UNIT 3. INTERACTION WITH DB2

- **DB2 OS/390**
  - **SPUFI (SQL Processing Using File Input)**
  - **QMF (Query Management Facility)**

Figure: 3.1 Interaction with DB2

Notes:

0S/390 SPUFI

```
 ===>                          SPUFI                          SSID: DSNP


Enter the input data set name:   (Can be sequential or partitioned)
 1 DATA SET NAME ... ===> 'MTPL002.SOURCES.CNTL (SPUFI)'
 2 VOLUME SERIAL ... ===>        (Enter if not cataloged)
 3 DATA SET PASSWORD ===>        (Enter if password protected)

Enter the output data set name:  (Must be a sequential data set)
 4 DATA SET NAME ... ===> 'MTPL002.SPUFI.OUT'

Specify processing options:
 5 CHANGE DEFAULTS   ===> YES   (Y/N - Display SPUFI defaults panel?)
 6 EDIT INPUT ...... ===> YES   (Y/N - Enter SQL statements?)
 7 EXECUTE ......... ===> YES   (Y/N - Execute SQL statements?)
 8 AUTOCOMMIT ...... ===> YES   (Y/N - Commit after successful run?)
 9 BROWSE OUTPUT ... ===> YES   (Y/N - Browse output data set?)

For remote SQL processing:
10 CONNECT LOCATION  ===>


PRESS:  ENTER to process    END to exit      HELP for more information
```

Figure: 3.2 OS/390 SPUFI

Notes:

- Reached from the ISPF menu
- SQL statements are written on the file named on line 1.
- Out put of the SQL statements will be returned to the file named on line 4.
- A YES on line 6 tells SPUFI that you want to write or change an SQL statement in the file named on line 1
- Pressing ENTER while at the SPUFI panel causes the first function for which YES is specified to be invoked.

CURRENT SPUFI DEFAULTS

```
      ===>                                                SSID: DSNP

Enter the following to control your SPUFI session
1 ISOLATION LEVEL      ===> RR    (RR=Repeatable Read, CS=Cursor
                                                Stability)
2 MAX SELECT LINES     ===> 250   (Maximum number of lines to be
                                          returned from a SELECT) Output
data set characteristics                                              3
RECORD LENGTH ...      ===> 4092  (LRECL=Logical record length)
4 BLOCK SIZE ......    ===> 4096  (Size of one block)
5 RECORD FORMAT ...    ===> VB    (RECFM=F, FB, FBA, V, VB, or VBA)
6 DEVICE TYPE.....     ===> SYSDA (Must be DASD unit name)

Output format characteristics:
7 MAX NUMERIC FIELD    ===> 33    (Maximum width for numeric fields)
8 MAX CHAR FIELD..     ===> 80    (Maximum width for character fields)
9 COLUMN HEADING       ===> NAMES (NAMES, LABELS, ANY or BOTH)



PRESS:  ENTER to process    END to exit HELP for more information
```

Figure: 3.3 Current SPUFI Defaults

Notes:

EXECUTE THE QUERY

```
File Edit Confirm Menu Utilities Compilers Test Help

EDIT       MTPL002.SOURCES.CNTL (INPUT) - 01.00            Columns
00001 00072

  ****** ***************************** Top of Data

==MSG> -Warning- The UNDO command is not available until you change
==MSG> your edit profile using the command RECOVERY ON.
 ''''''
 ‘’’’’’ Select * from SYSIBM.SYSTABLES;
 ''''''
 ''''''
 ''''''
 ''''''
 ''''''
 ''''''
 ''''''
 ''''''
 ''''''
 ''''''
 ''''''
 ''''''
 ''''''
 ''''''
 ****** **************************** Bottom of Data
```

Figure: 3.4 executing the query

Notes:

SPUFI DEFAULTS AFTER EDITING DATA SET

```
    SPUFI                                SSID: DSNP
===>
DSNE808A EDIT SESSION HAS COMPLETED. PRESS ENTER TO CONTINUE

Enter the input data set name: (Can be sequential or partitioned)
1 DATA SET NAME ... ===> 'MTPL002.SOURCES.CNTL (INPUT)'
2 VOLUME SERIAL ... ===>       (Enter if not cataloged)
3 DATA SET PASSWORD ===>       (Enter if password protected)

Enter the output data set name: (Must be a sequential data set)
4 DATA SET NAME ... ===> 'MTPL002.SPUFI.OUT'

Specify processing options:
5 CHANGE DEFAULTS   ===> *    (Y/N - Display SPUFI defaults panel?)
6 EDIT INPUT ...... ===>      (Y/N - Enter SQL statements?)
7 EXECUTE ......... ===> YES  (Y/N - Execute SQL statements?)
8 AUTOCOMMIT ...... ===> YES  (Y/N - Commit after successful run?)
9 BROWSE OUTPUT ... ===> YES  (Y/N - Browse output data set?)

For remote SQL processing:
10 CONNECT LOCATION  ===>


PRESS:  ENTER to process END to exit HELP for more information
```

Figure: 3.5 SPUFI Defaults after editing Data Set

Notes:

OUTPUT OF QUERY

```
BROWS    MTPL002.                                    Line 00000000    Col
001 080

****************************** Top of Data

SELECT * FROM SYSIBM.SYSTABLES WHERE DBNAME = 'DSNDB07';
---------+---------+---------+---------+---------+---------+-----
NAME CREATOR   TYPE DBNAME    TSNAME      DBID    OBID COLCOUNT
--------+---------+---------+---------+---------+---------+-----
DSNE610I NUMBER OF ROWS DISPLAYED IS 0
DSNE616I STATEMENT EXECUTION WAS SUCCESSFUL, SQLCODE IS 100
---------+---------+---------+---------+---------+---------+---------
DSNE617I COMMIT PERFORMED, SQLCODE IS 0
DSNE616I STATEMENT EXECUTION WAS SUCCESSFUL, SQLCODE IS 0
---------+---------+---------+---------+---------+---------+---------
DSNE601I SQL STATEMENTS ASSUMED TO BE BETWEEN COLUMNS 1 AND 72
DSNE620I NUMBER OF SQL STATEMENTS PROCESSED IS 1
DSNE621I NUMBER OF INPUT RECORDS READ IS 1
DSNE622I NUMBER OF OUTPUT RECORDS WRITTEN IS 16

****************************** Bottom of Data


 Command ===>                                Scroll ===> PAGE
```

Figure: 3.6 Output of Query

Notes:

QMF FOR OS/390

QMF HOME PANEL
Version 3
Release 1.0

Query
Management
Facility

Type command on command line or use , For Help , Press PF1 or type Help.

1=Help 2=List 3=End 4=show 5=Chart 6=Query

7=Retrieve 8=Edit table 9=Form 10=Proc 11=Profile 12=Report
Ok, you may enter a command

COMMAND ====➔

Figure: 3.7 QMF for OS/390

Notes:
A report in QMF is displayed or printed output from a QMF query. QMF queries can be formulated in different ways.

1. By means of direct SQL statements
2. By means of a relational prompted query interface.
3. By means of a language called Query by Example (QBE), which is another relational language like SQL.
4. By means of an entity or relationship prompted query interface.

EXECUTION OF QMF QUERY

```
SQL QUERY                                                    MODIFIED LINE
1


Select * from SYSIBM.SYSTABLES where dbname = dsndb06




 QUERY MESSAGES:

 1=Help     2=Run       3=End 4=Print     5=Char    6=Draw
 7=Backward 8=Forward   9=Form 10=Insert   11=Delete 12=Report

 OK, INSERT performed. Please proceed.

 COMMAND ===>                         SCROLL ===> PAGE
```

Figure: 3.8 Execution of QMF query

Notes:

Creating a Report

After composing and executing a query the user can produce reports in different formats. QMF tabular reports, QMF tailored reports.

OUTPUT OF QMF QUERY

REPORT LINE 1 POS 1 79

NAME	CREATOR	TYPE	DBNAME	TSNAME	DBID	OBID	COLCO
SYSCOPY	SYSIBM	T	DSNDB06	SYSCOPY	6	46	
SYSCOLAUTH	SYSIBM	T	DSNDB06	SYSDBASE	6	32	
SYSCOLUMNS	SYSIBM	T	DSNDB06	SYSDBASE	6	20	
SYSINDEXES	SYSIBM	T	DSNDB06	SYSDBASE	6	23	
SYSKEYS	SYSIBM	T	DSNDB06	SYSDBASE	6	27	
SYSLINKS	SYSIBM	T	DSNDB06	SYSDBASE	6	24	
SYSRELS	SYSIBM	T	DSNDB06	SYSDBASE	6	22	
SYSTABAUTH	SYSIBM	T	DSNDB06	SYSDBASE	6	28	
SYSTABLEPAR	SYSIBM	T	DSNDB06	SYSDBASE	6	18	
SYSTABLES	SYSIBM	T	DSNDB06	SYSDBASE	6	19	

*** END ***

Figure: 3.9 Output of QMF Query

Notes:

QMF TAILORED REPORT

DIVISION EARNINGS REPORT

DEPT. NUMBER	JOB	EMPLOYEE NAME	SALARY
15	SALES	ROTHAM	$16,502.83
	MGR	HANES	$20,659.80
	CLERK	KERMISCH	$12,258.50
	CLERK	NGAN	$12,508.20

		DEPT 15 TOTAL	$61,929.33
20	SALES	PERNAL	$18,171.25
	MGR	SANDERS	$18,357.50
	CLERK	KERMISCH	$13,504.60
	CLERK	SNEIDER	$14,252.75

		DEPT 20 TOTAL	$64,286.10
			==========
		GRAND TOTAL	$126,215.43

COMPANY CONFIDENTIAL

Figure: 3.10 QMF Tailored Report

Notes:
QMF gives us access to the report formatting instructions by making some simple changes to the formatting instructions; the tabular report on the previous page is converted to the tailored report. The queries and report formatting instructions may be saved.

QMF REPORT FORMATTING INSTRUCTIONS

FORM.MAIN MODIFIED

COLUMNS: Total Width of Report Columns: 39

NUM	COLUMN HEADING	USAGE	INDENT	WIDTH	EDIT	SEQ
1	DEPT_NUMBER	BREAK1	2	6	L	1
2	JOB		2	5	C	2
3	EMPLOYEE_NAME		2	9	C	3
4	SALARY	SUM	2	11	D2	4

******* END ******

PAGE: HEADING ==== > DIVISION EARNINGS REPORT
FOOTING ==== >COMPANY CONFIDENTIAL
FINAL: TEXT ==== > GRAND TOTAL
BREAK1: NEW PAGE FOR BREAK? ==== > NO
FOOTING ==== >DEPT &1 TOTAL
BREAK2: NEW PAGE FOR BREAK? ==== > NO
FOOTING ==== >
OPTIONS: OUTLINE? ==== >YES
DEFAULT BREAK TEXT? ==== > YES

Figure: 3.11 QMF Report Formatting Instructions

Notes:

- Typing over the current column headings customizes column headings.

QMF REPORT FORMATTING INSTRUCTIONS(Cont….)

- An underscore is a column heading which tells QMF to take the characters following the underscore and print them on the next line.
- The BREAK1 USAGE code tells QMF to generate a subtotal line anytime the value in the DEPT_NUMBER column changes.
- The column to be subtotaled is SALARY.
- The &1 on the BREAK1 FOOTING option is a variable pulling values from the first (1) column and placing them in the break footing text.
- The edit code D2, associated with the SALARY column, adds the currency symbol and decimal punctuation to the SALARY values in the report.

Figure: 3.12 QMF Formatting Instructions (cont…)

QMF PROCEDURES

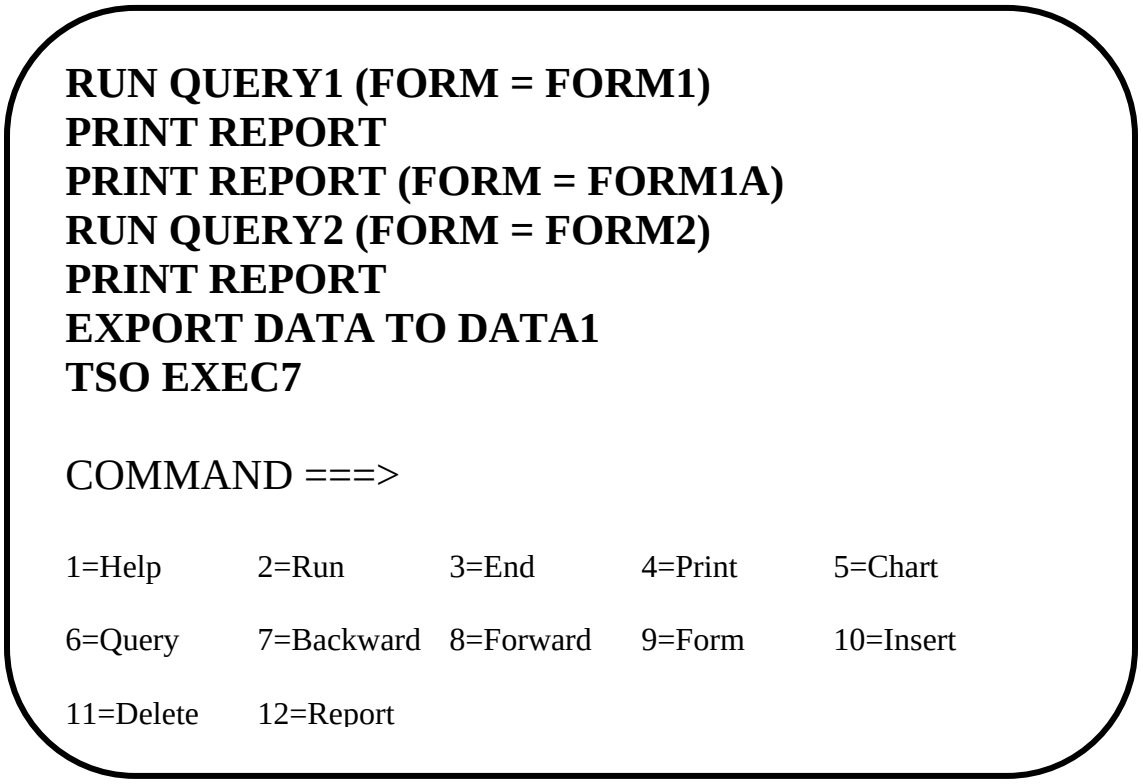

Figure: 3.13 QMF Procedures

Notes:

- QMF Procedure are comprised of ‘stacks of QMF commands’
- One Command Per line.
- No SQL in a procedure.
- QMF commands can run saved queries and format the results with saved format.