

chap0101.txt Chapter 1: How to define types and data objects
chap0102.txt Chapter 1: A Few Simple Examples
chap0103.txt Chapter 1: Working with database tables and internal tables
chap0104.txt Chapter 1: Designing a report
chap0301.txt Chapter 3: The Syntax of ABAP/4 Programs
chap0401.txt Chapter 4: Three approaches to define data objects
chap0402.txt Chapter 4: Types, data, constants
chap0403.txt Chapter 4: Character types
chap0404.txt Chapter 4: Numbers
chap0405.txt Chapter 4: Date and time
chap0406.txt Chapter 4: Hexadecimal (or binary) data
chap0407.txt Chapter 4: Records and internal tables
chap0408.txt Chapter 4: Complex Non-Elementary Types and Data Objects
chap0409.txt Chapter 4: Using system fields
chap0501.txt Chapter 5: Working with tables from the Dictionary
chap0701.txt Chapter 7: Copying fields
chap0702.txt Chapter 7: Simple examples of field conversion
chap0703.txt Chapter 7: Converting character fields
chap0704.txt Chapter 7: Converting number fields
chap0705.txt Chapter 7: Converting date fields
chap0706.txt Chapter 7: Copying structured objects
chap0707.txt Chapter 7: Arithmetic Expressions and Mathematical Functions
chap0708.txt Chapter 7: String Operations
chap0709.txt Chapter 7: Special conversions
chap0801.txt Chapter 8: Using the Basic Layout Formats
chap0802.txt Chapter 8: Customizing pages
chap0803.txt Chapter 8: Skipping lines
chap0804.txt Chapter 8: Setting the layout position of fields
chap0806.txt Chapter 8: Using symbols and icons
chap0807.txt Chapter 8: Using colors
chap0808.txt Chapter 8: Type-Specific Output Options
chap0809.txt Chapter 8: Multi-Language Support
chap0901.txt Chapter 9: External flow of control (events)
chap0902.txt Chapter 9: Internal flow of control (if, case, do, while)
chap1001.txt Chapter 10: Simple form (local subroutine of a program)
chap1002.txt Chapter 10: Local data in a form
chap1003.txt Chapter 10: Using static variables
chap1004.txt Chapter 10: Using interface parameters of a form
chap1005.txt Chapter 10: Classifying parameters
chap1006.txt Chapter 10: Using table parameters
chap1007.txt Chapter 10: Type check for form parameters
chap1008.txt Chapter 10: Form parameters without type reference
chap1009.txt Chapter 10: Form parameters with generic types
chap1010.txt Chapter 10: Calling a function
chap1011.txt Chapter 10: Recursive calls
chap1101.txt Chapter 11: A simple query

chap1102.txt Chapter 11: Using an alternative work area
chap1103.txt Chapter 11: Using internal tables as snapshots of database tables
chap1104.txt Chapter 11: Using where clauses
chap1105.txt Chapter 11: Reading single entries
chap1106.txt Chapter 11: Selecting single fields
chap1107.txt Chapter 11: Getting statistical information
chap1108.txt Chapter 11: Ordering query results
chap1109.txt Chapter 11: Using Select-Options
chap1110.txt Chapter 11: Using a dynamic table name
chap1111.txt Chapter 11: Obtaining data with nested select loops
chap1112.txt Chapter 11: Using Internal Tables for Selection Criteria
chap1201.txt Chapter 12: A simple internal table
chap1202.txt Chapter 12: Internal tables with header lines
chap1203.txt Chapter 12: Filling an internal table from a database table
chap1204.txt Chapter 12: Appending single lines
chap1205.txt Chapter 12: Appending multiple lines
chap1206.txt Chapter 12: Inserting lines at a specified position
chap1207.txt Chapter 12: Inserting lines at a specified position
chap1301.txt Chapter 13: Inserting single entries in a database table
chap1302.txt Chapter 13: Inserting multiple lines in a database table
chap1303.txt Chapter 13: Updating single entries in a database table
chap1304.txt Chapter 13: Updating multiple entries in a database table
chap1305.txt Chapter 13: Modifying single entries in a database table
chap1306.txt Chapter 13: Modifying multiple entries in a database table
chap1307.txt Chapter 13: Deleting single entries from a database table
chap1308.txt Chapter 13: Deleting multiple entries from a database table
chap1401.txt Chapter 14: Exporting to the ABAP/4 Memory
chap1402.txt Chapter 14: Importing from the ABAP/4 Memory
chap1501.txt Chapter 15: Using select statements
chap1502.txt Chapter 15: Using a Logical Database
chap1503.txt Chapter 15: Using the events start-of-selection and end-of-selection
chap1504.txt Chapter 15: Working with get events
chap1601.txt Chapter 16: Parameters on the selection screen
chap1602.txt Chapter 16: Working with Select-Options
chap1603.txt Chapter 16: Selection screen events
chap1701.txt Chapter 17: Double-clicking
chap1702.txt Chapter 17: Clicking on a hotspot area
chap1703.txt Chapter 17: Pop-up Screens
chap1704.txt Chapter 17: Working with the hide command
chap1705.txt Chapter 17: Tabular lists
chap1801.txt Chapter 18: Sample report with selection criteria
chap1802.txt Chapter 18: Running a report
chap1803.txt Chapter 18: Displaying the selection screen
chap1901.txt Chapters 19-22: Sample dialog program (flight reservation)
chap2301.txt Chapter 23: Dynamic sort command
chap2302.txt Chapter 23: Dynamic sort command with several sort criteria

chap2303.txt Chapter 23: Dynamic read table command
 chap2304.txt Chapter 23: Dynamic subtotals
 chap2305.txt Chapter 23: Dynamic Open SQL Commands: table name
 chap2306.txt Chapter 23: Dynamic Open SQL Commands: table name
 chap2307.txt Chapter 23: External perform (caller)
 chap2308.txt Chapter 23: External perform (called form)
 chap2309.txt Chapter 23: Dynamic external perform (call back form)
 chap2310.txt Chapter 23: Dynamic external perform
 chap2401.txt Chapter 24: Working with Field Symbols
 chap2402.txt Chapter 24: Using Field Symbols for variable parts of fields
 chap2403.txt Chapter 24: Using Field Symbols for components of a structure
 chap2501.txt Chapter 25: Working with temporary programs
 chap2502.txt Chapter 25: Syntax errors in temporary programs
 chap2503.txt Chapter 25: A real life example for using a temporary program
 chap2504.txt Chapter 25: Generating a persistent program
 chap2601.txt Chapter 26: Transferring data to a file
 chap2602.txt Chapter 26: Reading data from a file
 chap2603.txt Chapter 26: Transferring data to a file (presentation server)
 chap2604.txt Chapter 26: Reading data from a file (presentation server)
 chap2801.txt Chapter 28: Sample program for OLE Automation

```

*&-----*
*& Chapter 1: How to define types and data objects      *
*&-----*
  
```

REPORT CHAP0101.

```

* Elementary type character, length 20
DATA CUSTOMER_NAME(25) TYPE C.
  
```

```

* Non-elementary type
TYPES T_NAME(25) TYPE C.
DATA NEW_CUSTOMER_NAME TYPE T_NAME.
  
```

```

* Reference to a data object
DATA VENDOR_NAME LIKE CUSTOMER_NAME.
  
```

```

* Record
DATA: BEGIN OF BOOKING,
      ID(4) TYPE C,
      FLIGHT_DATE TYPE D,
      NAME LIKE CUSTOMER_NAME,
      END OF BOOKING.
  
```

```

* Internal table
DATA BOOKING_TABLE LIKE BOOKING OCCURS 100.
  
```

```
*&-----*
*& Chapter 1: A Few Simple Examples *
*&-----*
```

```
REPORT CHAP0102.
```

```
* Copying the content of one data object to another
DATA: SOURCE(10) TYPE C,
      TARGET LIKE SOURCE.
MOVE SOURCE TO TARGET.
```

```
* Displaying the contents of fields
WRITE 'ABAP/4 is easy.'.
NEW-LINE.
WRITE 'This text is displayed on a new line.'.
WRITE / 'After the symbol /, text also appears on a new line.'.
```

```
* Standard control structures (conditions and loops)
IF SOURCE = TARGET.
  WRITE / 'Fields source and target have the same content'.
ELSE.
  WRITE / 'Fields source and target do not have the same content'.
ENDIF.
```

```
DO 3 TIMES.
  WRITE / SY-INDEX.
ENDDO.
```

```
* Local subroutine of a single program
DATA: A1 TYPE I,
      A2 TYPE I.
PERFORM CALC USING  A1
      CHANGING A2.
WRITE / A2.
FORM CALC USING  F1 LIKE A1
      CHANGING F2 LIKE A2.
  F2 = F1 + ( F2 * 17 ).
ENDFORM.
```

```
* Event for drill-down facilities (reacts when a user selects a line)
AT LINE-SELECTION.
  WRITE 'This is displayed after double-clicking a line'.
```

```
*&-----*
*& Chapter 1: Working with database tables and internal tables *
*&-----*
```

```
REPORT CHAP0103.
```

```

* Declaration of a work area for a Dictionary table
TABLES CUSTOMERS.
* Internal table used as snapshot of the database table
DATA ALL_CUSTOMERS LIKE CUSTOMERS OCCURS 100
  WITH HEADER LINE.
* Reading the entries of the database table into an internal table
SELECT * FROM CUSTOMERS INTO TABLE ALL_CUSTOMERS.
* Displaying each line of an internal table
LOOP AT ALL_CUSTOMERS.
  WRITE: / ALL_CUSTOMERS-NAME.
ENDLOOP.

```

```

*&-----*
*& Chapter 1: Designing a report *
*&-----*
REPORT CHAP0104.

```

```

* Declaration of a work area for a Dictionary table
TABLES CUSTOMERS.
* Internal table used as snapshot of the database table
DATA ALL_CUSTOMERS LIKE CUSTOMERS OCCURS 100
  WITH HEADER LINE.
* Definition of input fields on the report's selection screen
SELECT-OPTIONS SNAME FOR CUSTOMERS-NAME.
* Reading the entries of the database table into an internal table
SELECT * FROM CUSTOMERS INTO TABLE ALL_CUSTOMERS
  WHERE NAME IN SNAME.
* Displaying each line of an internal table
LOOP AT ALL_CUSTOMERS.
  WRITE: / ALL_CUSTOMERS-NAME.
ENDLOOP.

```

```

*&-----*
*& Chapter 3: The Syntax of ABAP/4 Programs *
*&-----*
* Declaration of the program name
REPORT CHAP0301.

```

```

* Displaying the words 'Customer list' on the screen
WRITE / 'Customer list'.

```

```

* Using an addition of the write command
WRITE AT /10 'Customer list'.

```

```

* Using single quotation marks within the text of a literal

```

WRITE / 'Customer"s Name'.

* Here is a comment with an asterisk in the first column
WRITE / 'Ms O"Connor'. "This is a comment at the end of the line

* A field of type character and length 40
DATA TARGET_STRING(40) TYPE C.

* Statements may extend over several lines
* (e.g., copying fields using the move command):
MOVE 'Source string'
TO
TARGET_STRING.
WRITE / TARGET_STRING.

* Combining Statements
WRITE: / 'Customer list',
'Bookings'.

&-----
*& **Chapter 4: Three approaches to define data objects**
&-----
REPORT CHAP0401.

* 1. Elementary types
DATA: CUSTOMER_NAME_1(25) TYPE C,
VENDOR_NAME_1(25) TYPE C.

* 2. Reference to an existing field
DATA: CUSTOMER_NAME_2(25) TYPE C,
VENDOR_NAME_2 LIKE CUSTOMER_NAME_2.

* 3. Reference to a non-elementary type
TYPES T_NAME(25) TYPE C.
DATA: CUSTOMER_NAME_3 TYPE T_NAME,
VENDOR_NAME_3 TYPE T_NAME.

&-----
*& **Chapter 4: Types, data, constants**
&-----
REPORT CHAP0402.

* Type flag defines an abstract type
TYPES FLAG TYPE C.

* Field address_flag will allocate space in main memory at runtime

DATA ADDRESS_FLAG TYPE FLAG VALUE 'X'.

* Constants are defined like fields and cannot be changed
CONSTANTS: COMPANY_NAME(3) TYPE C VALUE 'SAP',
MAX_COUNTER TYPE I VALUE 9999.

* Using constants to define initial values
DATA COUNTER TYPE I VALUE MAX_COUNTER.

&-----

*& **Chapter 4: Character types**

&-----

REPORT CHAP0403.

* Type c is the default type when no type is specified.

* Initial value is space, if it is not specified explicitly.

DATA: NAME(25) TYPE C,
CITY(25),
FLAG,
SINGLE_CHARACTER VALUE 'A'.

* If the field and the initial value have different lengths, the

* initial value is either truncated or padded with blanks on the right:

DATA LANGUAGE(2) VALUE 'ABAP/4'.
WRITE / LANGUAGE.

* Maximum length 64KB

DATA MAX_CHARACTER_FIELD(65535).

* Variables of type n (numeric texts) contain strings of digits

DATA CUSTOMER_ID(8) TYPE N VALUE '87654321'.

* The default length for a field of type n is 1,

* and the default initial value is a string of zeros

DATA ZIP_CODE(5) TYPE N.
WRITE / ZIP_CODE.

* Type n fields pad the left side with zeroes

CUSTOMER_ID = '1234'.
WRITE / CUSTOMER_ID.

&-----

*& **Chapter 4: Numbers**

&-----

REPORT CHAP0404.

* Fields of type i (integer) are mainly used for counting

```
DATA: CUSTOMER_NUMBER TYPE I,  
      LOOP_COUNTER TYPE I.
```

* Integers have a fixed length of 4 bytes.

* The initial value is zero, if it is not specified explicitly.

```
DATA WORD_LENGTH TYPE I VALUE 17.
```

* Packed numbers (type p) are a way to store numbers internally

* in a compressed form. Therefore, they cover a wide range of possible

* values can be used for all kinds of computations.

```
DATA NUMBER_OF_MOSQUITOES TYPE P.
```

* Decimal handling is supported for packed numbers

```
DATA AIRBAG_PRICE TYPE P DECIMALS 2 VALUE '333.22'.  
WRITE / AIRBAG_PRICE.
```

* Default length of type p fields is 8, and the maximum length is 16,

* which can represent numbers of up to 31 digits plus the sign

```
DATA: PACKED_NORMAL TYPE P,  
      PACKED_16(16) TYPE P.
```

* Floating point numbers (type f) occur in complex arithmetic

* operations. Possible values range from 1E~-307 to 1E307.

* The standard output length of fields of type f is 22.

```
DATA AGE_OF_EARTH TYPE F VALUE '123E+8'.  
WRITE / AGE_OF_EARTH.
```

* The values of floating point numbers can be represented in

* different ways, but they are all equivalent:

```
DATA: F1 TYPE F,  
      F2 TYPE F,  
      F3 TYPE F.
```

```
F1 = 1.
```

```
F2 = '-12.34567'.
```

```
F3 = '-765E04'.
```

O/p:

```
F1=1.0000000000000000E+00
```

```
F2=-1.2345670000000000E+01
```

```
F3=-7.6500000000000000E+06
```

&-----

*& **Chapter 4: Date and time**

&-----

```
REPORT CHAP0405.
```


- * Date fields are type d with the fixed length 8 and the internal representation YYYYMMDD (year, month, and day).
- * The initial value of a date field is 00000000.

DATA TODAY TYPE D.

- * The write command formats dates according to personal settings of the end user.

TODAY = SY-DATUM.
WRITE (10) TODAY.

- * Using date fields to perform computations

DATA ULTIMO TYPE D.

- * Set variable to first day of current month.

ULTIMO = SY-DATUM.

ULTIMO+6(2) = '01'.

- * Set variable to last day of previous month.

SUBTRACT 1 FROM ULTIMO.

WRITE / ULTIMO.

- * Time fields are type t with the fixed length 6 and the format HHMMSS (hours, minutes, and seconds)

DATA MY_TIME TYPE T.

WRITE /(8) MY_TIME.

&-----

*& **Chapter 4: Hexadecimal (or binary) data** *

&-----

REPORT CHAP0406.

- * Hexadecimal (or binary) data is stored in fields of type x.
- * A type x field of length n contains 2n digits and its output length is also equal to 2n.
- * For example, the bit stream 1111000010001001 can be defined as follows (remind that 1111 = F, 0000 = 0, 1000 = 8, 1001 = 9):

DATA XSTRING(2) TYPE X VALUE 'F089'.

&-----

*& **Chapter 4: Records and internal tables** *

&-----

REPORT CHAP0407.

- * Records (or structures) consist of a fixed number of components

DATA: BEGIN OF CUSTOMER,
 ID(8) TYPE N,
 NAME(25),
 TELEPHONE(12),

END OF CUSTOMER.

* Working with the different components and the structure itself

DATA VENDOR LIKE CUSTOMER.

CUSTOMER-ID = '87654321'.

CUSTOMER-NAME = 'Edison'.

CUSTOMER-TELEPHONE = '111-111-1111'.

MOVE CUSTOMER TO VENDOR.

WRITE / VENDOR-NAME.

* Defining an internal table each entry having the structure of

* the record customer

DATA ALL_CUSTOMERS LIKE CUSTOMER OCCURS 100.

* Using a reference to a non-elementary type.

TYPES: BEGIN OF PERSONAL_DATA,

 NAME(25),

 CITY(25),

 STREET(30),

 END OF PERSONAL_DATA.

DATA PEOPLE TYPE PERSONAL_DATA OCCURS 300.

* Internal table with a header line, which is used as a default record

* to hold the record currently being added to the table

DATA NEW_CUSTOMERS LIKE CUSTOMER OCCURS 100

 WITH HEADER LINE.

&-----

*& **Chapter 4: Complex Non-Elementary Types and Data Objects**

&-----

REPORT CHAP0408.

* Nested records

TYPES: BEGIN OF ADDRESS,

 CITY(25),

 STREET(30),

 END OF ADDRESS,

 BEGIN OF PERSON,

 NAME(25),

 ADDRESS TYPE ADDRESS,

 END OF PERSON.

DATA RECEIVER TYPE PERSON.

RECEIVER-NAME = 'Smith'.

RECEIVER-ADDRESS-CITY = 'Big City'.

RECEIVER-ADDRESS-STREET = 'Main street'.

```
* Nested internal tables
TYPES: BEGIN OF PHONE_FAX_NUMBERS,
        COUNTRY_CODE(3) TYPE N,
        AREA_CODE(3) TYPE N,
        NUMBER(10) TYPE N,
        END OF PHONE_FAX_NUMBERS,
        BEGIN OF EMPLOYEE,
        NAME(25),
        PHONE TYPE PHONE_FAX_NUMBERS OCCURS 10,
        FAX TYPE PHONE_FAX_NUMBERS OCCURS 5,
        END OF EMPLOYEE.
DATA EMPLOYEES TYPE EMPLOYEE OCCURS 100.
```

```
*&-----*
*& Chapter 4: Using system fields
*&-----*
REPORT CHAP0409.
```

```
WRITE: / 'Current date',    SY-DATUM,
        / 'Current table index', SY-TABIX,
        / 'Loop counter',    SY-INDEX,
        / 'System return code', SY-SUBRC.
```

```
*&-----*
*& Chapter 5: Working with tables from the Dictionary
*&-----*
REPORT CHAP0501.
```

```
* Declaration of a work area for a Dictionary table
TABLES CUSTOMERS.
* Reading all entries of the database table and displaying each entry
SELECT * FROM CUSTOMERS.
        WRITE: / CUSTOMERS-NAME.
ENDSELECT.
```

```
*&-----*
*& Chapter 7: Copying fields
*&-----*
REPORT CHAP0701.
```

```
* move fields
DATA: NAME(25),
        COUNTER TYPE I.
DATA: SOURCE LIKE NAME,
        TARGET LIKE SOURCE.
MOVE: 'Edison' TO NAME,
```

17 TO COUNTER.
MOVE SOURCE TO TARGET.

* Using the compute command (keyword can be omitted)
COMPUTE TARGET = SOURCE.
TARGET = SOURCE.

* Concatenating compute commands
DATA: PHONE_1 LIKE SOURCE,
 PHONE_2 LIKE PHONE_1,
 PHONE_3 LIKE PHONE_2,
 PHONE_4 LIKE PHONE_3.
PHONE_4 = PHONE_3 = PHONE_2 = PHONE_1 = SOURCE.

&-----
* & **Chapter 7: Simple examples of field conversion**
&-----
REPORT CHAP0702.

* Converting to numbers during computations
DATA: NUMBER_1(4) VALUE '1771',
 NUMBER_2(3),
 RESULT TYPE I.

NUMBER_2 = '005'.
RESULT = NUMBER_1 + NUMBER_2.
WRITE / RESULT.

NUMBER_2 = ' 5'.
RESULT = NUMBER_1 + NUMBER_2.
WRITE / RESULT.

* Padding character fields with blanks
DATA: OLD_CUSTOMER_NAME(10) VALUE 'Edison',
 NEW_CUSTOMER_NAME(25).
MOVE OLD_CUSTOMER_NAME TO NEW_CUSTOMER_NAME.
WRITE / NEW_CUSTOMER_NAME.

* Calculating dates
DATA: ANY_DATE TYPE D,
 SAME_DAY_OF_NEXT_WEEK TYPE D.

ANY_DATE = '19991231'.
SAME_DAY_OF_NEXT_WEEK = ANY_DATE + 7.
WRITE / SAME_DAY_OF_NEXT_WEEK.

```
ANY_DATE = '20000228'.
SAME_DAY_OF_NEXT_WEEK = ANY_DATE + 7.
WRITE / SAME_DAY_OF_NEXT_WEEK.
```

```
*&-----*
*& Chapter 7: Converting character fields
*&-----*
REPORT CHAP0703.
```

```
* Truncating fields or padding with blanks
DATA: SHORT_NAME(8),
      LONG_NAME(16).
MOVE 'Washington' TO: SHORT_NAME, LONG_NAME.
WRITE: / SHORT_NAME, LONG_NAME.
```

```
* Take care of intermediate steps
LONG_NAME = SHORT_NAME = 'Washington'.
WRITE: / SHORT_NAME, LONG_NAME.
```

```
*&-----*
*& Chapter 7: Converting number fields
*&-----*
REPORT CHAP0704.
```

```
* Using numeric texts and packed numbers
DATA: NO_EMPLOYEES(4) TYPE N,
      NO_ROOMS TYPE P,
      EMPLOYEES_PER_ROOM TYPE P DECIMALS 2.
EMPLOYEES_PER_ROOM = NO_EMPLOYEES / NO_ROOMS.
```

```
* Rounding with integers and packed numbers
DATA: INCOME TYPE I VALUE '10000',
      TAX TYPE P DECIMALS 2 VALUE '0.2',
      NET_INCOME TYPE P DECIMALS 2,
      ROUNDED_NET_INCOME TYPE I.
```

```
NET_INCOME = INCOME * ( 1 - TAX ).
ROUNDED_NET_INCOME = INCOME * ( 1 - TAX ).
WRITE: / NET_INCOME, ROUNDED_NET_INCOME.
```

```
INCOME = '10002'.
NET_INCOME = INCOME * ( 1 - TAX ).
ROUNDED_NET_INCOME = INCOME * ( 1 - TAX ).
WRITE: / NET_INCOME, ROUNDED_NET_INCOME.
```

```
-----*
```

*** & Chapter 7: Converting date fields**

* &-----*

REPORT CHAP0705.

* Using the built-in calendar

DATA: RECEIVING_DATE TYPE D,
LAST_ADMISSIBLE_DATE TYPE D.

RECEIVING_DATE = '19980223'.
LAST_ADMISSIBLE_DATE = RECEIVING_DATE + 10.
WRITE / LAST_ADMISSIBLE_DATE.

RECEIVING_DATE = '19980305'.
LAST_ADMISSIBLE_DATE = RECEIVING_DATE + 10.
WRITE / LAST_ADMISSIBLE_DATE.

RECEIVING_DATE = '20000223'.
LAST_ADMISSIBLE_DATE = RECEIVING_DATE + 10.
WRITE / LAST_ADMISSIBLE_DATE.

* &-----*

*** & Chapter 7: Copying structured objects**

* &-----*

REPORT CHAP0706.

* Using move-corresponding to copy fields with the same name

DATA: BEGIN OF MY_CUSTOMER,
ID(8) TYPE N,
NAME(25),
CITY(25),
END OF MY_CUSTOMER,
BEGIN OF CITY_OF_CUSTOMER,
CITY LIKE MY_CUSTOMER-CITY,
TEXT(30),
ID LIKE MY_CUSTOMER-ID,
END OF CITY_OF_CUSTOMER.

MY_CUSTOMER-ID = '87654321'.
CITY_OF_CUSTOMER-TEXT = 'Old text'.
MOVE-CORRESPONDING MY_CUSTOMER TO CITY_OF_CUSTOMER.
WRITE: / 'Changed ID', CITY_OF_CUSTOMER-ID,
/ 'Unchanged text', CITY_OF_CUSTOMER-TEXT.

* Using the move command for structures

DATA: CURRENT_CUSTOMER LIKE MY_CUSTOMER,

BEGIN OF PREVIOUS_CUSTOMER,
 IDENTIFIER LIKE MY_CUSTOMER-ID,
 NAME LIKE MY_CUSTOMER-NAME,
 CITY LIKE MY_CUSTOMER-CITY,
 END OF PREVIOUS_CUSTOMER.
 CURRENT_CUSTOMER-ID = '12345678'.
 MOVE CURRENT_CUSTOMER TO PREVIOUS_CUSTOMER.
 WRITE: / 'Changed ID', PREVIOUS_CUSTOMER-IDENTIFIER.

* Copying complete internal tables
 TYPES: BEGIN OF TABLE_LINE,
 FIELD_1,
 FIELD_2 TYPE I,
 END OF TABLE_LINE.
 DATA: SOURCE_TABLE TYPE TABLE_LINE OCCURS 100,
 TARGET_TABLE TYPE TABLE_LINE OCCURS 50.
 MOVE SOURCE_TABLE TO TARGET_TABLE.

&-----
 *& **Chapter 7: Arithmetic Expressions and Mathematical Functions**
 &-----
 REPORT CHAP0707.

* Self-explanatory formulas
 DATA: A TYPE P, B LIKE A, X LIKE A, Y LIKE A,
 INCOME TYPE I, TAX TYPE P, NET_INCOME TYPE P,
 ALPHA TYPE P.
 $Y = A * X + B.$
 $NET_INCOME = INCOME * (1 - TAX).$
 $Y = X * COS(ALPHA).$

* Arithmetic expressions
 DATA: BLACK_SWANS TYPE I,
 WHITE_SWANS TYPE I.
 DATA PERCENTAGE TYPE P DECIMALS 2.
 $PERCENTAGE = BLACK_SWANS * 100 / (BLACK_SWANS + WHITE_SWANS).$

* Associative law
 DATA: N1 TYPE P, N2 TYPE P, N3 TYPE P, N4 TYPE P, N5 TYPE P.
 $N5 = ((N1 - (N2 / N3)) * (N4 + N1) / N5).$
 $N5 = (N1 - N2 / N3) * (N4 + N1) / N5.$

* More formulas including mathematical functions
 DATA: W TYPE P, D TYPE I, N TYPE P, Q TYPE I, R TYPE P.
 $Y = X * COS(ALPHA).$
 $A = 1.$

W = EXP(B * LOG(A)).
D = N DIV Q.

&-----

*& **Chapter 7: String Operations**

&-----

REPORT CHAP0708.

* Concatenating strings without delimiter

DATA: FIRST_NAME(25), MIDDLE_NAME(2), LAST_NAME(25),
FULL_NAME(54).

FIRST_NAME = 'John'.

MIDDLE_NAME = 'F.'.

LAST_NAME = 'Kennedy'.

CONCATENATE FIRST_NAME MIDDLE_NAME LAST_NAME INTO
FULL_NAME.

WRITE / FULL_NAME.

* Concatenating strings with delimiter

DATA: DIRECTORY_1(2), DIRECTORY_2(10), FILE_NAME(10),
PATH(24).

DIRECTORY_1 = 'a:'.

DIRECTORY_2 = 'usr'.

FILE_NAME = 'programs'.

CONCATENATE DIRECTORY_1 DIRECTORY_2 FILE_NAME
INTO PATH

SEPARATED BY '\'.

WRITE / PATH.

* Splitting strings

DATA: LIST(40),
NAME_1(25), NAME_2(25), NAME_3(25).

LIST = 'Edison,Smith,Young'.

SPLIT LIST AT ',' INTO NAME_1 NAME_2 NAME_3.

WRITE: / NAME_1, NAME_2, NAME_3.

* Splitting strings with result in an internal table

DATA NAMES LIKE NAME_1 OCCURS 10 WITH HEADER LINE.

LIST = 'Edison,Smith,Young,Edwards'.

SPLIT LIST AT ',' INTO TABLE NAMES.

LOOP AT NAMES.

WRITE / NAMES.

ENDLOOP.

* Shifting strings by a fixed number of places

NAME_1 = 'Edison'.


```
NAME_2 = 'Smith'.
NAME_3 = 'Young'.
SHIFT NAME_1.
SHIFT NAME_2 BY 3 PLACES.
SHIFT NAME_3 RIGHT.
WRITE: / NAME_1, NAME_2, NAME_3.
```

```
* Shifting strings up to a substring
NAMES = 'Alexander Bill Charles'.
SHIFT NAMES UP TO 'Bill'.
WRITE / NAMES.
```

```
* Shifting strings deleting blanks
NAMES = 'Joanne___'.
SHIFT NAMES RIGHT DELETING TRAILING SPACE.
WRITE / NAMES.
```

```
* Replacing and translating characters in strings
DATA: STRING(80),
      EXPRESSION(30).
STRING = 'Variable: &. The variable & is substituted later.'.
REPLACE '&' WITH 'X' INTO STRING.
WRITE / STRING.
TRANSLATE STRING USING '&X'.
WRITE / STRING.
EXPRESSION = 'a ** 2 + b ** 2 = c ** 2'.
TRANSLATE EXPRESSION USING 'axbycz'.
WRITE / EXPRESSION.
```

```
* Searching for strings in fields or internal tables
DATA TEXT(100) VALUE 'Texas California New Mexico Louisiana Oregon'.
SEARCH TEXT FOR 'California'.
IF SY-SUBRC NE 0. WRITE 'Not found'. ENDIF.
SEARCH TEXT FOR 'cAliforniA'.
IF SY-SUBRC NE 0. WRITE 'Not found'. ENDIF.
SEARCH TEXT FOR 'New M'.
IF SY-SUBRC NE 0. WRITE 'Not found'. ENDIF.
```

```
* Working with parts of fields
DATA: S(8) VALUE 'ABCDEFGH',
      T(8) VALUE '12345678',
      OFF1 TYPE I, OFF2 TYPE I,
      LEN1 TYPE I, LEN2 TYPE I.
```

```
OFF1 = 2.
LEN1 = 3.
```

OFF2 = 4.
LEN2 = 3.
MOVE S+OFF1(LEN1) TO T+OFF2(LEN2).
WRITE / T.

&-----
*& **Chapter 7: Special conversions**
&-----

REPORT CHAP0709.

* Converting type c to type n
DATA: SCN(4) VALUE '12x4',
 T1CN(2) TYPE N,
 T2CN(6) TYPE N.
MOVE: SCN TO T1CN,
 SCN TO T2CN.

* Converting type n to type c
DATA: SNC(4) TYPE N VALUE '0124',
 T1NC(2),
 T2NC(6).
MOVE: SNC TO T1NC,
 SNC TO T2NC.

* Converting type n to type p
DATA: SNP(6) TYPE N VALUE '012345',
 T1NP(10) TYPE P,
 T2NP(2) TYPE P.
MOVE SNP TO T1NP.
*move snp to t2np. "This produces a runtime error when activated!"

* Converting type p to type n
DATA: SPN(4) TYPE P VALUE 124,
 T1PN(2) TYPE N,
 T2PN(6) TYPE N.
MOVE: SPN TO T1PN,
 SPN TO T2PN.

WRITE 'Program finished'.

&-----
*& **Chapter 8: Using the Basic Layout Formats**
&-----

REPORT CHAP0801.

* Simple output containing the current date

WRITE: 'This is the current date:', SY-DATUM.

* Displaying fields according to their type

DATA: STRING(20),
 INT TYPE I,
 PACKED_NUMBER TYPE P DECIMALS 2,
 DATE LIKE SY-DATUM.

STRING = 'Customer list'.

INT = 17.

PACKED_NUMBER = 5 / 4.

DATE = SY-DATUM + 30.

WRITE: / STRING, INT, PACKED_NUMBER, DATE.

&-----

*& **Chapter 8: Customizing pages**

&-----

* suppress the standard header of a page

REPORT CHAP0802 NO STANDARD PAGE HEADING..

* Define a counter for the output page

DATA COUNTER(9) TYPE N.

* Start a new page and set the line size

NEW-PAGE LINE-SIZE 44.

* Display the counter 40 times

DO 40 TIMES.

 COUNTER = SY-INDEX.

 WRITE COUNTER.

ENDDO.

&-----

*& **Chapter 8: Skipping lines**

&-----

REPORT CHAP0803.

WRITE 'This string will appear on the first line.'.

NEW-LINE.

WRITE: 'New line',

 / 'Yet another line'.

SKIP 3.

WRITE / 'skip 3 produces three empty lines.'.

&-----

*** & Chapter 8: Setting the layout position of fields**

* &-----*

REPORT CHAP0804.

DATA: POS TYPE I,
LEN TYPE I.

WRITE AT 5 'position 5'.
POS = 20.
WRITE AT POS 'position 20'.
POSITION 40.
WRITE 'position 40'.

POS = 10. LEN = 20.
NEW-LINE.
WRITE AT POS(LEN) 'position 10, length 20'.

* &-----*

*** & Chapter 8: Using symbols and icons**

* &-----*

REPORT CHAP0806.

* Declaring symbols and icons
INCLUDE: <SYMBOL>, <ICON>.

* Displaying symbols and icons
WRITE: / SYM_PHONE AS SYMBOL, 'telephone',
/ SYM_FAX AS SYMBOL, 'fax machine',
/ SYM_LEFT_HAND AS SYMBOL, 'hand pointing left',
/ SYM_CAUTION AS SYMBOL, 'caution',
/ ICON_CHECKED AS ICON, 'checked; okay',
/ ICON_DELETE AS ICON, 'delete',
/ ICON_PRINT AS ICON, 'print'.

* &-----*

*** & Chapter 8: Using colors**

* &-----*

REPORT CHAP0807.

* Display the header using an appropriate color (grayish blue)
WRITE 'Header' COLOR COL_HEADING.

* Switch the standard color
FORMAT COLOR COL_TOTAL.

* Make the color less bright

```
WRITE / 'total sum' COLOR COL_TOTAL INTENSIFIED OFF.
```

```
* Using different colors
```

```
FORMAT COLOR COL_HEADING.
```

```
WRITE / 'Header'.
```

```
FORMAT COLOR OFF.
```

```
SKIP.
```

```
WRITE: / 'Key field' COLOR COL_KEY,
```

```
    'Background',
```

```
    'Negative' COLOR COL_NEGATIVE,
```

```
    / 'Total sum' COLOR COL_TOTAL INTENSIFIED OFF.
```

```
*&-----*
```

```
*& Chapter 8: Type-Specific Output Options
```

```
*&-----*
```

```
REPORT CHAP0808.
```

```
* Specifying a format template
```

```
DATA TIME TYPE T VALUE '154633'.
```

```
WRITE AT (8) TIME USING EDIT MASK '__:__:__'.
```

```
* Using decimals
```

```
DATA PACKED_NUMBER TYPE P VALUE 123.
```

```
WRITE PACKED_NUMBER DECIMALS 2.
```

```
*&-----*
```

```
*& Chapter 8: Multi-Language Support
```

```
*&-----*
```

```
REPORT CHAP0809.
```

```
* Using text symbols
```

```
WRITE: / 'Literal without text symbol',
```

```
    / 'Original text of the source code'(001),
```

```
    / TEXT-002.
```

```
*&-----*
```

```
*& Chapter 9: External flow of control (events)
```

```
*&-----*
```

```
REPORT CHAP0901.
```

```
* Display a list of customers
```

```
TABLES CUSTOMERS.
```

```
SELECT * FROM CUSTOMERS.
```

```
    WRITE / CUSTOMERS-NAME.
```

```
ENDSELECT.
```

* Event for drill down
AT LINE-SELECTION.
WRITE: / 'This line appears after drill-down'.

&-----
*& **Chapter 9: Internal flow of control (if, case, do, while)**
&-----
REPORT CHAP0902.

* Declarations for later use
TABLES CUSTOMERS.
DATA: COLOR(10) VALUE 'yellow',
N(4) TYPE N VALUE '123',
P TYPE P,
C4(4) VALUE '124',
C5(5) VALUE '00124',
SQUARE_NUMBER TYPE I,
X TYPE I,
Y TYPE I.

* Using a condition (e.g., business class or not)
IF CUSTOMERS-CUSTTYPE = 'B'.
* book business class
WRITE 'B'.
ELSE.
* book economy class
WRITE 'Something else'.
ENDIF.

* Nested if clauses
IF N > 0.
N = N + 1.
ELSE.
IF N = 0.
WRITE / 'zero'.
ELSE.
N = N - 1.
ENDIF.
ENDIF.

* Using elseif instead of a nested if clauses
IF N > 0.
N = N + 1.
ELSEIF N = 0.
WRITE / 'zero'.
ELSE.

```
N = N - 1.  
ENDIF.
```

* Using a case clause

```
CASE COLOR.  
  WHEN 'red'.  WRITE 'color is red'.  
  WHEN 'green'. WRITE 'color is green'.  
  WHEN 'yellow'. WRITE 'color is yellow'.  
  WHEN OTHERS. WRITE 'non-standard color'.  
ENDCASE.
```

* Some logical expressions in if clauses

```
IF N IS INITIAL.  
  WRITE 'initial'.  
ELSEIF N LT 0  
  OR N GT 5.  
  WRITE / 'less than zero or greater than 5'.  
ELSE.  
  WRITE / 'something else'.  
ENDIF.
```

```
IF N > P.
```

```
  WRITE / 'n is greater than p'.  
ENDIF.
```

* Conversion in an expression

```
IF C4 = C5.  
  WRITE / 'c4 and c5 are equal'.  
ENDIF.
```

* Comparing character strings

```
DATA: A(6) VALUE 'ABAP/4',  
      RESULT(6).  
IF A CA 'XP'.  
  RESULT = A+SY-FDPOS(2).  
  WRITE / RESULT.  
ENDIF.
```

```
IF A CO 'ABP'.
```

```
  WRITE / 'a only contains A,B, and P'.  
ENDIF.
```

```
IF A CS 'BAP'.
```

```
  WRITE / 'a contains the string BAP'.  
ENDIF.
```

```
IF A CP '*AP++'.  
  WRITE / 'a contains AP followed by two more characters'.  
ENDIF.
```

```
* Unconditional loop  
DO 100 TIMES.  
  SQUARE_NUMBER = SY-INDEX ** 2.  
  WRITE / SQUARE_NUMBER.  
ENDDO.
```

```
* Terminating a loop  
DO.  
* terminate loop after 5 steps or when the color is red  
  IF SY-INDEX > 5 OR COLOR = 'red'. EXIT. ENDIF.  
* main loop step  
  WRITE / SY-INDEX.  
ENDDO.
```

```
* Using a conditional loop.  
X = Y - 2.  
WHILE X <> Y.  
  X = Y + 1.  
  WRITE / X.  
  IF X > Y. EXIT. ENDIF.  
ENDWHILE.
```

```
*&-----*  
*& Chapter 10: Simple form (local subroutine of a program)  
*&-----*  
REPORT CHAP1001.
```

```
* Global field of the program  
DATA FLAG VALUE 'G'.  
* Displaying the global field  
WRITE FLAG.  
* Calling a form  
PERFORM SET_FLAG.  
* Displaying the global field again  
WRITE FLAG.
```

```
* Defining a form  
FORM SET_FLAG.  
* Changing and displaying the global field  
  FLAG = 'L'.  
  WRITE FLAG.  
ENDFORM.
```


&-----

***& Chapter 10: Local data in a form**

&-----

REPORT CHAP1002.

* Global field of the program

DATA FLAG VALUE 'G'.

* Displaying the global field

WRITE FLAG.

* Calling a form

PERFORM WRITE_FLAG.

* Displaying the global field again

WRITE FLAG.

* Defining a form with local data

FORM WRITE_FLAG.

* Local data

DATA L_FLAG.

* Changing and displaying local data

L_FLAG = 'L'.

WRITE L_FLAG.

ENDFORM.

&-----

***& Chapter 10: Using static variables**

&-----

REPORT CHAP1003.

* Calling a form twice

PERFORM COUNT.

PERFORM COUNT.

* Defining a form with a static variable

FORM COUNT.

STATICS CALLS TYPE I.

CALLS = CALLS + 1.

WRITE CALLS.

ENDFORM.

&-----

***& Chapter 10: Using interface parameters of a form**

&-----

REPORT CHAP1004.

* Types and data for later use

TYPES: T_NAME(20).

DATA: NAME_1 TYPE T_NAME VALUE 'A',

```

NAME_2 TYPE T_NAME VALUE 'B'.
* Calling a form with different parameters
PERFORM SET_NAME CHANGING NAME_1.
PERFORM SET_NAME CHANGING NAME_2.
* Defining a form with a parameter
FORM SET_NAME
  CHANGING F_NAME TYPE T_NAME.
  WRITE F_NAME.
  F_NAME = 'Smith'.
  WRITE F_NAME.
ENDFORM.

```

```

*&-----*
*& Chapter 10: Classifying parameters
*&-----*
REPORT CHAP1005.

```

```

* Data declarations for later use
DATA: A1 TYPE P VALUE 2,
      A2 TYPE P VALUE 4,
      A3 TYPE P VALUE 8.
* Calling a form with different parameter types
PERFORM CALC USING  A1
                  A2
                  CHANGING A3.
* Displaying the result
WRITE A3.
* Defining a form with different parameter types
FORM CALC USING  VALUE(F1) LIKE A1
                F2 LIKE A2
                CHANGING VALUE(F3) LIKE A3.
                F3 = F1 + ( F2 * F3 ).
ENDFORM.

```

```

*&-----*
*& Chapter 10: Using table parameters
*&-----*
REPORT CHAP1006.

```

```

* Work area of database table and internal table for later use
TABLES CUSTOMERS.
DATA ALL_CUSTOMERS LIKE CUSTOMERS OCCURS 50 WITH HEADER LINE.
* Calling a form with a table parameter
PERFORM READ_CUSTOMERS TABLES ALL_CUSTOMERS.
LOOP AT ALL_CUSTOMERS.
  WRITE / ALL_CUSTOMERS-NAME.

```

```

ENDLOOP.
* Defining a form with a table parameter
FORM READ_CUSTOMERS TABLES F_CUSTOMERS STRUCTURE
ALL_CUSTOMERS.
  SELECT * FROM CUSTOMERS INTO TABLE F_CUSTOMERS.
ENDFORM.
*&-----*
*& Chapter 10: Type check for form parameters
*&-----*
REPORT CHAP1007.
* Types and variables for later use
TYPES: T_NAME_1(20),
       T_NAME_2(20).
DATA: NAME_1 TYPE T_NAME_1,
      NAME_2 TYPE T_NAME_2.
* Calling forms with different actual parameters
PERFORM SET_NAME_LIKE CHANGING NAME_1.
PERFORM SET_NAME_LIKE CHANGING NAME_2.
PERFORM SET_NAME_TYPE CHANGING NAME_1.
PERFORM SET_NAME_TYPE CHANGING NAME_2.
* Form definition with type reference via like
FORM SET_NAME_LIKE CHANGING F_NAME LIKE NAME_2.
  F_NAME = 'Smith'.
ENDFORM.
* Form definition with type reference via type
FORM SET_NAME_TYPE CHANGING F_NAME TYPE T_NAME_2.
  F_NAME = 'Smith'.
ENDFORM.

*&-----*
*& Chapter 10: Form parameters without type reference
*&-----*
REPORT CHAP1008.
* Variable for later use
DATA: STRING_1(2) VALUE 'AB',
      STRING_2(8) VALUE ' ABAP/4'.
* Calling forms with different actual parameters
PERFORM WRITE_FIRST_CHARACTER CHANGING: STRING_1,
                                         STRING_2.
* Form parameters without type reference
FORM WRITE_FIRST_CHARACTER CHANGING F_STRING.
  SHIFT F_STRING LEFT DELETING LEADING SPACE.
  WRITE AT (1) F_STRING.
ENDFORM.

*&-----*

```

*** & Chapter 10: Form parameters with generic types**

* &-----*

REPORT CHAP1009.

* Variable for later use

DATA: SHORT_STRING(3) VALUE 'AB',
 SHORT_NUMBER(3) TYPE N VALUE '0',
 ALL_CUSTOMERS LIKE CUSTOMERS OCCURS 100.

* Calling forms with different actual parameters

* Correct call (actual parameter is of type c)

PERFORM WRITE_FIRST_CHARACTER CHANGING SHORT_STRING.

* Incorrect call (actual parameter is not of type c)

* perform write_first_character changing short_number.

* Correct call (actual parameter is a table)

PERFORM SORT_AND_SEARCH_IN_TABLE
 CHANGING ALL_CUSTOMERS.

* Form parameters with generic types

FORM WRITE_FIRST_CHARACTER CHANGING F_STRING TYPE C.

 SHIFT F_STRING LEFT DELETING LEADING SPACE.

 WRITE AT (1) F_STRING.

ENDFORM.

FORM SORT_AND_SEARCH_IN_TABLE

 CHANGING F_TABLE TYPE TABLE.

 SORT F_TABLE.

 SEARCH F_TABLE FOR 'Smith'.

ENDFORM.

* &-----*

*** & Chapter 10: Calling a function**

* &-----*

REPORT CHAP1010.

* Variable for later use

DATA: X TYPE I VALUE 5,
 Y LIKE X VALUE 7,
 MAXIMUM LIKE X.

* Calling a function

CALL FUNCTION 'MAX_TEST'

 EXPORTING

 A = X

 B = Y

 IMPORTING

 MAX = MAXIMUM.

WRITE MAXIMUM.

* &-----*

*** & Chapter 10: Recursive calls**

* &-----*

REPORT CHAP1011.

* Variable for later use

DATA: NUMBER TYPE I VALUE 5,
 RESULT TYPE I VALUE 1.

* Calling a form from the main program

PERFORM FACTORIAL.

WRITE RESULT.

* Defining a form with a recursive call

FORM FACTORIAL.

 IF NUMBER <= 1.

 EXIT.

 ENDIF.

 RESULT = RESULT * NUMBER.

 NUMBER = NUMBER - 1.

 PERFORM FACTORIAL.

ENDFORM.

* &-----*

*** & Chapter 11: A simple query**

* &-----*

REPORT CHAP1101.

* Work area for a database table

TABLES CUSTOMERS.

* Reading all entries of the database table

SELECT * FROM CUSTOMERS.

 WRITE: / CUSTOMERS-NAME.

ENDSELECT.

* &-----*

*** & Chapter 11: Using an alternative work area**

* &-----*

REPORT CHAP1102.

* Work area for a database table

TABLES CUSTOMERS.

* alternative work area

DATA MY_CUSTOMER LIKE CUSTOMERS.

* Reading all entries of the database table

SELECT * FROM CUSTOMERS INTO MY_CUSTOMER.

 WRITE: / MY_CUSTOMER-NAME.

ENDSELECT.

* &-----*

*** & Chapter 11: Using internal tables as snapshots of database tables**

* &-----*

REPORT CHAP1103.

* Work area for a database table

TABLES CUSTOMERS.

* Internal table

DATA ALL_CUSTOMERS LIKE CUSTOMERS OCCURS 100
WITH HEADER LINE.

* Filling the internal table with all entries of the database table

SELECT * FROM CUSTOMERS INTO TABLE ALL_CUSTOMERS.

* Displaying the contents of the internal table

LOOP AT ALL_CUSTOMERS.

WRITE: / ALL_CUSTOMERS-NAME.

ENDLOOP.

* &-----*

*** & Chapter 11: Using where clauses**

* &-----*

REPORT CHAP1104.

* Work areas

TABLES: BOOKINGS, CUSTOMERS.

* Internal tables

DATA CUSTOMER_ORDERS LIKE BOOKINGS OCCURS 100
WITH HEADER LINE.

DATA ALL_CUSTOMERS LIKE CUSTOMERS OCCURS 100
WITH HEADER LINE.

* Selecting data with a simple where clause

SELECT * FROM BOOKINGS INTO TABLE CUSTOMER_ORDERS
WHERE ORDER_DATE = '19990101'.

* Displaying the result

LOOP AT CUSTOMER_ORDERS.

WRITE / CUSTOMER_ORDERS-FLDATE.

ENDLOOP.

* Selecting data with a complex where clause

SELECT * FROM BOOKINGS INTO TABLE CUSTOMER_ORDERS
WHERE CUSTOMID = '87654321'
AND ORDER_DATE >= '19990101'.

* Displaying the result

SKIP.

LOOP AT CUSTOMER_ORDERS.

WRITE / CUSTOMER_ORDERS-FLDATE.

ENDLOOP.

* Selecting data with a complex where clause

```

SELECT * FROM CUSTOMERS INTO TABLE ALL_CUSTOMERS
    WHERE NAME LIKE 'E%'.
* Displaying the result
SKIP.
LOOP AT ALL_CUSTOMERS.
    WRITE / ALL_CUSTOMERS-NAME.
ENDLOOP.

```

```
*&-----*
```

```
*& Chapter 11: Reading single entries
```

```
*&-----*
```

```

REPORT CHAP1105.
* Work area for a database table
TABLES CUSTOMERS.
* Reading a single entry
SELECT SINGLE * FROM CUSTOMERS
    WHERE ID = '87654321'.
IF SY-SUBRC = 0.
    WRITE CUSTOMERS-NAME.
ELSE.
    WRITE 'Customer not found.'.
ENDIF.

```

```
*&-----*
```

```
*& Chapter 11: Selecting single fields
```

```
*&-----*
```

```

REPORT CHAP1106.
* Work area for a database table
TABLES CUSTOMERS.
* Selecting single fields
DATA: CID LIKE CUSTOMERS-ID,
      CNAME LIKE CUSTOMERS-NAME.
SELECT ID NAME INTO (CID,CNAME) FROM CUSTOMERS.
    WRITE: / CID, CNAME.
ENDSELECT.

```

```
*&-----*
```

```
*& Chapter 11: Getting statistical information
```

```
*&-----*
```

```

REPORT CHAP1107.
* Work area for a database table
TABLES: BOOKINGS, ACTFLI.
* Variables for later use
DATA: COUNT_BOOKINGS TYPE I,
      AVERAGE_SEATS_OCCUPIED LIKE ACTFLI-SEATSOCC,
      MAX_SEATS LIKE ACTFLI-SEATSMAX.

```

* Getting the number of selected entries
SELECT COUNT(*) FROM BOOKINGS INTO COUNT_BOOKINGS
WHERE ORDER_DATE >= '19990101'.

WRITE COUNT_BOOKINGS.

* Average and maximum

SELECT AVG(SEATSOCC) MAX(SEATSMAX) FROM ACTFLI
INTO (AVERAGE_SEATS_OCCUPIED,MAX_SEATS).

WRITE: / AVERAGE_SEATS_OCCUPIED, MAX_SEATS.

&-----

*& **Chapter 11: Ordering query results**

&-----

REPORT CHAP1108.

* Work area

TABLES CUSTOMERS.

* Reading table entries in a specified order

SELECT * FROM CUSTOMERS
ORDER BY CITY NAME.

WRITE: / CUSTOMERS-CITY,
CUSTOMERS-NAME.

ENDSELECT.

&-----

*& **Chapter 11: Using Select-Options**

&-----

REPORT CHAP1109.

* Work area

TABLES CUSTOMERS.

* Specifying a Select-Option

SELECT-OPTIONS SNAME FOR CUSTOMERS-NAME.

* Internal table for later use

DATA ALL_CUSTOMERS LIKE CUSTOMERS OCCURS 100
WITH HEADER LINE.

* Reading table entries according to a Select-Option

SELECT * FROM CUSTOMERS INTO TABLE ALL_CUSTOMERS
WHERE NAME IN SNAME.

* Displaying the result

LOOP AT ALL_CUSTOMERS.

WRITE: / ALL_CUSTOMERS-CITY,
ALL_CUSTOMERS-NAME.

ENDLOOP.

&-----

*** & Chapter 11: Using a dynamic table name**

* &-----*

REPORT CHAP1110.

* Variables for later use

DATA: TABLENAME(10),
 COUNT_ROWS TYPE I.

* Setting the table name dynamically

MOVE 'CUSTOMERS' TO TABLENAME.

* Selecting data

SELECT COUNT(*) FROM (TABLENAME) INTO COUNT_ROWS.
WRITE: TABLENAME, COUNT_ROWS.

* &-----*

*** & Chapter 11: Obtaining data with nested select loops**

* &-----*

REPORT CHAP1111.

* Work areas

TABLES: CUSTOMERS, BOOKINGS.

* Reading entries from both database table

SELECT * FROM CUSTOMERS.
 SELECT * FROM BOOKINGS
 WHERE CUSTOMID = CUSTOMERS-ID
 AND ORDER_DATE = '19990101'.

 WRITE: / CUSTOMERS-NAME,
 BOOKINGS-FLDATE.

 ENDSELECT.

ENDSELECT.

* &-----*

*** & Chapter 11: Using Internal Tables for Selection Criteria**

* &-----*

REPORT CHAP1112.

* Work areas

TABLES: CUSTOMERS, BOOKINGS.

* Internal tables

DATA: ALL_CUSTOMERS LIKE CUSTOMERS OCCURS 100
 WITH HEADER LINE,
 ALL_BOOKINGS LIKE BOOKINGS OCCURS 500
 WITH HEADER LINE.

* Reading entries from both database table

SELECT * FROM CUSTOMERS INTO TABLE ALL_CUSTOMERS.
SELECT * FROM BOOKINGS INTO TABLE ALL_BOOKINGS
 FOR ALL ENTRIES IN ALL_CUSTOMERS
 WHERE CUSTOMID = ALL_CUSTOMERS-ID
 AND ORDER_DATE = '19990101'.

* Displaying the result

```
LOOP AT ALL_CUSTOMERS.
  LOOP AT ALL_BOOKINGS
    WHERE CUSTOMID = ALL_CUSTOMERS-ID.
    WRITE: / ALL_CUSTOMERS-NAME,
           ALL_BOOKINGS-FLDATE.
  ENDLOOP.
ENDLOOP.
```

```
*&-----*
```

```
*& Chapter 12: A simple internal table
```

```
*&-----*
```

```
REPORT CHAP1201.
* Work area for a database table
TABLES CUSTOMERS.
* Defining an internal table
DATA ALL_CUSTOMERS LIKE CUSTOMERS OCCURS 100.
* Reading all entries of the database table into the internal table
SELECT * FROM CUSTOMERS INTO TABLE ALL_CUSTOMERS.
```

```
*&-----*
```

```
*& Chapter 12: Internal tables with header lines
```

```
*&-----*
```

```
REPORT CHAP1202.
* Work area for a database table
TABLES CUSTOMERS.
* Defining an internal table with header line
DATA ALL_CUSTOMERS LIKE CUSTOMERS OCCURS 100
  WITH HEADER LINE.
* Reading all entries of the database table into the internal table
SELECT * FROM CUSTOMERS INTO TABLE ALL_CUSTOMERS.
```

```
*&-----*
```

```
*& Chapter 12: Filling an internal table from a database table
```

```
*&-----*
```

```
REPORT CHAP1203.
* Work area for a database table
TABLES CUSTOMERS.
* Defining an internal table with header line
DATA ALL_CUSTOMERS LIKE CUSTOMERS OCCURS 100
  WITH HEADER LINE.
* Filling the internal table (previous content overwritten)
SELECT * FROM CUSTOMERS INTO TABLE ALL_CUSTOMERS.
* Filling the internal table (previous content kept)
SELECT * FROM CUSTOMERS APPENDING TABLE ALL_CUSTOMERS.
* Displaying the result
LOOP AT ALL_CUSTOMERS.
```

```
WRITE / ALL_CUSTOMERS-NAME.  
ENDLOOP.
```

```
*&-----*
```

```
*& Chapter 12: Appending single lines
```

```
*&-----*
```

```
REPORT CHAP1204.
```

```
* Work area for a database table
```

```
TABLES CUSTOMERS.
```

```
* Types for later use
```

```
TYPES: BEGIN OF T_CUSTOMER_CITY,  
        ID LIKE CUSTOMERS-ID,  
        CITY LIKE CUSTOMERS-CITY,  
        END OF T_CUSTOMER_CITY.
```

```
* Internal table with two columns
```

```
DATA CUSTOMER_CITIES TYPE T_CUSTOMER_CITY OCCURS 100  
        WITH HEADER LINE.
```

```
* Filling the internal table
```

```
SELECT * FROM CUSTOMERS.  
        MOVE-CORRESPONDING CUSTOMERS TO CUSTOMER_CITIES.  
        APPEND CUSTOMER_CITIES.  
ENDSELECT.
```

```
* Displaying the result
```

```
LOOP AT CUSTOMER_CITIES.  
        WRITE / CUSTOMER_CITIES-CITY.  
ENDLOOP.
```

```
*&-----*
```

```
*& Chapter 12: Appending multiple lines
```

```
*&-----*
```

```
REPORT CHAP1205.
```

```
* Work area for a database table
```

```
TABLES CUSTOMERS.
```

```
* Defining internal tables
```

```
DATA: ALL_CUSTOMERS LIKE CUSTOMERS OCCURS 100  
        WITH HEADER LINE,  
        OLD_CUSTOMERS LIKE CUSTOMERS OCCURS 10  
        WITH HEADER LINE.
```

```
* Filling both internal tables
```

```
SELECT * FROM CUSTOMERS INTO TABLE ALL_CUSTOMERS.  
SELECT * FROM CUSTOMERS INTO TABLE OLD_CUSTOMERS.
```

```
* Appending one internal table to the other
```

```
APPEND LINES OF OLD_CUSTOMERS TO ALL_CUSTOMERS.
```

```
* Displaying the result
```

```
LOOP AT ALL_CUSTOMERS.  
        WRITE / ALL_CUSTOMERS-NAME.
```

ENDLOOP.

&-----

*& **Chapter 12: Inserting lines at a specified position**

&-----

REPORT CHAP1206.

* Work area for a database table

TABLES CUSTOMERS.

* Types for later use

TYPES: BEGIN OF T_CUSTOMER_CITY,

 ID LIKE CUSTOMERS-ID,

 CITY LIKE CUSTOMERS-CITY,

 END OF T_CUSTOMER_CITY.

* Internal table with two columns

DATA CUSTOMER_CITIES TYPE T_CUSTOMER_CITY OCCURS 100
 WITH HEADER LINE.

* Filling the internal table

SELECT * FROM CUSTOMERS.

 MOVE-CORRESPONDING CUSTOMERS TO CUSTOMER_CITIES.

 APPEND CUSTOMER_CITIES.

ENDSELECT.

* Inserting a line at a specified position

CUSTOMER_CITIES-ID = '00000005'.

CUSTOMER_CITIES-CITY = 'Pleasant Site'.

INSERT CUSTOMER_CITIES INDEX 3.

* Displaying the result

LOOP AT CUSTOMER_CITIES.

 WRITE / CUSTOMER_CITIES-CITY.

ENDLOOP.

&-----

*& **Chapter 12: Inserting lines at a specified position**

&-----

REPORT CHAP1206.

* Work area for a database table

TABLES CUSTOMERS.

* Types for later use

TYPES: BEGIN OF T_CUSTOMER_CITY,

 ID LIKE CUSTOMERS-ID,

 CITY LIKE CUSTOMERS-CITY,

 END OF T_CUSTOMER_CITY.

* Internal table with two columns

DATA CUSTOMER_CITIES TYPE T_CUSTOMER_CITY OCCURS 100
 WITH HEADER LINE.

* Filling the internal table

SELECT * FROM CUSTOMERS.

```

MOVE-CORRESPONDING CUSTOMERS TO CUSTOMER_CITIES.
APPEND CUSTOMER_CITIES.
ENDSELECT.
* Inserting a line at a specified position
CUSTOMER_CITIES-ID = '00000005'.
CUSTOMER_CITIES-CITY = 'Pleasant Site'.
INSERT CUSTOMER_CITIES INDEX 3.
* Displaying the result
LOOP AT CUSTOMER_CITIES.
  WRITE / CUSTOMER_CITIES-CITY.
ENDLOOP.

```

```

*&-----*
*& Chapter 13: Inserting single entries in a database table
*&-----*

```

```

REPORT CHAP1301.
* Work area
TABLES CUSTOMERS.
* Record used as alternative work area
DATA MY_CUSTOMER LIKE CUSTOMERS.
* Inserting one entry from the work area
CUSTOMERS-ID = '12345678'.
CUSTOMERS-NAME = 'Brown'.
INSERT CUSTOMERS.
IF SY-SUBRC <> 0.
  WRITE: / 'Entry already exists:', CUSTOMERS-ID.
ENDIF.
* Inserting one entry from the record
MY_CUSTOMER-ID = '11111111'.
MY_CUSTOMER-NAME = 'Green'.
INSERT INTO CUSTOMERS VALUES MY_CUSTOMER.
IF SY-SUBRC <> 0.
  WRITE: / 'Entry already exists:', MY_CUSTOMER-ID.
ENDIF.

```

```

*&-----*
*& Chapter 13: Inserting multiple entries in a database table
*&-----*

```

```

REPORT CHAP1302.
* Work area
TABLES CUSTOMERS.
* Internal table for new entries
DATA ALL_CUSTOMERS LIKE CUSTOMERS OCCURS 100
  WITH HEADER LINE.
* Filling the internal table
ALL_CUSTOMERS-ID = '12345678'.

```

```
ALL_CUSTOMERS-NAME = 'Brown'.
APPEND ALL_CUSTOMERS.
ALL_CUSTOMERS-ID = '11111111'.
ALL_CUSTOMERS-NAME = 'Green'.
APPEND ALL_CUSTOMERS.
ALL_CUSTOMERS-ID = '12121212'.
ALL_CUSTOMERS-NAME = 'White'.
APPEND ALL_CUSTOMERS.
* Inserting the internal table
INSERT CUSTOMERS FROM TABLE ALL_CUSTOMERS.
```

```
*&-----*
*& Chapter 13: Updating single entries in a database table
*&-----*
```

```
REPORT CHAP1303.
* Work area
TABLES CUSTOMERS.
* Record used as alternative work area
DATA MY_CUSTOMER LIKE CUSTOMERS.
* Updating one entry from the work area
CUSTOMERS-ID = '12345678'.
CUSTOMERS-CITY = 'Village'.
UPDATE CUSTOMERS.
IF SY-SUBRC <> 0.
  WRITE: 'Entry not existing:', CUSTOMERS-ID.
ENDIF.
```

```
*&-----*
*& Chapter 13: Updating multiple entries in a database table
*&-----*
```

```
REPORT CHAP1304.
* Work area
TABLES CUSTOMERS.
* Internal table for changed entries
DATA CHANGED_CUSTOMERS LIKE CUSTOMERS OCCURS 50
  WITH HEADER LINE.
* Filling the internal table
SELECT * FROM CUSTOMERS INTO TABLE CHANGED_CUSTOMERS
  WHERE CITY = SPACE.
LOOP AT CHANGED_CUSTOMERS.
  CHANGED_CUSTOMERS-CITY = 'City unknown'.
  MODIFY CHANGED_CUSTOMERS.
ENDLOOP.
* Updating the database table with values from the internal table
UPDATE CUSTOMERS FROM TABLE CHANGED_CUSTOMERS.
* Updating the database table according to a where condition
```

```
UPDATE CUSTOMERS SET CITY = 'City unknown'
WHERE CITY = SPACE.
```

```
*&-----*
*& Chapter 13: Modifying single entries in a database table
*&-----*
```

```
REPORT CHAP1305.
* Work area
TABLES CUSTOMERS.
* Modifying an entry
CUSTOMERS-ID = '12345678'.
CUSTOMERS-CITY = 'Village'.
MODIFY CUSTOMERS.
```

```
*&-----*
*& Chapter 13: Modifying multiple entries in a database table
*&-----*
```

```
REPORT CHAP1306.
* Work area
TABLES CUSTOMERS.
* Internal table for changed entries
DATA ALL_CUSTOMERS LIKE CUSTOMERS OCCURS 50
WITH HEADER LINE.
* Filling the internal table
SELECT * FROM CUSTOMERS INTO TABLE ALL_CUSTOMERS
WHERE CITY = SPACE.
ALL_CUSTOMERS-ID = '04295119'.
ALL_CUSTOMERS-NAME = 'Gray'.
APPEND ALL_CUSTOMERS.
LOOP AT ALL_CUSTOMERS.
ALL_CUSTOMERS-CITY = 'City unknown'.
MODIFY ALL_CUSTOMERS.
ENDLOOP.
* Modifying the database table with values from the internal table
MODIFY CUSTOMERS FROM TABLE ALL_CUSTOMERS.
```

```
*&-----*
*& Chapter 13: Deleting single entries from a database table
*&-----*
```

```
REPORT CHAP1307.
* Work area
TABLES CUSTOMERS.
* Deleting an entry
CUSTOMERS-ID = '12345678'.
DELETE CUSTOMERS.
```

&-----
*& **Chapter 13: Deleting multiple entries from a database table**

&-----

REPORT CHAP1308.

* Work area

TABLES CUSTOMERS.

* Internal table for deleted entries

DATA ALL_CUSTOMERS LIKE CUSTOMERS OCCURS 50
WITH HEADER LINE.

* Filling the internal table

SELECT * FROM CUSTOMERS INTO TABLE ALL_CUSTOMERS
WHERE CITY = SPACE.

* Deleting entries with values from the internal table

DELETE CUSTOMERS FROM TABLE ALL_CUSTOMERS.

* Deleting entries according to a where condition

DELETE FROM CUSTOMERS
WHERE ID LIKE '1%'.

&-----

*& **Chapter 14: Exporting to the ABAP/4 Memory**

&-----

REPORT CHAP1401.

* Work areas

TABLES: CUSTOMERS, BOOKINGS.

* Internal tables which will be exported

DATA: ALL_CUSTOMERS LIKE CUSTOMERS OCCURS 100
WITH HEADER LINE,
ALL_BOOKINGS LIKE BOOKINGS OCCURS 10
WITH HEADER LINE.

* Filling the internal tables

SELECT * FROM CUSTOMERS INTO TABLE ALL_CUSTOMERS.
SELECT * FROM BOOKINGS INTO TABLE ALL_BOOKINGS.

* Exporting to the ABAP/4 Memory

EXPORT ALL_CUSTOMERS ALL_BOOKINGS
TO MEMORY ID 'CUSTBOOK'.

* Displaying the result

LOOP AT ALL_CUSTOMERS.
WRITE / ALL_CUSTOMERS-NAME.
ENDLOOP.
LOOP AT ALL_BOOKINGS.
WRITE / ALL_BOOKINGS-FLDATE.
ENDLOOP.

&-----

*** & Chapter 14: Importing from the ABAP/4 Memory**

* &-----*

REPORT CHAP1402.

* Internal tables which will be imported

DATA: ALL_CUSTOMERS LIKE CUSTOMERS OCCURS 100

WITH HEADER LINE,

ALL_BOOKINGS LIKE BOOKINGS OCCURS 10

WITH HEADER LINE,

NEW_BOOKINGS LIKE BOOKINGS OCCURS 50

WITH HEADER LINE.

* Importing from the ABAP/4 Memory

IMPORT ALL_CUSTOMERS ALL_BOOKINGS

FROM MEMORY ID 'CUSTBOOK'.

IF SY-SUBRC NE 0.

WRITE 'Import failed.'

ENDIF.

* Skipping and renaming objects at import

IMPORT ALL_BOOKINGS TO NEW_BOOKINGS

FROM MEMORY ID 'CUSTBOOK'.

* Displaying the result

LOOP AT ALL_CUSTOMERS.

WRITE / ALL_CUSTOMERS-NAME.

ENDLOOP.

LOOP AT ALL_BOOKINGS.

WRITE / ALL_BOOKINGS-FLDATE.

ENDLOOP.

LOOP AT NEW_BOOKINGS.

WRITE / NEW_BOOKINGS-FLDATE.

ENDLOOP.

* &-----*

*** & Chapter 15: Using select statements**

* &-----*

REPORT CHAP1501.

* Work areas

TABLES: CUSTOMERS, BOOKINGS.

* Reading data

SELECT * FROM CUSTOMERS.

WRITE / CUSTOMERS-NAME.

SELECT * FROM BOOKINGS

WHERE CUSTOMID = CUSTOMERS-ID

AND FLDATE > '19990501'

AND ORDER_DATE = '19990101'.

WRITE: AT /3 BOOKINGS-FLDATE.

ENDSELECT.

ENDSELECT.

&-----

***& Chapter 15: Using a Logical Database**

&-----

REPORT CHAP1502.

* Work areas

TABLES: CUSTOMERS, BOOKINGS.

* Reading data

GET CUSTOMERS.

WRITE / CUSTOMERS-NAME.

GET BOOKINGS.

WRITE: AT /3 BOOKINGS-FLDATE.

&-----

***& Chapter 15: Using the events start-of-selection and end-of-selection**

&-----

REPORT CHAP1503.

* Work area

TABLES BOOKINGS.

* Initial processing

START-OF-SELECTION.

WRITE / 'Start'.

* Reading data

GET BOOKINGS.

WRITE: AT /3 BOOKINGS-FLDATE.

* Final processing

END-OF-SELECTION.

WRITE / 'Finished'.

&-----

***& Chapter 15: Working with get events**

&-----

REPORT CHAP1504.

* Work areas

TABLES BOOKINGS.

* Reading data

GET BOOKINGS.

WRITE / BOOKINGS-FLDATE.

&-----

***& Chapter 16: Parameters on the selection screen**

&-----

REPORT CHAP1601.

* Defining parameters

PARAMETERS:

P_CITY LIKE CUSTOMERS-CITY,

```
P_FLDATE LIKE ACTFLI-FLDATE DEFAULT '19991231',  
P_FLAG AS CHECKBOX DEFAULT 'X'.
```

```
* Using Parameters
```

```
IF P_CITY = 'Big City'.
```

```
WRITE 'Input value of Parameter p_city is Big City'.
```

```
ENDIF.
```

```
*&-----*
```

```
*& Chapter 16: Working with Select-Options
```

```
*&-----*
```

```
REPORT CHAP1602.
```

```
* Work area
```

```
TABLES CUSTOMERS.
```

```
* Defining Select-Options
```

```
SELECT-OPTIONS S_NAME FOR CUSTOMERS-NAME.
```

```
SELECT * FROM CUSTOMERS
```

```
WHERE NAME IN S_NAME.
```

```
WRITE / CUSTOMERS-NAME.
```

```
ENDSELECT.
```

```
*&-----*
```

```
*& Chapter 16: Selection screen events
```

```
*&-----*
```

```
REPORT CHAP1603 MESSAGE-ID SU.
```

```
* Worka area
```

```
TABLES CUSTOMERS.
```

```
* Selection criteria
```

```
PARAMETERS PCODE LIKE CUSTOMERS-POSTCODE.
```

```
SELECT-OPTIONS S_NAME FOR CUSTOMERS-NAME.
```

```
* Variables
```

```
DATA: PARAMETER_LENGTH TYPE I,
```

```
NUMBER_OF_SELECTIONS TYPE I.
```

```
* Checking user input in Parameter pcode
```

```
AT SELECTION-SCREEN ON PCODE.
```

```
PARAMETER_LENGTH = STRLEN( PCODE ).
```

```
IF PARAMETER_LENGTH < 5.
```

```
MESSAGE E000 WITH 'ZIP code invalid'.
```

```
ENDIF.
```

```
* Checking user input in Select-Option s_name
```

```
AT SELECTION-SCREEN ON S_NAME.
```

```
DESCRIBE TABLE S_NAME LINES NUMBER_OF_SELECTIONS.
```

```
IF NUMBER_OF_SELECTIONS = 0.
```

```
MESSAGE E000 WITH 'Please specify name of customer'.
```

```
ENDIF.
```

```
* Processing data
```

```
START-OF-SELECTION.  
  SELECT * FROM CUSTOMERS  
    WHERE NAME IN S_NAME.  
  WRITE / CUSTOMERS-NAME.  
ENDSELECT.
```

```
*&-----*
```

```
*& Chapter 17: Double-clicking
```

```
*&-----*
```

```
REPORT CHAP1701.  
START-OF-SELECTION.  
  WRITE 'Basic list'.
```

```
AT LINE-SELECTION.  
  WRITE 'New list after double-click'.
```

```
*&-----*
```

```
*& Chapter 17: Clicking on a hotspot area
```

```
*&-----*
```

```
REPORT CHAP1702.  
* work area  
TABLES CUSTOMERS.  
* Processing data  
START-OF-SELECTION.  
  SELECT * FROM CUSTOMERS.  
  WRITE / CUSTOMERS-NAME HOTSPOT ON.  
ENDSELECT.
```

```
* Single click  
AT LINE-SELECTION.  
  WRITE 'New list after single-click on a hotspot area'.
```

```
*&-----*
```

```
*& Chapter 17: Pop-up Screens
```

```
*&-----*
```

```
REPORT CHAP1703.  
* work area  
TABLES CUSTOMERS.  
* Processing data  
START-OF-SELECTION.  
  SELECT * FROM CUSTOMERS.  
  WRITE / CUSTOMERS-NAME HOTSPOT ON.  
ENDSELECT.
```

```
* Single click  
AT LINE-SELECTION.  
  WINDOW STARTING AT 10 10  
  ENDING AT 40 20.
```

WRITE 'This is my first window'.

&-----

*& **Chapter 17: Working with the hide command**

&-----

REPORT CHAP1704.

* work area

TABLES CUSTOMERS.

* Internal table

DATA ALL_CUSTOMERS LIKE CUSTOMERS OCCURS 100
WITH HEADER LINE.

* Processing data

START-OF-SELECTION.

SELECT * FROM CUSTOMERS INTO TABLE ALL_CUSTOMERS.

LOOP AT ALL_CUSTOMERS.

WRITE / ALL_CUSTOMERS-NAME HOTSPOT ON.

HIDE ALL_CUSTOMERS-ID.

ENDLOOP.

* Detail information

AT LINE-SELECTION.

WRITE: / 'Customer detail information:',

ALL_CUSTOMERS-NAME,

ALL_CUSTOMERS-CITY,

ALL_CUSTOMERS-TELEPHONE.

&-----

*& **Chapter 17: Tabular lists**

&-----

REPORT CHAP1706 NO STANDARD PAGE HEADING.

CONSTANTS MY_LINE_SIZE TYPE I VALUE 40.

DATA SQUARE TYPE I.

NEW-PAGE LINE-SIZE MY_LINE_SIZE.

ULINE.

FORMAT COLOR COL_HEADING.

WRITE: / SY-VLINE,

'Numbers and their squares',

AT MY_LINE_SIZE SY-VLINE.

FORMAT COLOR OFF.

ULINE.

DO 20 TIMES.

SQUARE = SY-INDEX ** 2.

WRITE: / SY-VLINE,

SY-INDEX COLOR COL_KEY,

SY-VLINE,

SQUARE,

AT MY_LINE_SIZE SY-VLINE.

ENDDO.
ULINE.

&-----

*& **Chapter 18: Sample report with selection criteria**

&-----

REPORT CHAP1801.
TABLES: CUSTOMERS, BOOKINGS.
PARAMETERS P_DATE TYPE D.
SELECT-OPTIONS S_NAME FOR CUSTOMERS-NAME.
SELECT * FROM CUSTOMERS
 WHERE NAME IN S_NAME.
 WRITE / CUSTOMERS-NAME.
SELECT * FROM BOOKINGS
 WHERE ORDER_DATE = P_DATE
 AND CUSTOMID = CUSTOMERS-ID.
 WRITE: / BOOKINGS-CARRID,
 BOOKINGS-CONNID,
 BOOKINGS-FLDATE.
ENDSELECT.
ENDSELECT.

&-----

*& **Chapter 18: Running a report**

&-----

REPORT CHAP1802.
* Work area
TABLES CUSTOMERS.
* Selection criteria
SELECT-OPTIONS S_NAME FOR CUSTOMERS-NAME.
* Running report chap1801 with specified selection criteria
SUBMIT CHAP1801
 WITH P_DATE = SY-DATUM
 WITH S_NAME IN S_NAME.

&-----

*& **Chapter 18: Displaying the selection screen**

&-----

REPORT CHAP1803.
* Work area
TABLES CUSTOMERS.
* Selection criteria
SELECT-OPTIONS S_NAME FOR CUSTOMERS-NAME.
* running chap1801 and displaying the selection screen
SUBMIT CHAP1801
 VIA SELECTION-SCREEN


```

*   Switch to previous screen.
CASE SY-DYNNR.
  WHEN c_screen_request. SET SCREEN 0.
  WHEN C_SCREEN_BOOKING. FLAG_KEEP_INPUT = FALSE.
    SET SCREEN c_screen_request.
  ENDCASE.
WHEN C_FCODE_EXIT.
*   Exit program
  SET SCREEN 0.
  ENDCASE.
  LEAVE SCREEN.
ENDMODULE.          " EXIT_SCREEN INPUT

```

```

*&-----*
*&   Module ACTION_REQUEST INPUT
*&-----*
*   Check input data to represent a valid flight connection.   *
*-----*
MODULE ACTION_REQUEST INPUT.
  CASE FCODE.
  WHEN C_FCODE_REQUEST.
*   Check for a valid connection
  PERFORM FLIGHT_REQUEST CHANGING FLAG_FOUND.

  IF FLAG_FOUND = FALSE.
    MESSAGE E001.      " Flight connection not available
  ELSE.
    SET SCREEN 200.   " Next screen: entering customer data
    LEAVE SCREEN.
  ENDIF.
  ENDCASE.
ENDMODULE.          " ACTION_REQUEST INPUT

```

```

*&-----*
*&   Module ACTION_BOOKING INPUT
*&-----*
*   Get customer data to make the booking.   *
*-----*
MODULE ACTION_BOOKING INPUT.
  CASE FCODE.
  WHEN C_FCODE_BOOKING.
*   Make the booking
  PERFORM FLIGHT_BOOKING.

*   Return to previous screen for another request.
  FLAG_KEEP_INPUT = FALSE.

```

```
    SET SCREEN C_SCREEN_REQUEST.
    LEAVE SCREEN.
  ENDCASE.
ENDMODULE.          " ACTION_BOOKING INPUT
```

```
*&-----*
*&  Module VALUES_CUSTOMERS INPUT
*&-----*
*   Display list of customers                *
*-----*
```

```
MODULE VALUES_CUSTOMERS INPUT.
* Display all customers in a dialog box
  CALL SCREEN 110
  STARTING AT 10 10
  ENDING  AT 30 20.
ENDMODULE.          " VALUES_CUSTOMERS INPUT
```

```
*&-----*
*&  Module ACTION_LIST INPUT
*&-----*
*   Write list of customers                  *
*-----*
```

```
MODULE ACTION_LIST INPUT.
```

```
* Read all customers
  SELECT * FROM CUSTOMERS INTO TABLE ALL_CUSTOMERS.
```

```
* Write all customers
  NEW-PAGE NO-TITLE.
  LOOP AT ALL_CUSTOMERS.
    WRITE / ALL_CUSTOMERS-NAME.
    HIDE ALL_CUSTOMERS-ID.
  ENDLOOP.
```

```
ENDMODULE.          " ACTION_LIST INPUT
```

```
*-----*
***INCLUDE MSABBO01 .
*-----*
```

```
*&-----*
*&  Module INIT_REQUEST OUTPUT
*&-----*
*   Initializes titlebar and status of the screen for a flight *
*   request.                *
*-----*
```

MODULE INIT_REQUEST OUTPUT.

```
* Initialize titlebar and status
  SET TITLEBAR C_TITLE_REQUEST.
  SET PF-STATUS C_STATUS_REQUEST.
ENDMODULE.          " INIT_REQUEST OUTPUT
```

```
*&-----*
```

```
*&  Module INIT_BOOKING OUTPUT
```

```
*&-----*
```

```
*   Initializes titlebar and status of the screen for a flight   *
*   request. The fields for the number of free and required seats *
*   and for the customer's data are initialized.                 *
*-----*
```

MODULE INIT_BOOKING OUTPUT.

```
* Initialize titlebar and status
  SET TITLEBAR C_TITLE_BOOKING.
  SET PF-STATUS C_STATUS_BOOKING.
```

```
* Get number of seats free
  SEATS_FREE = ACTFLI-SEATSMAX - ACTFLI-SEATSOCC.
```

```
* While processing the booking screen, the contents of the
* input fields are kept, e.g. if ENTER is pressed.
  IF FLAG_KEEP_INPUT = FALSE.
    CLEAR CUSTOMERS.
    SEATS_REQUIRED = 1.
    FLAG_KEEP_INPUT = TRUE. " kept while processing the screen
  ENDIF.
```

```
ENDMODULE.          " INIT_BOOKING OUTPUT
```

```
*&-----*
```

```
*&  Module INIT_LIST OUTPUT
```

```
*&-----*
```

```
*   Write list of customers                                     *
*-----*
```

MODULE INIT_LIST OUTPUT.

```
* Initialize titlebar and status
  SET TITLEBAR C_TITLE_LIST_CUSTOMERS.
  SET PF-STATUS C_STATUS_LIST.
```

```
* Prepare list
  SUPPRESS DIALOG.
  LEAVE TO LIST-PROCESSING AND RETURN TO SCREEN 0.
```

```
ENDMODULE.          " INIT_LIST OUTPUT
```

```
*-----  
***INCLUDE MSABBF01 .  
*-----
```

```
*&-----*  
*& Form FLIGHT_REQUEST  
*&-----*  
* Check for a valid connection **-----*
```

FORM FLIGHT_REQUEST CHANGING F_FLAG_FOUND TYPE BOOLEAN.

* First check for a valid connection, i.e. check if carrier CARRID
* offers a flight starting in city CITYFROM with destination CITYTO.
F_FLAG_FOUND = FALSE.

```
SELECT * FROM PLANFLI  
WHERE CARRID = PLANFLI-CARRID  
AND CITYFROM = PLANFLI-CITYFROM  
AND CITYTO = PLANFLI-CITYTO.
```

* Then check if the connection is also offered for the
* specified date.

```
SELECT SINGLE * FROM ACTFLI  
WHERE CARRID = PLANFLI-CARRID  
AND CONNID = PLANFLI-CONNID  
AND FLDATE = ACTFLI-FLDATE.  
IF SY-SUBRC = 0.  
F_FLAG_FOUND = TRUE.  
EXIT.  
ENDIF.  
ENDSELECT.  
ENDFORM. " FLIGHT_REQUEST
```

```
*&-----*  
*& Form FLIGHT_BOOKING  
*&-----*  
* Insert the booking into database tables *  
*-----*
```

FORM FLIGHT_BOOKING.

```
DATA: L_CUSTOMERS LIKE CUSTOMERS OCCURS 10  
WITH HEADER LINE,  
L_LINE_COUNT TYPE I,  
L_INDEX LIKE SY-TABIX.
```

* 1. Check if seats are available

```
IF SEATS_REQUIRED > SEATS_FREE.  
  MESSAGE E003 WITH SEATS_FREE.    " Not enough seats  
endif.
```

```
* 2. Booking is only allowed for registered customers. Thus,  
*   check if a customer id is available in table CUSTOMERS.  
  SELECT * FROM CUSTOMERS INTO TABLE L_CUSTOMERS  
        WHERE NAME = CUSTOMERS-NAME.
```

```
* Check number of matching entries  
  DESCRIBE TABLE L_CUSTOMERS LINES L_LINE_COUNT.  
  IF L_LINE_COUNT = 0.  
    message e004 with customers-name. " Customer id not available  
  ELSEIF L_LINE_COUNT > 1.  
*   Process dialog to select the appropriate customer  
  ... " To be implemented: sets L_INDEX  
endif.
```

```
L_INDEX = 1.    " Must be deleted if L_INDEX is set above  
  READ TABLE L_CUSTOMERS INDEX L_INDEX.  
  IF SY-SUBRC <> 0.  
    MESSAGE A006.    " Internal booking error: missing entry  
  ENDIF.
```

```
* 3. Update bookings information in table BOOKINGS  
  MOVE-CORRESPONDING ACTFLI TO BOOKINGS.  
  PERFORM SET_BOOKID CHANGING BOOKINGS-BOOKID.  
  BOOKINGS-CUSTOMID = L_CUSTOMERS-ID.  
  BOOKINGS-ORDER_DATE = SY-DATUM.
```

```
  INSERT BOOKINGS.    " Optional: call function in update task  
  IF SY-SUBRC <> 0.  
    MESSAGE A005.    " Internal booking error: duplicate entries  
  ENDIF.
```

```
* 4. Update number of occupied seats in table ACTFLI  
  ADD SEATS_REQUIRED TO ACTFLI-SEATSOCC.  
  UPDATE ACTFLI.    " Optional: call function in update task  
  IF SY-SUBRC <> 0.  
    MESSAGE A006.    " Internal booking error: missing entry  
  ENDIF.
```

```
* Optional: using an update task  
* call function 'ABAP_BOOK_INSERT_BOOKINGS'  
*   in update task  
*   exporting
```

```
*      i_bookings = bookings
*      i_actfli  = actfli.
* commit work.
```

```
* 5. Message: booking successful for customer ...
MESSAGE I002 WITH ACTFLI-CONNID CUSTOMERS-NAME.
```

```
ENDFORM.                " FLIGHT_BOOKING
```

```
*&-----*
*& Form SET_BOOKID
*&-----*
* Determine a new booking id.                *
*-----*
```

```
FORM SET_BOOKID CHANGING F_BOOKID LIKE BOOKINGS-BOOKID.
```

```
* Get maximum bookid and increment it by 1
SELECT MAX( BOOKID ) INTO (F_BOOKID) FROM BOOKINGS.
ADD 1 TO F_BOOKID.
ENDFORM.                " SET_BOOKID
```

```
*-----*
***INCLUDE MSABBE01 .
*-----*
```

```
*&-----*
*& Event AT LINE-SELECTION
*&-----*
```

```
at line-selection.
```

```
* Get selected customer and display name
read table all_customers with key id = all_customers-id.
if sy-subrc = 0.
  customers-name = all_customers-name.
endif.
leave to screen 0.
```

```
*&-----*
*& Chapter 23: Dynamic sort command
*&-----*
```

```
REPORT CHAP2301.
```

```
* Parameter for the sort criterion, can be modified by the end user
PARAMETERS COLUMN(10) DEFAULT 'NAME'.
```

```
* Declarations for later use
```

```

TABLES CUSTOMERS.
DATA ALL_CUSTOMERS LIKE CUSTOMERS OCCURS 100
      WITH HEADER LINE.
* Filling the internal table
SELECT * FROM CUSTOMERS INTO TABLE ALL_CUSTOMERS.
* Dynamic sort
SORT ALL_CUSTOMERS BY (COLUMN).
* Displaying the result
LOOP AT ALL_CUSTOMERS.
  WRITE: / ALL_CUSTOMERS-ID,
         ALL_CUSTOMERS-NAME,
         ALL_CUSTOMERS-CITY,
         ALL_CUSTOMERS-TELEPHONE.
ENDLOOP.
*&-----*
*& Chapter 23: Dynamic sort command with several sort criteria
*&-----*
REPORT CHAP2302.
* Parameters for the sort criterion, can be modified by the end user
PARAMETERS: COLUMN1(10)   DEFAULT 'NAME',
            COLUMN2 LIKE COLUMN1 DEFAULT 'ID'.
* Declarations for later use
TABLES CUSTOMERS.
DATA ALL_CUSTOMERS LIKE CUSTOMERS OCCURS 100
      WITH HEADER LINE.
* Filling the internal table
SELECT * FROM CUSTOMERS INTO TABLE ALL_CUSTOMERS.
* Dynamic sort with two sort criteria
SORT ALL_CUSTOMERS BY (COLUMN1) (COLUMN2) DESCENDING.
* Displaying the result
LOOP AT ALL_CUSTOMERS.
  WRITE: / ALL_CUSTOMERS-ID,
         ALL_CUSTOMERS-NAME,
         ALL_CUSTOMERS-CITY,
         ALL_CUSTOMERS-TELEPHONE.
ENDLOOP.

*&-----*
*& Chapter 23: Dynamic read table command
*&-----*
REPORT CHAP2303.
* Parameters for reading a single line, can be modified by the end user
PARAMETERS: KEY1(10)     DEFAULT 'NAME',
            VALUE1(25),
            KEY2  LIKE KEY1 DEFAULT 'ID',

```

```

        VALUE2 LIKE VALUE1.
* Declarations for later use
TABLES CUSTOMERS.
DATA ALL_CUSTOMERS LIKE CUSTOMERS OCCURS 100
        WITH HEADER LINE.
* Filling the internal table
SELECT * FROM CUSTOMERS INTO TABLE ALL_CUSTOMERS.
* Dynamic read table command
READ TABLE ALL_CUSTOMERS
        WITH KEY (KEY1) = VALUE1
                (KEY2) = VALUE2.
* Displaying the result
IF SY-SUBRC EQ 0.
        WRITE: / ALL_CUSTOMERS-ID,
                ALL_CUSTOMERS-NAME,
                ALL_CUSTOMERS-CITY,
                ALL_CUSTOMERS-TELEPHONE.
ELSE.
        WRITE 'Entry not found'.
ENDIF.

```

```
*&-----*
```

```
*& Chapter 23: Dynamic subtotals
```

```
*&-----*
```

```

REPORT CHAP2304.
TABLES ACTFLI.
DATA MY_FLIGHTS LIKE ACTFLI OCCURS 10
        WITH HEADER LINE.
DATA SUM_OCCUPIED_SEATS LIKE MY_FLIGHTS-SEATSOCC.
DATA COLUMN(30).
SELECT * FROM ACTFLI INTO TABLE MY_FLIGHTS
        ORDER BY PRIMARY KEY.
LOOP AT MY_FLIGHTS.
        WRITE: / MY_FLIGHTS-CARRID,
                MY_FLIGHTS-CONNID,
                MY_FLIGHTS-FLDATE.
ENDLOOP.
AT LINE-SELECTION.
* Display subtotals according to end user's selection
GET CURSOR FIELD COLUMN.
SHIFT COLUMN UP TO '-'.
SHIFT COLUMN.
LOOP AT MY_FLIGHTS.
        AT NEW (COLUMN).
                NEW-PAGE.
                WRITE / MY_FLIGHTS-CARRID.

```



```
CLEAR SUM_OCCUPIED_SEATS.  
ENDAT.  
ADD MY_FLIGHTS-SEATSOCC TO SUM_OCCUPIED_SEATS.  
WRITE / MY_FLIGHTS-SEATSOCC.  
AT END OF (COLUMN).  
WRITE: / 'Occupied seats total:', SUM_OCCUPIED_SEATS.  
ENDAT.  
ENDLOOP.
```

```
*&-----*  
*& Chapter 23: Dynamic Open SQL Commands: table name  
*&-----*  
REPORT CHAP2305.
```

```
PARAMETERS TABLENAME(10) DEFAULT 'CUSTOMERS'.  
DATA COUNT_ROWS TYPE I.  
SELECT COUNT( * ) FROM (TABLENAME) INTO COUNT_ROWS.  
WRITE: TABLENAME, COUNT_ROWS.
```

```
DATA WHERE_TAB(80) OCCURS 10 WITH HEADER LINE.  
APPEND 'name like "E%"' TO WHERE_TAB.  
APPEND 'and city like "S%"' TO WHERE_TAB.  
TABLES CUSTOMERS.  
DATA ALL_CUSTOMERS LIKE CUSTOMERS OCCURS 100.  
SELECT * FROM CUSTOMERS INTO TABLE ALL_CUSTOMERS  
WHERE ID BETWEEN 1 AND 999  
AND (WHERE_TAB).
```

```
*&-----*  
*& Chapter 23: Dynamic Open SQL Commands: table name  
*&-----*  
REPORT CHAP2305.
```

```
PARAMETERS TABLENAME(10) DEFAULT 'CUSTOMERS'.  
DATA COUNT_ROWS TYPE I.  
SELECT COUNT( * ) FROM (TABLENAME) INTO COUNT_ROWS.  
WRITE: TABLENAME, COUNT_ROWS.
```

```
DATA WHERE_TAB(80) OCCURS 10 WITH HEADER LINE.  
APPEND 'name like "E%"' TO WHERE_TAB.  
APPEND 'and city like "S%"' TO WHERE_TAB.  
TABLES CUSTOMERS.  
DATA ALL_CUSTOMERS LIKE CUSTOMERS OCCURS 100.  
SELECT * FROM CUSTOMERS INTO TABLE ALL_CUSTOMERS  
WHERE ID BETWEEN 1 AND 999  
AND (WHERE_TAB).
```

&-----

***& Chapter 23: External perform (caller)**

&-----

REPORT CHAP2307.

* List of the current program

WRITE / 'I am program chap2307'.

* External perform

PERFORM EXTFORM IN PROGRAM CHAP2308.

&-----

***& Chapter 23: External perform (called form)**

&-----

REPORT CHAP2308.

* Form definition

FORM EXTFORM.

WRITE / 'I am extform in program chap2308'.

ENDFORM.

&-----

***& Chapter 23: Dynamic external perform (call back form)**

&-----

REPORT CHAP2309.

PERFORM EXTFORM IN PROGRAM CHAP2310

USING 'CALL_BACK_FORM'

SY-CPROG.

FORM CALL_BACK_FORM.

WRITE / 'I am the call back form in chap2309.'.

ENDFORM.

&-----

***& Chapter 23: Dynamic external perform**

&-----

REPORT CHAP2310.

FORM EXTFORM

USING F_CALL_BACK_FORM

F_PROGRAM.

PERFORM (F_CALL_BACK_FORM) IN PROGRAM (F_PROGRAM).

WRITE / 'I am the form in chap2310.'.

ENDFORM.

&-----

***& Chapter 24: Working with Field Symbols**

&-----

REPORT CHAP2401.

* Defining a Field Symbol

FIELD-SYMBOLS <FS>.

* Variable for later use

DATA FIELD VALUE 'X'.

* Assigning a field to a Field Symbol

ASSIGN FIELD TO <FS>.

* Using a Field Symbol which has an assigned field

WRITE <FS>.

&-----

*& **Chapter 24: Using Field Symbols for variable parts of fields**

&-----

REPORT CHAP2402.

DATA: EXTERNAL_RECORD(4000),

 POSITION TYPE I,

 LENGTH TYPE N.

FIELD-SYMBOLS <ENTRY>.

EXTERNAL_RECORD = '0005Smith0007Edwards0005Young'.

DO.

 LENGTH = EXTERNAL_RECORD+POSITION(4).

 IF LENGTH = 0.

 EXIT.

 ENDIF.

 ADD 4 TO POSITION.

 ASSIGN EXTERNAL_RECORD+POSITION(LENGTH) TO <ENTRY>.

 WRITE <ENTRY>.

 ADD LENGTH TO POSITION.

 IF POSITION >= 4000.

 EXIT.

 ENDIF.

ENDDO.

&-----

*& **Chapter 24: Using Field Symbols for components of a structure**

&-----

REPORT CHAP2403.

* Table work area for later use

TABLES CUSTOMERS.

* Defining a Field Symbol

FIELD-SYMBOLS <OUTPUT>.

* Displaying all fields of all table entries

SELECT * FROM CUSTOMERS.

 NEW-LINE.

 DO.

 ASSIGN COMPONENT SY-INDEX OF STRUCTURE CUSTOMERS TO
 <OUTPUT>.

 IF SY-SUBRC <> 0.

```
EXIT.  
ENDIF.  
WRITE <OUTPUT>.  
ENDDO.  
ENDSELECT.
```

```
*&-----*
```

```
*& Chapter 25: Working with temporary programs
```

```
*&-----*
```

```
REPORT CHAP2501.
```

```
* Internal table for source code, field for name of temporary program  
DATA: SOURCE_TABLE(72) OCCURS 10 WITH HEADER LINE,  
      PROGRAM_NAME LIKE SY-CPROG.
```

```
* Building the source code
```

```
APPEND 'report test.'           TO SOURCE_TABLE.  
APPEND 'form display.'         TO SOURCE_TABLE.  
APPEND 'write "I am a temporary program".' TO SOURCE_TABLE.  
APPEND 'endform.'             TO SOURCE_TABLE.
```

```
* Generating the temporary program
```

```
GENERATE SUBROUTINE POOL SOURCE_TABLE NAME PROGRAM_NAME.
```

```
* Calling a form externally
```

```
PERFORM DISPLAY IN PROGRAM (PROGRAM_NAME).
```

```
*&-----*
```

```
*& Chapter 25: Syntax errors in temporary programs
```

```
*&-----*
```

```
REPORT CHAP2502.
```

```
* Variables for later use
```

```
DATA: SOURCE_TABLE(72) OCCURS 10 WITH HEADER LINE,  
      PROGRAM_NAME LIKE SY-CPROG,  
      SYNTAX_CHECK_MESSAGE(128),  
      LINE_NO TYPE I.
```

```
* Building the source code
```

```
APPEND 'report test.'           TO SOURCE_TABLE.  
APPEND 'form display.'         TO SOURCE_TABLE.  
APPEND 'write "I am a temporary program".' TO SOURCE_TABLE.  
APPEND 'endform'             TO SOURCE_TABLE.
```

```
* Generating the temporary program, checking syntax errors
```

```
GENERATE SUBROUTINE POOL SOURCE_TABLE  
      NAME PROGRAM_NAME  
      MESSAGE SYNTAX_CHECK_MESSAGE  
      LINE LINE_NO.
```

```
IF SY-SUBRC NE 0.
```

```
  WRITE: / 'Syntax error, message', SYNTAX_CHECK_MESSAGE,  
         / 'in line', LINE_NO.
```

```
EXIT.
```

```

ENDIF.
* Calling a form externally
PERFORM DISPLAY IN PROGRAM (PROGRAM_NAME).

*&-----*
*& Chapter 25: A real life example for using a temporary program
*&-----*
REPORT CHAP2503.
* Variables for later use
PARAMETERS TABNAME(10) DEFAULT 'CUSTOMERS'.
DATA: SOURCE_TABLE(72) OCCURS 100 WITH HEADER LINE,
      PROGRAM_NAME LIKE SY-CPROG,
      SYNTAX_CHECK_MESSAGE(128),
      LINE_NO TYPE I.
* Building the source code
PERFORM BUILD_THE_SOURCE_CODE USING TABNAME.
* Generating the temporary program, checking syntax errors
GENERATE SUBROUTINE POOL SOURCE_TABLE
      NAME PROGRAM_NAME
      MESSAGE SYNTAX_CHECK_MESSAGE
      LINE LINE_NO.
IF SY-SUBRC NE 0.
  WRITE: / 'Syntax error, message', SYNTAX_CHECK_MESSAGE,
        / 'in line', LINE_NO.
  EXIT.
ENDIF.
* Calling a form externally
PERFORM DISPLAY_TABLE IN PROGRAM (PROGRAM_NAME).
* Form to build the source code of the temporary program
FORM BUILD_THE_SOURCE_CODE USING F_NAME.
APPEND:
'report ztmpprog.          ' TO SOURCE_TABLE,
'tables                    ' TO SOURCE_TABLE,
  F_NAME                    TO SOURCE_TABLE,
':                          ' TO SOURCE_TABLE,
'field-symbols <output>.   ' TO SOURCE_TABLE,
'form display_table.       ' TO SOURCE_TABLE,
'select * from              ' TO SOURCE_TABLE,
  F_NAME                    TO SOURCE_TABLE,
':                          ' TO SOURCE_TABLE,
' new-line.                 ' TO SOURCE_TABLE,
' do.                       ' TO SOURCE_TABLE,
' assign component sy-index ' TO SOURCE_TABLE,
'   of structure            ' TO SOURCE_TABLE,
  F_NAME                    TO SOURCE_TABLE,
'   to <output>.           ' TO SOURCE_TABLE,

```

```
' if sy-subrc ne 0. exit. endif.' TO SOURCE_TABLE,
' write <output>.          ' TO SOURCE_TABLE,
' enddo.                  ' TO SOURCE_TABLE,
'endselect.              ' TO SOURCE_TABLE,
'endform.                ' TO SOURCE_TABLE.
ENDFORM.
```

```
*&-----*
```

```
*& Chapter 25: Generating a persistent program
```

```
*&-----*
```

```
REPORT CHAP2504.
```

```
* Internal table for source code, field for name of temporary program
DATA: SOURCE_TABLE(72) OCCURS 10 WITH HEADER LINE,
      PROGRAM_NAME LIKE SY-CPROG.
```

```
* Building the source code
```

```
APPEND 'report zgenprog.'          TO SOURCE_TABLE.
APPEND 'write "I am a generated program".' TO SOURCE_TABLE.
```

```
* Insert the report, if necessary
```

```
READ REPORT 'zgenprog' INTO SOURCE_TABLE.
IF SY-SUBRC NE 0.
```

```
  APPEND 'report zgenprog.'        TO SOURCE_TABLE.
  APPEND 'write "Here is zgenprog".' TO SOURCE_TABLE.
  INSERT REPORT 'zgenprog' FROM SOURCE_TABLE.
```

```
ENDIF.
```

```
* Execute the report
```

```
SUBMIT ZGENPROG AND RETURN.
```

```
*&-----*
```

```
*& Chapter 26: Transferring data to a file
```

```
*&-----*
```

```
REPORT CHAP2601.
```

```
* Data declarations for later use
```

```
PARAMETERS FILENAME(128) DEFAULT '/usr/tmp/testfile.dat'
          LOWER CASE.
```

```
TABLES CUSTOMERS.
```

```
DATA MSG_TEXT(50).
```

```
* Get data for file transfer
```

```
DATA ALL_CUSTOMERS LIKE CUSTOMERS OCCURS 100
      WITH HEADER LINE.
```

```
SELECT * FROM CUSTOMERS INTO TABLE ALL_CUSTOMERS.
```

```
SORT ALL_CUSTOMERS BY CITY.
```

```
LOOP AT ALL_CUSTOMERS.
```

```
  WRITE: / ALL_CUSTOMERS-CITY,
          ALL_CUSTOMERS-NAME.
```

```
ENDLOOP.
```

```
* Opening the File
```

```

OPEN DATASET FILENAME FOR OUTPUT IN TEXT MODE
      MESSAGE MSG_TEXT.
IF SY-SUBRC NE 0.
  WRITE: 'File cannot be opened. Reason:', MSG_TEXT.
  EXIT.
ENDIF.
* Transferring Data
LOOP AT ALL_CUSTOMERS.
  TRANSFER ALL_CUSTOMERS-NAME TO FILENAME.
ENDLOOP.
* Closing the File
CLOSE DATASET FILENAME.

*&-----*
*& Chapter 26: Reading data from a file
*&-----*
REPORT CHAP2602.
* Data declarations for later use
TABLES CUSTOMERS.
PARAMETERS FILENAME(128) DEFAULT '/usr/tmp/testfile.dat'
      LOWER CASE.
DATA: MSG_TEXT(50),
      ALL_CUSTOMER_NAMES LIKE CUSTOMERS-NAME OCCURS 100
      WITH HEADER LINE.
* Opening the File
OPEN DATASET FILENAME FOR INPUT IN TEXT MODE
      MESSAGE MSG_TEXT.
IF SY-SUBRC NE 0.
  WRITE: 'File cannot be opened. Reason:', MSG_TEXT.
  EXIT.
ENDIF.
* Reading Data
DO.
  READ DATASET FILENAME INTO ALL_CUSTOMER_NAMES.
  IF SY-SUBRC NE 0.
    EXIT.
  ENDIF.
  APPEND ALL_CUSTOMER_NAMES.
ENDDO.
* Closing the file
CLOSE DATASET FILENAME.
* Display the result
LOOP AT ALL_CUSTOMER_NAMES.
  WRITE / ALL_CUSTOMER_NAMES.
ENDLOOP.

```

```

*&-----*
*& Chapter 26: Transferring data to a file (presentation server)
*&-----*
REPORT CHAP2603.
* Data declarations for later use
PARAMETERS FILENAME(128) DEFAULT 'c:\users\default\testfile.dat'
        LOWER CASE.
TABLES CUSTOMERS.
DATA ALL_CUSTOMERS LIKE CUSTOMERS OCCURS 100
        WITH HEADER LINE.
* Get data for file transfer
SELECT * FROM CUSTOMERS INTO TABLE ALL_CUSTOMERS.
SORT ALL_CUSTOMERS BY CITY.
LOOP AT ALL_CUSTOMERS.
    WRITE: / ALL_CUSTOMERS-CITY,
           ALL_CUSTOMERS-NAME.
ENDLOOP.
* Transferring Data
CALL FUNCTION 'WS_DOWNLOAD'
    EXPORTING
        FILENAME      = FILENAME
    TABLES
        DATA_TAB     = ALL_CUSTOMERS
    EXCEPTIONS
        FILE_OPEN_ERROR  = 1
        OTHERS           = 2.
CASE SY-SUBRC.
    WHEN 1.
        WRITE 'Error when file opened'.
        EXIT.
    WHEN 2.
        WRITE 'Error during data transfer'.
        EXIT.
ENDCASE.

*&-----*
*& Chapter 26: Reading data from a file (presentation server)
*&-----*
REPORT CHAP2604.
* Data declarations for later use
PARAMETERS FILENAME(128) DEFAULT 'c:\users\default\testfile.dat'
        LOWER CASE.
TABLES CUSTOMERS.
DATA ALL_CUSTOMERS LIKE CUSTOMERS OCCURS 100
        WITH HEADER LINE.
CALL FUNCTION 'WS_UPLOAD'

```



```

EXPORTING
  FILENAME      = FILENAME
TABLES
  DATA_TAB     = ALL_CUSTOMERS
EXCEPTIONS
  FILE_OPEN_ERROR = 1
  OTHERS        = 2.
CASE SY-SUBRC.
  WHEN 1.
    WRITE 'Error when file opened'.
    EXIT.
  WHEN 2.
    WRITE 'Error during data transfer'.
    EXIT.
ENDCASE.
* Display the result
LOOP AT ALL_CUSTOMERS.
  WRITE: / ALL_CUSTOMERS-NAME,
         ALL_CUSTOMERS-CITY.
ENDLOOP.

```

```
*&-----*
```

```
*& Chapter 28: Sample program for OLE Automation
```

```
*&-----*
```

```

REPORT CHAP2801.
* Including OLE types
INCLUDE OLE2INCL.
* Tables and variables for later use
TABLES: CUSTOMERS.
DATA: APPLICATION TYPE OLE2_OBJECT,
      WORKBOOK   TYPE OLE2_OBJECT,
      SHEET      TYPE OLE2_OBJECT,
      CELLS      TYPE OLE2_OBJECT.
* Creating an object
CREATE OBJECT APPLICATION 'excel.application'.
IF SY-SUBRC NE 0.
  WRITE: / 'Error when opening excel.application', SY-MSGLI.
ENDIF.
* Setting properties
SET PROPERTY OF APPLICATION 'Visible' = 1.
* Calling methods
CALL METHOD OF APPLICATION 'Workbooks' = WORKBOOK.
PERFORM ERRORS.
CALL METHOD OF WORKBOOK 'Add'.
PERFORM ERRORS.
CALL METHOD OF APPLICATION 'Worksheets' = SHEET EXPORTING #1 = 1.

```

PERFORM ERRORS.
CALL METHOD OF SHEET 'Activate'.
PERFORM ERRORS.
PERFORM FILL_SHEET.

* Subroutine for filling the spread sheet
FORM FILL_SHEET.

DATA: ROW_MAX TYPE I VALUE 256,
INDEX TYPE I.

FIELD-SYMBOLS: <NAME>.

SELECT * FROM CUSTOMERS.

INDEX = ROW_MAX * (SY-DBCNT - 1) + 1.

DO 4 TIMES.

ASSIGN COMPONENT SY-INDEX OF STRUCTURE CUSTOMERS TO
<NAME>.

CALL METHOD OF SHEET 'Cells' = CELLS
EXPORTING #1 = INDEX.

SET PROPERTY OF CELLS 'Value' = <NAME>.

ADD 1 TO INDEX.

ENDDO.

ENDSELECT.

ENDFORM.

* Subroutine for error handling

FORM ERRORS.

IF SY-SUBRC NE 0.

WRITE: / 'Error in OLE call', SY-MSGLI.

EXIT.

ENDIF.

ENDFORM.