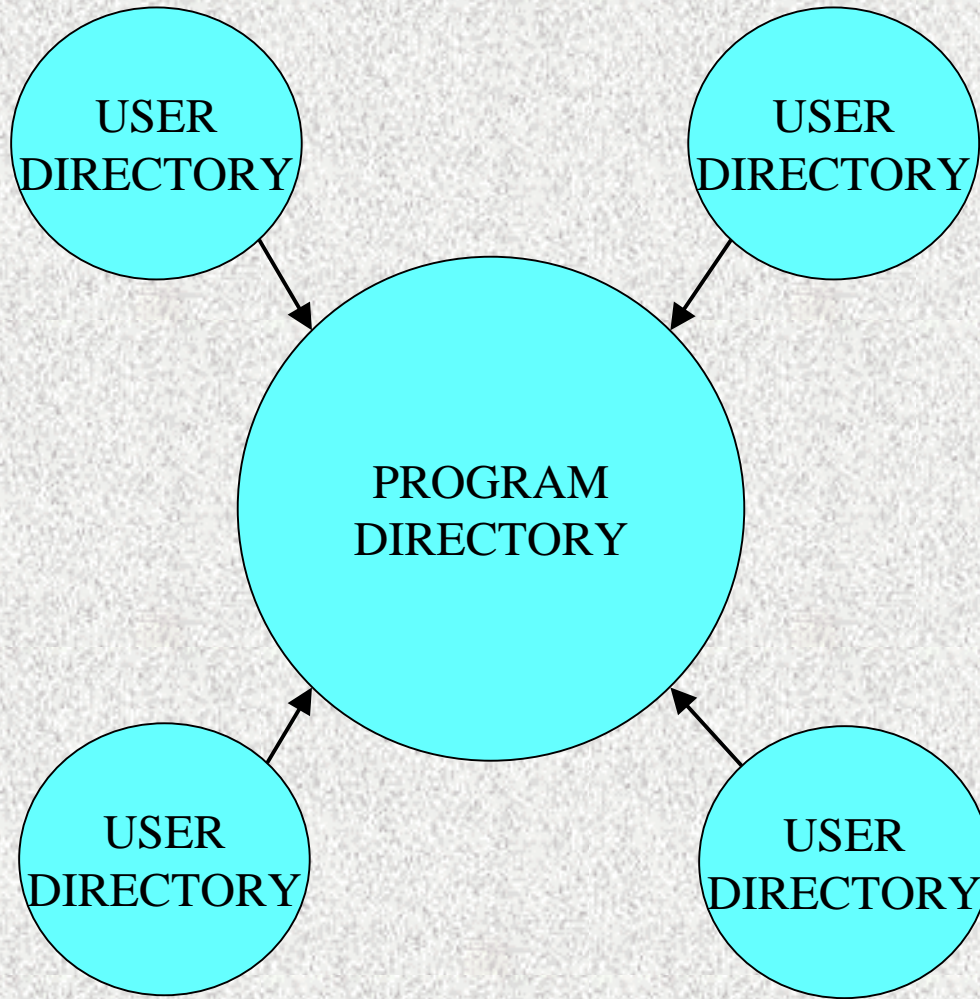
Read-Only
Access

ARCDR9 is a duplicate of
DR9 in Program directory.

All other files are read from
Program directory.

Alternate Directories

Sharing Programs by Multiple Users



- Each users has a separate directory.
- Each user directory has a copy of the DR9 file from the program directory.
- Changes to programs in the program directory take effect in all user directories.

Displaying Text with INFO

- Use the HELP command
- Displays any system-level text file
- Pauses after 23 lines, like a report
- Use HELP to create your own HELP function
- Use HELP to display bulky text data
- Use HELP to display menus

Purging from Large Files

RES by \$RECNO=300
PURGE

READ/ WRITE 29,999 Records

VS.

READ/ WRITE 29,996 Records

RES by \$RECNO=300
CALC\$ID=999
ASEL

RES by \$RECNO=200
PURGE

READ/ WRITE 29,998 Records

RES by \$RECNO=200
CALC \$ID=999
ASEL

RES by \$RECNO=100
PURGE

READ/ WRITE 29,997 Records

RES by \$RECNO=100
CALC \$ID=999
ASEL

RES by \$RECNO=50
PURGE

READ/ WRITE 29,996 Records

RES by \$RECNO=50
ASEL \$ID=999
PURGE

Also, note that method 1 causes record numbers to change whenever a record is purged - all records following the purged one have their record number decreased by 1.

Loading and Unloading Data

Use **ADD** to enter data interactively or form a file containing delimiters.

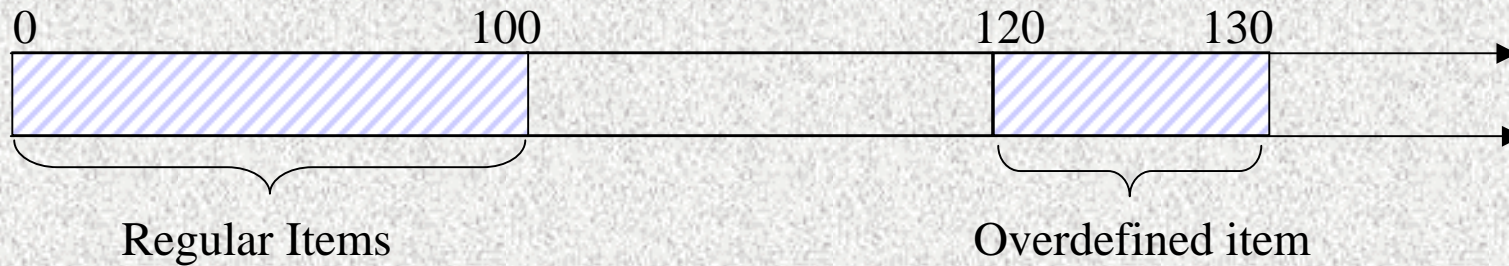
Use **GET** to read a formatted file or to copy a file into **INFO**

Use **SAVE** to put **INFO** data into a file without changing its format.

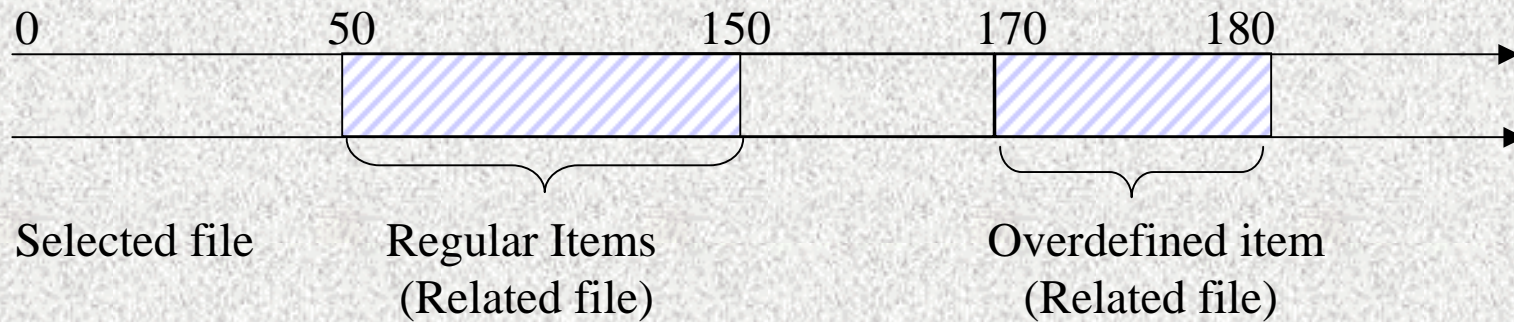
Use **PRINT** to put **INFO** data into a text file and rearrange or reformat items.

Use **REPORT** to create specially formatted text files with header lines.

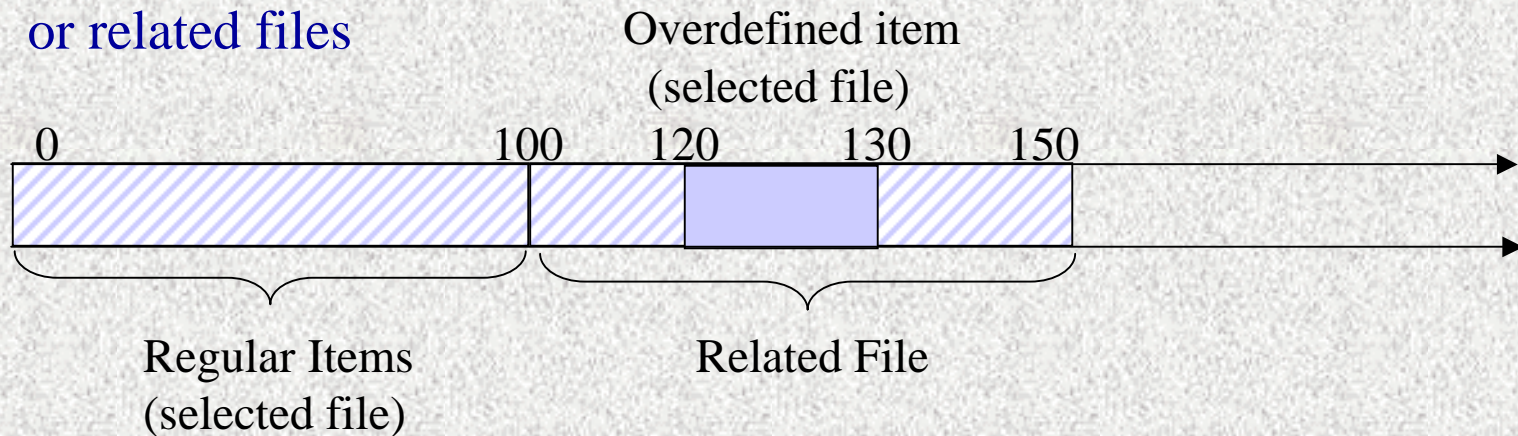
OVERDEFINED ITEMS



Overdefined items give you access to unused buffer space.



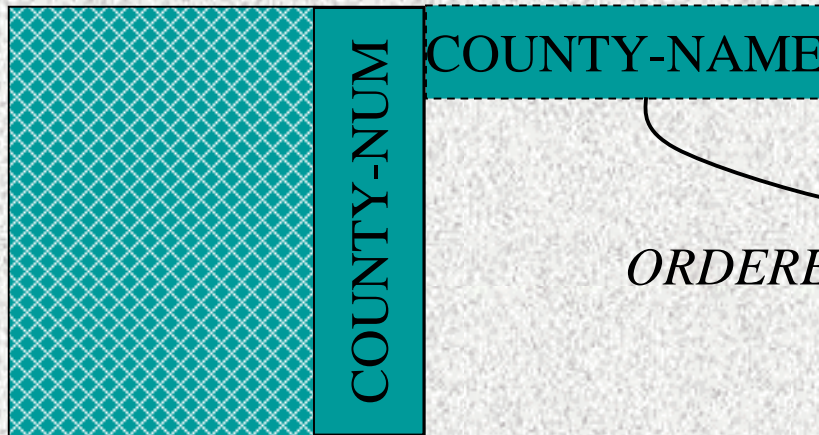
Buffer positions of redefined items are offset by previously selected or related files



Be Careful! Overdefined items might overlap other files in the relate structure!

OVERDEFINED ITEMS

AN EXAMPLE:
ADDRESS



COUNTY_TABLE



ORDERED

- In the program:

```
SEL ADDRESS  
REL COUNT.TABLE BY COUNTY-NAME OR  
INPUT FROM ADDRESS.IF
```

- In the input form:

```
10,5,COUNTY:  
10,15, COUNTY-NAME, M1  
10,15,COUNTY-NUM, S, $1COUNTY-NUM
```

Other Useful Techniques

Checking Sort Order

```
FORMAT $NUM1, 4,5,B
CALC $NUM1 = 0
SELECT COV.PAT
PROGRAM SECTION EVEN
IF COV# LT $1NUM1
    DIS 'The file is not sorted!'
    DONE
ENDIF
CALC $NUM1 = COV#
PROGRAM SECTION ODD
END
```

Selecting Unique Records

```
FORMAT $NUM1,4,5,B
FORMAT $NUM2, 4,5,B
DIS 'Enter the ID to search
    for: ',=ACCEPT $NUM1
PROGRAM SECTION EVEN
IF COV-ID = $NUM1
    CALC $NUM2 =
    $RECNO
    DONE
ENDIF
PROGRAM SECTION ODD
RESELECT BY $RECNO =
    $NUM2
```

Modular Arithmetic

```
FORMAT $NUM1,2,5,B
FORMAT $NUM2, 2,5,B
FORMAT $NUM3, 2,5,B
DIS 'Enter the interval value:', =
ACCEPT $NUM1
SELECT CONTOURS.AAT
PROGRAM SECTION EVEN
CALC $NUM2 = Elevation / $NUM1
REM
REM Truncates if elevation not
    evenly divisible
REM
CALC $NUM3 = $NUM2 * $NUM1
REM
REM Gives different elevation if
    $NUM3
REM truncated
REM
IF ELEVATION = $NUM3
    CALC FLAG = 1
END IF
PROGRAM SECTION ODD
```