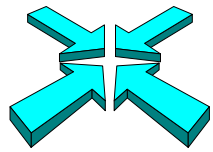


Inside Module 6

Working with Suprlink

Page

■ Accessing Suprlink	4
■ A sample scenario	6
■ Self-describing files	15
■ Linking files	19
■ Adding information	32
■ Suprlink requirements	41
■ Performance guidelines	43



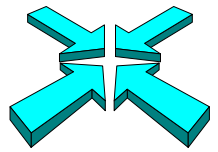
Suprlink expands Suprtool capabilities

Suprlink

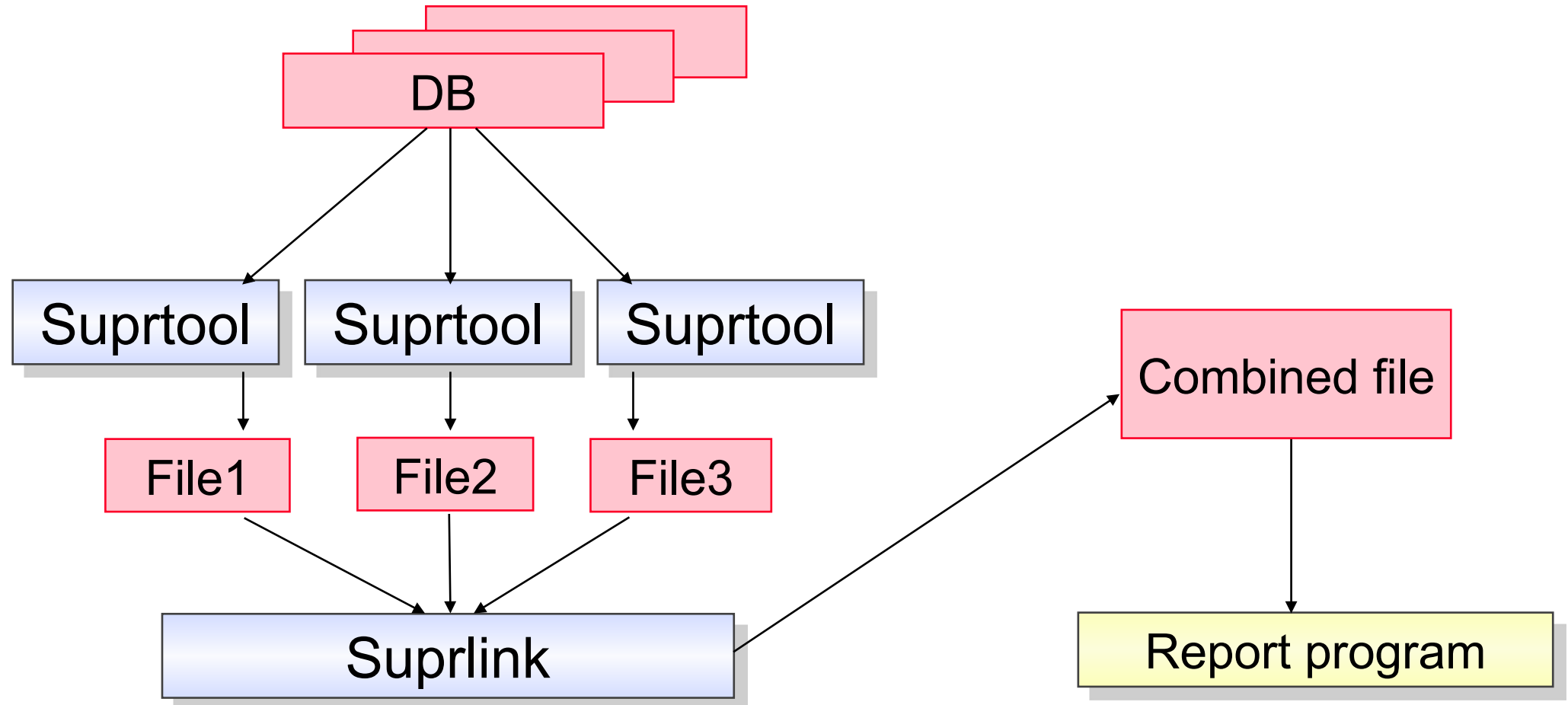
- Adds multi-file linking to Suprtool's remarkable speed
- Works on IMAGE, KSAM, and MPE files
- Merges up to 8 files into one
- Creates one sorted file as input to your report programs

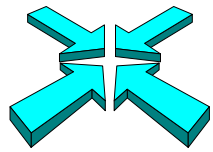
“

We love Suprtool's speed, but couldn't we have multiple dataset extracts too? ”



Suprlink ties your data together





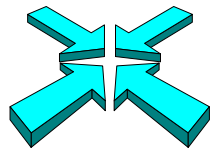
Three ways to access Suprlink

- Use the RUN command to use Suprlink directly

```
:run suprlink.pub.robelle  
+input file1  
+link file2  
+output file3  
+exit
```

- Use the Suprtool LINK command to start Suprlink

```
:run suprtool.pub.robelle  
>link  
+input file1  
+link file2  
+output file3  
+exit  
>
```



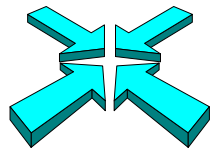
Three ways to access Suprlink continued

- Use Suprtool's LINK command to pass commands to Suprlink

```
:run suprtool.pub.robelle  
>link input file1  
>link link file2  
>link output file3  
>link exit
```

- On HP-UX run Suprlink directly.

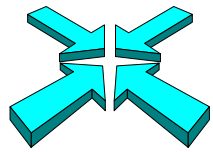
```
-/opt/robelle/bin/suprlink
```



I need all invoices over \$100 for British Columbia customers, now!

- Step 1: Identify the required data, and their sources
- Step 2: Use Suprtool to select and sort records from each dataset or file, extracting the required fields
- Step 3: Link the extracted files
- Step 4: Produce the report from the linked file





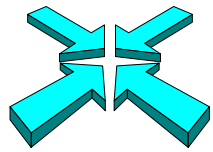
What should the report look like?

May 12, 1996 9:18

BC Sales over \$100

Page 1

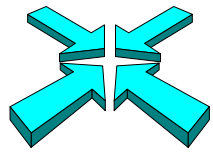
Account#	Name	Purch Date	Amount	Product#
10003	Melander John	19931015	112.07	50511501
		19931015	166.00	50512501
		19931015	219.10	50513001
10020	Nisbet Walley	19931001	224.15	50511501
		19931028	167.13	50512501



Step 1: Where are the records located?

- Suprtool's FORM SETS command lists all the sets in a database opened with the BASE command, and describes their attributes
- Use the FORM *dataset* command to list field names in a dataset
- Use COBOL Copylib or Cognos Qschema listings to get the layouts of non-IMAGE files



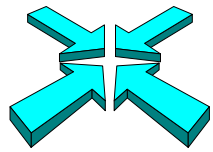


What datasets are in the Store database?

```
:run suprtool.pub.robelle  
>base store.demo  
>form sets
```

Database: STORE.DEMO.ROBELLE

	Set	Item	Entry	Load	Entry			
Sets:	Num	Type	Count	Capacity	Count	Factor	Length	B/F
M-CUSTOMER	1	M	9	211	20	9 %	55	7
M-PRODUCT	2	M	3	307	13	4 %	24	12
M-SUPPLIER	3	M	6	211	3	1 %	49	8
D-INVENTORY	4	D	6	462	13	3 %	15	22
D-SALES	5	D	8	602	8	1 %	19	14



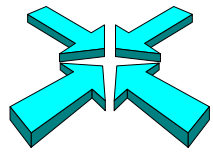
What fields are in the m-customer dataset?

>form m-customer

Database: STORE.DEMO.ROBELLE

M-CUSTOMER	Master	Set#	1	
Entry:			Offset	
CITY		X12	1	
CREDIT-RATING		J2	13	
→ CUST-ACCOUNT		Z8	17	<<Search Field>>
CUST-STATUS		X2	25	
→ NAME-FIRST		X10	27	
→ NAME-LAST		X16	37	
STATE-CODE		X2	53	
STREET-ADDRESS		2X25	55	
POSTAL-CODE		X6	105	

Capacity: 211 (7) Entries: 20 Bytes: 110



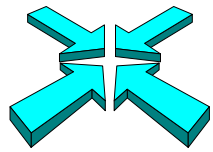
What fields are in the d-sales dataset?

>form d-sales

Database: STORE.DEMO.ROBELLE

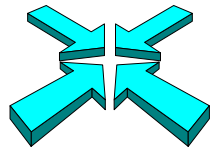
D-SALES	Detail	Set#	5	Offset	
Entry:					
➔ CUST-ACCOUNT		Z8	1		(!M-CUSTOMER)
DELIV-DATE		J2	9		
➔ PRODUCT-NO		Z8	13		(M-PRODUCT)
PRODUCT-PRICE		J2	21		
➔ PURCH-DATE		J2	25		
SALES-QTY		J1	29		
SALES-TAX		J2	31		
➔ SALES-TOTAL		J2	35		

Capacity: 602 (14) Entries: 8 Bytes: 38



Step 2: *Extracting and sorting records*

- First, we need to read all the customer records of British Columbia customers and extract the `cust-account`, `name-last`, and `name-first` fields
- Next, we have to read all the records of invoices over \$100 and extract the `cust-account`, `product-no`, `purch-date`, and `sales-total` fields
- The `cust-account` field is common to both records, so we will sort both files by this `cust-account`



Reading records of British Columbia customers

- Use Suprtool to select and sort British Columbia customers

```
>get m-customer
```

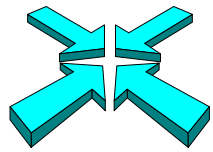
```
>if state-code = "BC"
```

```
>sort cust-account
```

```
>extract cust-account,name-last,name-first
```

```
>output custfile,temp,link
```

```
>xex
```

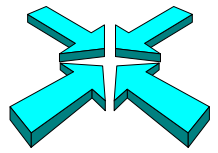


List of British Columbia customers

```
>input custfile;list standard;xeq
```

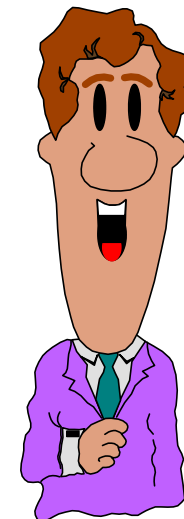
CUST-ACCO	NAME-LAST	NAME-FIRST
10001	Hamilton	Darlene
10002	Lackner	Gordon
10003	Melander	John
10008	Sarafin	Thomas
...		
10020	Nisbet	Walley



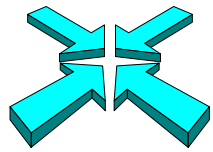


What is a self-describing file?

- It is a standard MPE disc file
- It has user labels that contain a mini-dictionary describing record structures
- Use the FORM command to see the structure



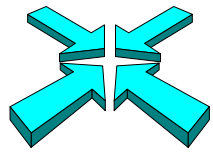
Hi, my
name
is
Peter
from
BC



Suprlink requires self-describing (SD) files

- Suprlink uses self-describing files as input and creates SD files as output
- The LINK option of the Suprtool OUTPUT command specifies a self-describing file

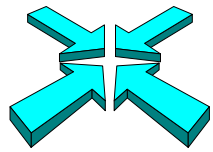
```
>output custfile,temp,link
```
- In our example, [Custfile](#) and [Tranfile](#) are self-describing files that Suprlink can use as input



Reading records of invoices over \$100

- Use Suprtool again to select and sort records with invoices greater than \$100

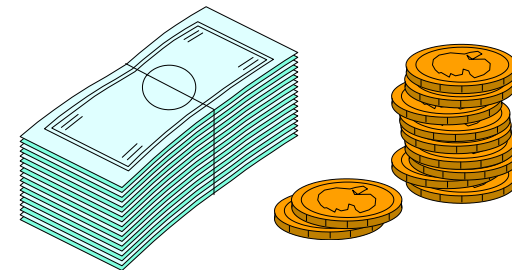
```
>get d-sales  
>item sales-total,decimal,2  
>if sales-total > 100.00  
>sort cust-account  
>sort purch-date  
>extract cust-account,sales-total,purch-date,product-no  
>output tranfile,temp,link  
>xex
```

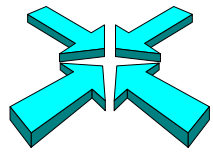


List of invoices over \$100

```
>input tranfile;list standard;xeq
```

CUST-ACCO	SALES-TOTAL	PURCH-DATE	PRODUCT-NO
10003	112.07	19931015	50511501
10003	166.00	19931015	50512501
10003	219.10	19931015	50513001
10016	159.42	19931021	50532001
10020	224.15	19931001	50511501
...			

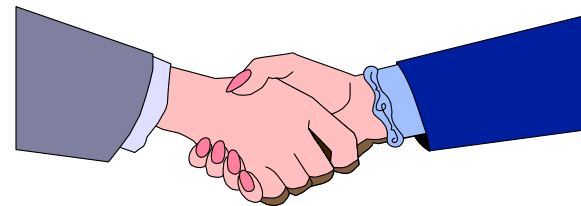


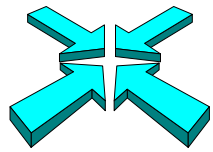


Step 3: *Linking customer and invoice records*

- Use Suprlink to merge the extracted records

```
:run suprlink.pub.robelle  
+input tranfile  
+link custfile  
+output reptfile,temp  
+exit
```





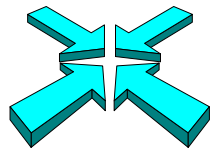
What is the structure of the merged file?

>form reptfile

File: REPTFILE.DATA.SALES (SD Version B.00.00)

Entry:	Offset		
CUST-ACCOUNT	Z8	1	<<Sort# 1 >>
SALES-TOTAL	I2	9	<< .2 >>
PURCH-DATE	I2	13	<<Sort# 2 >>
PRODUCT-NO	Z8	17	
NAME-LAST	X16	25	
NAME-FIRST	X10	41	

Limit: 6 EOF: 5 Entry Length: 50 Blocking: 81

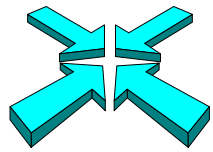


How does the merged file look?



```
>input reptfile;list standard;xeq
```

CUST-ACCO	SALES-TOTAL	PURCH-DATE	PRODUCT-N	NAME-LAST	NAME-FIRST
10003	112.07	19931015	50511501	Melander	John
10003	166.00	19931015	50512501	Melander	John
10003	219.10	19931015	50513001	Melander	John
10020	224.15	19931001	50511501	Nisbet	Walley
10020	167.13	19931028	50512501	Nisbet	Walley
...					



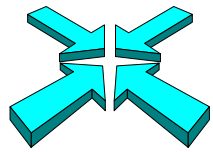
How does the link work?

Input file - 6 records

10003	112.07	19931015	505
10003	166.00	19931015	505
10003	219.10	19931015	505
10016	159.42	19931021	505
10020	224.15	19931001	505
10020	167.13	19931028	505

Link file - 12 records

10001	Hamilton	Darlene
10002	Lackner	Gordon
10003	Melander	John
10008	Sarafin	Thomas
10009	Oxenbury	Gordon
10010	Humphreys	Wayne
10011	Kirk	William
10012	Ferguson	Percy
10013	Andersen	Colin
10020	Nisbet	Walley



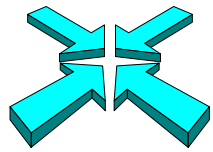
How the link works

Input file - 6 records

10003	112.07	19931015	505
10003	166.00	19931015	505
10003	219.10	19931015	505
10016	159.42	19931021	505
10020	224.15	19931001	505
10020	167.13	19931028	505

Link file - 12 records

10001	Hamilton	Darlene
10002	Lackner	Gordon
10003	Melander	John
10008	Sarafin	Thomas
10009	Oxenbury	Gordon
10010	Humphreys	Wayne
10011	Kirk	William
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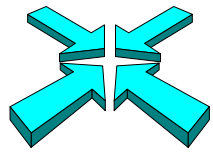


What happens if we reverse the linking order?

```
>link input custfile
>link link tranfile
>link output reptfile,temp
>link xeq
```

```
>input reptfile;list standard;xeq
```

CUST-ACCO	NAME-LAST	NAME-FIRST	SALES-TOTAL	PURCH-DATE	PRODUCT-N
10003	Melander	John	112.07	19931015	50511501
10020	Nisbet	Walley	224.15	19931001	50511501
...					



Reversing the input and link files

Input file - 12 records

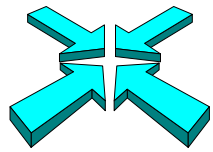
10001	Hamilton	Darlene
10002	Lackner	Gordon
10003	Melander	John
10008	Sarafin	Thomas
10009	Oxenbury	Gordon
10010	Humphreys	Wayne
10011	Kirk	William
10012	Ferguson	Percy
10013	Andersen	Colin

Link file - 6 records

10003	112.07	19931015	505
10003	166.00	19931015	505
10003	219.10	19931015	505
10016	159.42	19931021	505
10020	224.15	19931001	505
10020	167.13	19931028	505

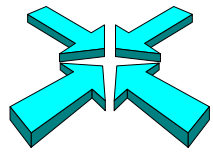
Output file - 2 records

10003	Melander	John	112.07	19931015	50511501
10020	Nisbet	Walley	224.15	19931001	50511501



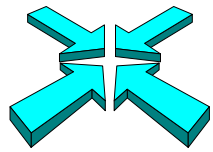
What if an invoice does not match a customer record?

- By default, Suprlink drops *input* records without a matching record in the link file
- Specify LINK OPTIONAL to override this default and include unmatched input records
- LINK OPTIONAL does not include *link* records without a matching record in the input file

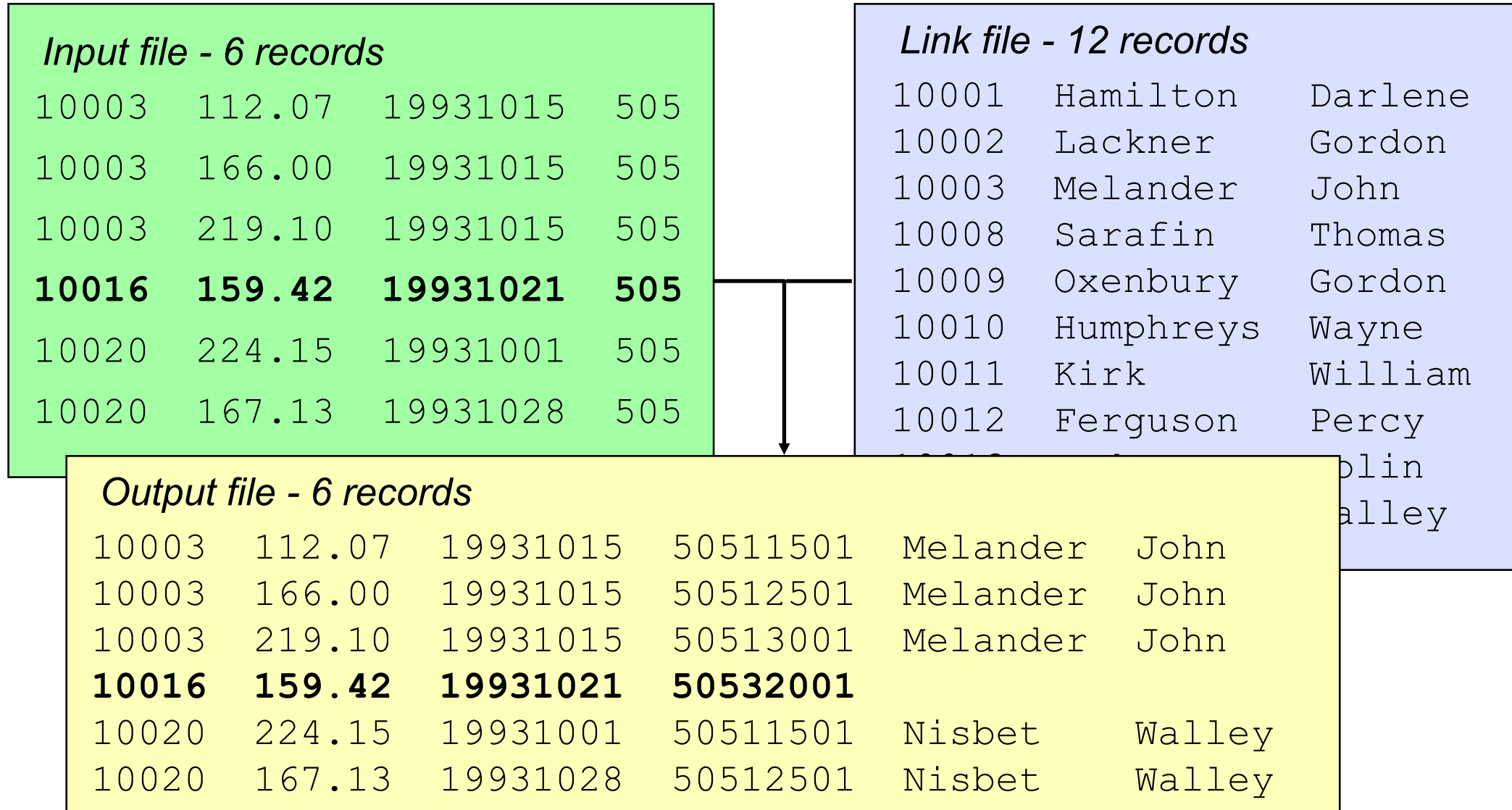


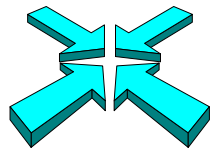
Including unmatched records

- >link input tranfile
- >link link custfile **optional**
- >link output reptfile,temp
- >link xeq



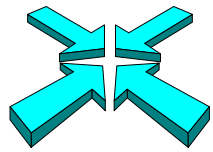
Including unmatched input records





Step 4: Produce the report

- Use your favorite report writer to format the final report, adding headings, titles, and other features
- The report writer has almost no work to do
- Use Suprtool LIST command if the reporting needs are basic



Suprtool can (almost) produce the report

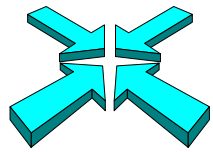
```
>input reptfile
>extract cust-account,name-last,name-first,purch-date,&
>>sales-total,product-no
>list standard,title "BC Sales over $100",&
>>heading "Account#  Name                               ",&
>>"Purch Date      Amount  Product#"
>xeq
```

May 12, 1996 10:10

BC Sales over \$100

Page 1

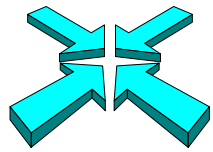
Account#	Name		Purch Date	Amount	Product#
10003	Melander	John	19931015	112.07	50511501
10003	Melander	John	19931015	166.00	50512501
10003	Melander	John	19931015	219.10	50513001
10020	Nisbet	Walley	19931001	224.15	50511501
10020	Nisbet	Walley	19931028	167.13	50512501



Suprlink Exercise 1

- From the Store database, find all the British Columbia supplied products that have inventories less than 20
- You should include the product number, quantity in stock, as well as the supplier's name and number





Can I add more information to the report?

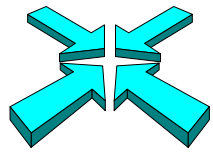
- The boss has asked to see product descriptions on the report

May 12, 1996 9:18

BC Sales over \$100

Page 1


Account#	Name		Purch Date	Amount	Product#	Product
10003	Melander	John	19931015	112.07	50511501	Drill
			19931015	166.00	50512501	Drill
			19931015	219.10	50513001	Saw
10020	Nisbet	Walley	19931001	224.15	50511501	Saw
			19931028	167.13	50512501	Jigsaw

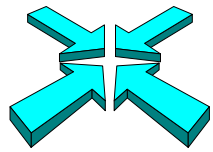


Which dataset contains product descriptions?

>form sets

Database: STORE.DEMO.ROBELLE

Sets:	Set Num	Type	Item Count	Capacity	Entry Count	Load Factor	Entry Length	B/F
	1	M	9	211	20	9 %	55	7
	2	M	3	307	13	4 %	24	12
	3	M	6	211	3	1 %	49	8
	4	D	6	462	13	3 %	15	22
	5	D	8	602	8	1 %	19	14



What fields are in the product dataset?

>form m-product

Database: STORE.DEMO.ROBELLE

M-PRODUCT Master Set# 2

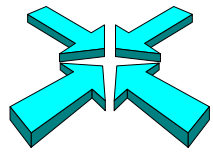
Entry: Offset

PRODUCT-DESC X30 1

PRODUCT-MODEL X10 31

PRODUCT-NO Z8 41 <<Search Field>>

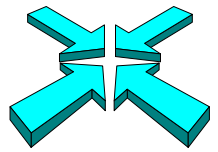
Capacity: 307 (12) Entries: 13 Bytes: 48



Selecting the required fields

- We want to read the **product-no** and **product-desc** fields in the product master dataset
- We want to read **all the fields** in Reptfile
- **Product-no** field is common to both records

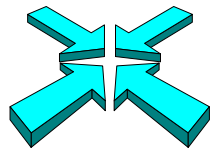




Reading product description records

```
>get m-product  
>sort product-no  
>extract product-no,product-desc  
>output prodfile,temp,link  
>xeq
```

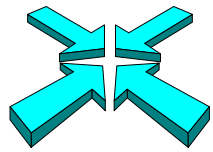




Re-sorting the invoices on the product field

- Suprlink input and link files must have the same sort key, so the invoices have to be re-sorted on the product-no field

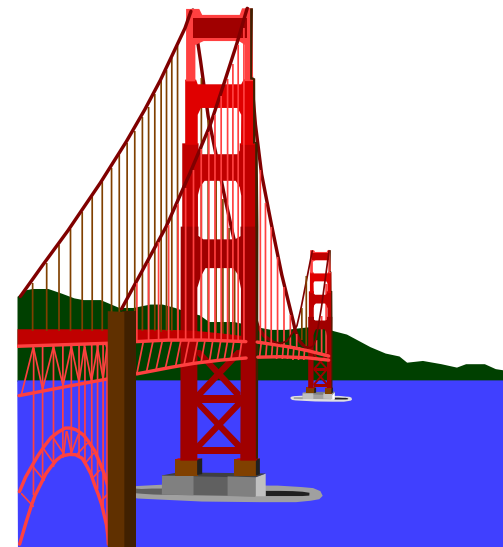
```
>input reptfile  
>sort product-no  
>output = input  
>xeq
```

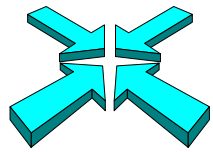


Linking product descriptions to the invoices



```
>link input reptfile  
>link link prodfile  
>link output listfile temp  
>link xeq
```



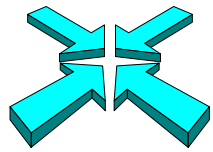


How does the new report look?

```
>input listfile
>extract cust-account,name-last,name-first,purch-date,sales-total,product-no
>extract product-desc
>list standard,title "BC Sales over $100",&
>>heading "Account#  Name                               ",&
>>"Purch Date      Amount  Product# and Description"
>sort cust-account
>sort purch-date
>xeq
```

Account#	Name	Purch Date	Amount	Product#	and Description
10003	Melander John	19931015	112.07	50511501	Makita 3/8" Var. Speed Drill
10003	Melander John	19931015	166.00	50512501	Makita 8 1/4" Circular Saw
10003	Melander John	19931015	219.10	50513001	Makita 1" Jigsaw
10020	Nisbet Walley	19931001	224.15	50511501	Makita 3/8" Var. Speed Drill
10020	Nisbet Walley	19931028	167.13	50512501	Makita 8 1/4" Circular Saw

```
IN=5, OUT=5. CPU-Sec=1. Wall-Sec=1.
```

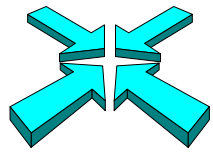


Suprlink Exercise 2

- Add the product price to the list in Exercise 1 (page 31)

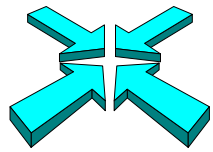
SUPPLIER-	PRODUCT-N	ON-HAND-QTY	SUPPLIER-NAME
5051	50512501	7	Makita Canada Inc.
5051	50511501	5	Makita Canada Inc.
5051	50512001	2	Makita Canada Inc.
5051	50513001	3	Makita Canada Inc.
5052	50521001	10	Black & Decker
...			





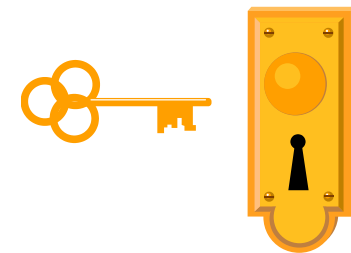
Specifying Link Fields

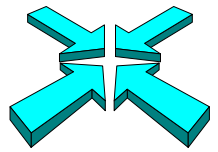
- You can specify link fields:
 - + `input tranfile by cust-account`
 - + `link custfile by account-num`
- Useful when files created with `,QUERY` instead of `,LINK`
- Also useful for specifying a secondary link key:
 - + `link majors by ssn cmaj`
- If field names different in the input file:
 - + `link majors by ssn cmaj from ssn currmaj`



Suprlink requirements

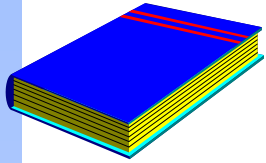
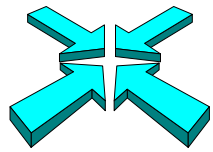
- Suprlink requires enough disc space for the original database, each input file, the final output file, and hidden Sortscr files
- Input and link files must be self-describing files
- Input and link files must be sorted on the same key field
- Link keys can be any type except a floating-point field type





Performance guidelines

- Avoid using Suprlink if repeated sorting is required
- Minimize record sizes by only selecting necessary fields
- Minimize file sizes by only selecting required records



Summary

- Suprlink theory
- Input files versus link files
- Implied record selection
- Optional linking
- Adding more information
- Performance tips