

Screen Design

This chapter provides options to define a general screen layout:

- Control of the Message Line - Terminal Command %M
 - Assigning Colors to Fields - Terminal Command %=
 - Infoline - Terminal Command %X
 - Windows
 - Standard/Dynamic Layout Maps
 - Multilingual User Interfaces
 - Skill-Sensitive User Interfaces
-

Control of the Message Line - Terminal Command %M

Various options of the terminal command %M are available for defining how and where the Natural message line is to be displayed.

Below is information on:

- Positioning the Message Line
- Message Line Color

Positioning the Message Line

%MB

The message line is displayed at the bottom of the screen.

%MT

The message line is displayed at the top of the screen.

Other options for the positioning of the message line are described in *%M - Control of Message Line* in the *Terminal Commands* documentation.

Message Line Color

%M=color-code

The message line is displayed in the specified color (for an explanation of color codes, see the session parameter CD as described in the *Parameter Reference*).

Assigning Colors to Fields - Terminal Command %=

You can use the terminal command %= to assign colors to field attributes for programs that were originally not written for color support. The command causes all fields/text defined with the specified attributes to be displayed in the specified color.

If predefined color assignments are not suitable for your terminal type, you can use this command to override the original assignments with new ones.

You can also use the %= terminal command within Natural editors, for example to define color assignments dynamically during map creation.

Codes	Description
<i>blank</i>	Clear color translate table.
F	Newly defined colors are to override colors assigned by the program.
N	Color attributes assigned by program are not to be modified.
O	Output field.
M	Modifiable field (output and input).
T	Text constant.
B	Blinking
C	Italic
D	Default
I	Intensified
U	Underlined
V	Reverse video
BG	Background
BL	Blue
GR	Green
NE	Neutral
PI	Pink
RE	Red
TU	Turquoise
YE	Yellow

Example:

```
%=TI=RE,OB=YE
```

This example assigns the color red to all intensified text fields and yellow to all blinking output fields.

Infoline - Terminal Command %X

The terminal command %X controls the display of the Natural infoline.

For further information, see the description of the terminal command %X in the *Terminal Commands* documentation.

Windows

Below is information on:

- What is a Window?
- DEFINE WINDOW Statement
- INPUT WINDOW Statement

What is a Window?

A *window* is that segment of a logical page, built by a program, which is displayed on the terminal screen.

A *logical page* is the output area for Natural; in other words the logical page contains the current report/map produced by the Natural program for display. This logical page may be larger than the physical screen.

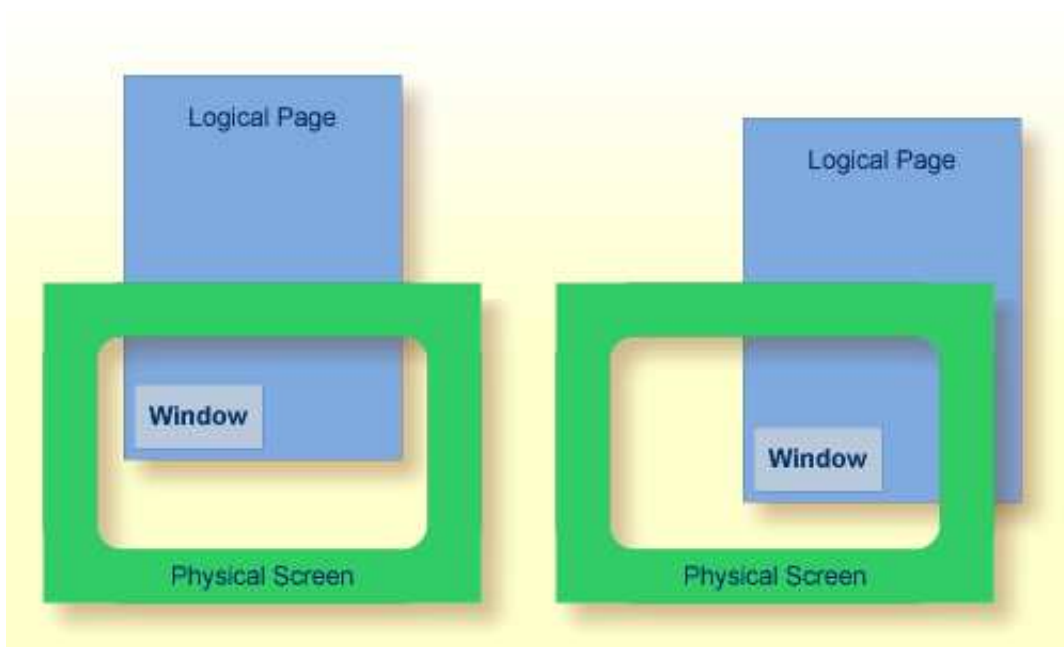
There is always a window present, although you may not be aware of its existence. Unless specified differently (by a `DEFINE WINDOW` statement), the size of the window is identical to the physical size of your terminal screen.

You can manipulate a window in two ways:

- You can control the size and position of the window on the *physical screen*.
- You can control the position of the window on the *logical page*.

Positioning on the Physical Screen

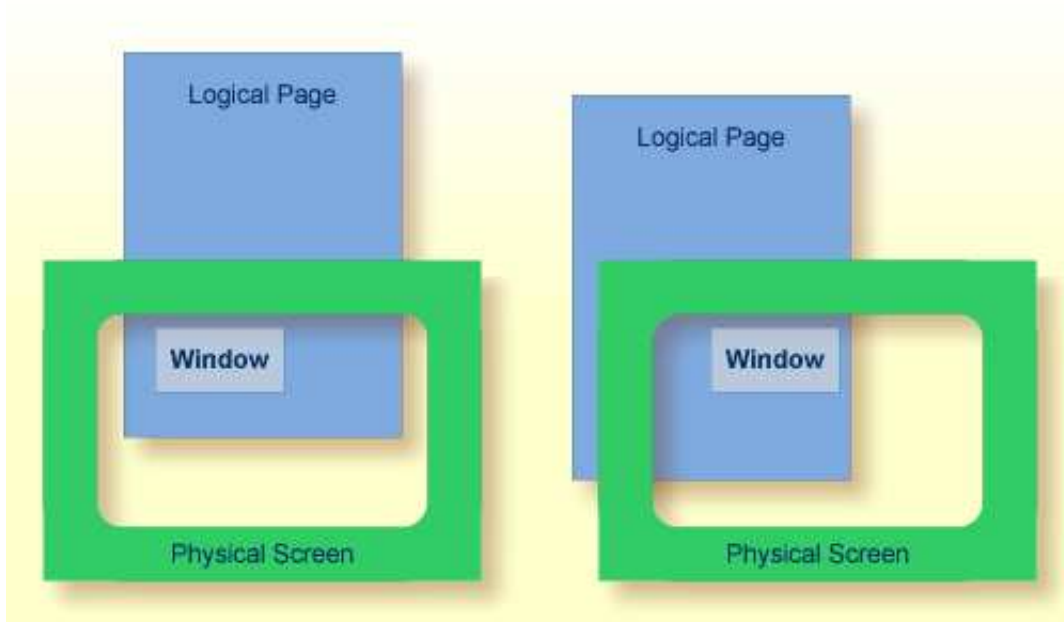
The figure below illustrates the positioning of a window on the physical screen. Note that the same section of the logical page is displayed in both cases, only the position of the window on the screen has changed.



Positioning on the Logical Page

The figure below illustrates the positioning of a window on the logical page.

When you change the position of the window on the *logical page*, the size and position of the window on the *physical screen* will remain unchanged. In other words, the window is not moved over the page, but the page is moved "underneath" the window.



DEFINE WINDOW Statement

You use the `DEFINE WINDOW` statement to specify the size, position and attributes of a window on the *physical screen*.

A `DEFINE WINDOW` statement does not activate a window; this is done with a `SET WINDOW` statement or with the `WINDOW` clause of an `INPUT` statement.

Various options are available with the `DEFINE WINDOW` statement. These are described below in the context of the following example.

The following program defines a window on the physical screen.

```

** Example 'WINDX01': DEFINE WINDOW
*****
DEFINE DATA LOCAL
1 COMMAND (A10)
END-DEFINE
*
DEFINE WINDOW TEST
    SIZE 5*25
    BASE 5/40
    TITLE 'Sample Window'
    CONTROL WINDOW
    FRAMED POSITION SYMBOL BOTTOM LEFT
*
INPUT WINDOW='TEST' WITH TEXT 'message line'
    COMMAND (AD=I'_' ) /
    'dataline 1' /
    'dataline 2' /
    'dataline 3' 'long data line'
*
IF COMMAND = 'TEST2'
    FETCH 'WINDX02'
ELSE
    IF COMMAND = '.'
        STOP
    ELSE
        REINPUT 'invalid command'
    END-IF
END-IF
END

```

The window-name identifies the window. The name may be up to 32 characters long. For a window name, the same naming conventions apply as for user-defined variables. Here the name is `TEST`.

The window size is set with the `SIZE` option. Here the window is 5 lines high and 25 columns (positions) wide.

The position of the window is set by the `BASE` option. Here the top left-hand corner of the window is positioned on line 5, column 40.

With the `TITLE` option, you can define a title that is to be displayed in the window frame (of course, only if you have defined a frame for the window).

With the `CONTROL` clause, you determine whether the PF-key lines, the message line and the statistics line are displayed in the window or on the full physical screen. Here `CONTROL WINDOW` causes the message line to be displayed inside the window. `CONTROL SCREEN` would cause the lines to be displayed on the full physical screen outside the window. If you omit the `CONTROL` clause, `CONTROL WINDOW` applies by default.

With the `FRAMED` option, you define that the window is to be framed. This frame is then cursor-sensitive. Where applicable, you can page forward, backward, left or right within the window by simply placing the cursor over the appropriate symbol (<, -, +, or >; see `POSITION` clause) and then pressing Enter. In other words, you are moving the *logical page* underneath the window on the physical screen. If no symbols are displayed, you can page backward and forward within the window by placing the cursor in the top frame line (for backward positioning) or bottom frame line (for forward positioning) and then pressing Enter.

With the `POSITION` clause of the `FRAMED` option, you define that information on the position of the window on the logical page is to be displayed in the frame of the window. This applies only if the logical page is larger than the window; if it is not, the `POSITION` clause will be ignored. The position information indicates in which directions the logical page extends above, below, to the left and to the right of the current window.

If the `POSITION` clause is omitted, `POSITION SYMBOL TOP RIGHT` applies by default.

`POSITION SYMBOL` causes the position information to be displayed in form of symbols: "More: < - + >". The information is displayed in the top and/or bottom frame line.

`TOP/BOTTOM` determines whether the position information is displayed in the top or bottom frame line.

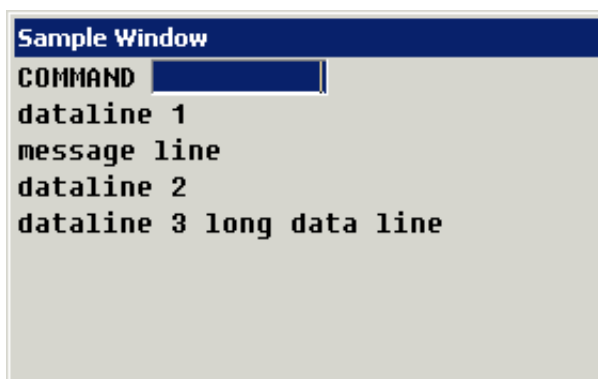
`LEFT/RIGHT` determines whether the position information is displayed in the left or right part of the frame line.

INPUT WINDOW Statement

The `INPUT WINDOW` statement activates the window defined in the `DEFINE WINDOW` statement. In the example, the window `TEST` is activated. Note that if you wish to output data in a window (for example, with a `WRITE` statement), you use the `SET WINDOW` statement.

When the above program is run, the window is displayed with one input field `COMMAND`. The session parameter `AD` is used to define that the value of the field is displayed intensified and an underscore is used as filler character.

Output of Program WINDX01:



Multiple Windows

You can, of course, open multiple windows. However, only one Natural window is active at any one time, that is, the most recent window. Any previous windows may still be visible on the screen, but are no longer active and are ignored by Natural. You may enter input only in the most recent window. If there is not enough space to enter input, the window size must be adjusted first.

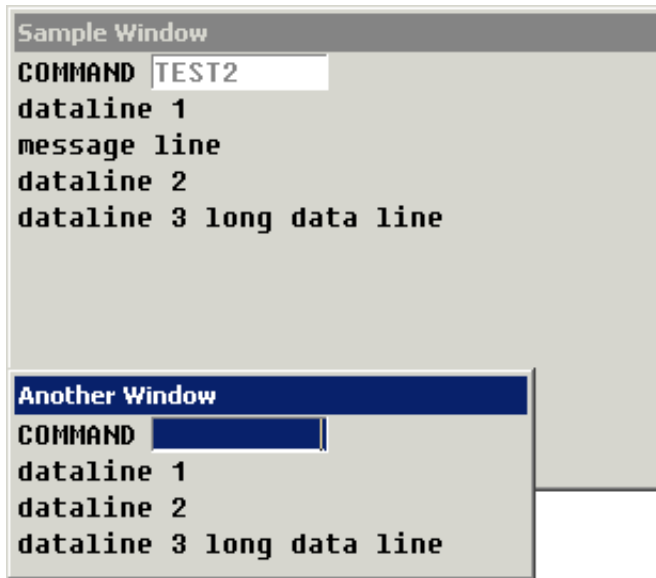
When TEST2 is entered in the COMMAND field, the program WINDX02 is executed.

```

** Example 'WINDX02': DEFINE WINDOW
*****
DEFINE DATA LOCAL
1 COMMAND (A10)
END-DEFINE
*
DEFINE WINDOW TEST2
    SIZE 5*30
    BASE 15/40
    TITLE 'Another Window'
    CONTROL SCREEN
    FRAMED POSITION SYMBOL BOTTOM LEFT
*
INPUT WINDOW='TEST2' WITH TEXT 'message line'
    COMMAND (AD=I'_' ) /
    'dataline 1' /
    'dataline 2' /
    'dataline 3' 'long data line'
*
IF COMMAND = 'TEST'
    FETCH 'WINDX01'
ELSE
    IF COMMAND = '.'
        STOP
    ELSE
        REINPUT 'invalid command'
    END-IF
END-IF
END

```

A second window is opened. The other window is still visible, but it is inactive.



Note that for the new window the message line is now displayed at the bottom of the output window and not in the window. This was defined by the `CONTROL SCREEN` clause in the `WINDX02` program.

For further details on the statements `DEFINE WINDOW`, `INPUT WINDOW` and `SET WINDOW`, see the corresponding descriptions in the *Statements* documentation.

Standard/Dynamic Layout Maps

Standard Layout Maps

A *standard layout* can be defined in the map editor. This layout guarantees a uniform appearance for all maps that reference it throughout the application.

When a map that references a standard layout is initialized, the standard layout becomes a fixed part of the map. This means that if this standard layout is modified, all affected maps must be re-cataloged before the changes take effect.

Dynamic Layout Maps

In contrast to a standard layout, a *dynamic layout* does not become a fixed part of a map that references it, rather it is executed at runtime.

This means that if you define the layout map as "dynamic" on the Define Map Settings For MAP screen in the map editor, any modifications to the layout map are also carried out on all maps that reference it. The maps need not be re-cataloged.

For further details on layout maps, see *Map Editor* in the *Editors* documentation.

Multilingual User Interfaces

Using Natural, you can create multilingual applications for international use.

Maps, help routines, error messages, programs, functions, subprograms and copycodes can be defined in up to 60 different languages (including languages with double-byte character sets).

Below is information on:

- Language Codes
- Defining the Language of a Natural Object
- Defining the User Language
- Referencing Multilingual Objects
- Programs
- Error Messages
- Edit Masks for Date and Time Fields

Language Codes

In Natural, each language has a *language code* (from 1 to 60). The table below is an extract from the full table of language codes. For a complete overview, refer to the description of the system variable *LANGUAGE in the *System Variables* documentation.

Language Code	Language	Map Code in Object Names
1	English	1
2	German	2
3	French	3
4	Spanish	4
5	Italian	5
6	Dutch	6
7	Turkish	7
8	Danish	8
9	Norwegian	9
10	Albanian	A
11	Portuguese	B

The language code (left column) is the code that is contained in the system variable *LANGUAGE. This code is used by Natural internally. It is the code you use to define the user language (see *Defining the User Language* below). The code you use to identify the language of a Natural object is the *map code* in the right-hand column of the table.

Example:

The language code for Portuguese is "11". The code you use when cataloging a Portuguese Natural object is "B".

For the full table of language codes, see the system variable *LANGUAGE as described in the *System Variables* documentation.

Defining the Language of a Natural Object

To define the language of a Natural object (map, help routine, program, function, subprogram or copycode), you add the corresponding map code to the object name. Apart from the map code, the name of the object must be identical for all languages.

In the example below, a map has been created in English and in German. To identify the languages of the maps, the map code that corresponds to the respective language has been included in the map name.

Example of Map Names for a Multilingual Application

DEMO1 = English map (map code 1)

DEMO2 = German map (map code 2)

Defining Languages with Alphabetical Map Codes

Map codes are in the range 1-9, A-Z or a-y. The alphabetical map codes require special handling.

Normally, it is not possible to catalog an object with a lower-case letter in the name - all characters are automatically converted into capitals.

This is however necessary, if for example you wish to define an object for Kanji (Japanese) which has the language code 59 and the map code x.

To catalog such an object, you first set the correct language code (here 59) using the terminal command %L=nn, where nn is the language code.

You then catalog the object using the ampersand (&) character instead of the actual map code in the object name. So to have a Japanese version of the map DEMO, you store the map under the name DEMO&.

If you now look at the list of Natural objects, you will see that the map is correctly listed as DEMOx.

Objects with language codes 1-9 and upper case A-Z can be cataloged directly without the use of the ampersand (&) notation.

In the example list below, you can see the three maps DEMO1, DEMO2 and DEMOx. To delete the map DEMOx, you use the same method as when creating it, that is, you set the correct language with the terminal command %L=59 and then confirm the deletion with the ampersand (&) notation (DEMO&).

Defining the User Language

You define the language to be used per user - as defined in the system variable *LANGUAGE - with the profile parameter ULANG (which is described in the *Parameter Reference*) or with the terminal command %L=nn (where nn is the language code).

Referencing Multilingual Objects

To reference multilingual objects in a program, you use the ampersand (&) character in the name of the object.

The program below uses the maps DEMO1 and DEMO2. The ampersand (&) character at the end of the map name stands for the map code and indicates that the map with the current language as defined in the *LANGUAGE system variable is to be used.

```
DEFINE DATA LOCAL
1 PERSONNEL VIEW OF EMPLOYEES
  2 NAME (A20)
  2 PERSONNEL-ID (A8)
1 CAR VIEW OF VEHICLES
  2 REG-NUM (A15)
1 #CODE (N1)
END-DEFINE
*
INPUT USING MAP 'DEMO&' /* <--- INVOKE MAP WITH CURRENT LANGUAGE CODE
...
```

When this program is run, the English map (DEMO1) is displayed. This is because the current value of *LANGUAGE is 1 = English.

```
MAP DEMO1

SAMPLE MAP

Please select a function!

1.) Employee information
2.) Vehicle information

Enter code here: _
```

In the example below, the language code has been switched to 2 = German with the terminal command %L=2.

When the program is now run, the German map (DEMO2) is displayed.

```
BEISPIEL-MAP

Bitte wählen Sie eine Funktion!

1.) Mitarbeiterdaten
2.) Fahrzeugdaten

Code hier eingeben: _
```

Programs

For some applications it may be useful to define multilingual programs. For example, a standard invoicing program, might use different subprograms to handle various tax aspects, depending on the country where the invoice is to be written.

Multilingual programs are defined with the same technique as described above for maps.

Error Messages

Using the Natural utility `SYSERR`, you can translate Natural error messages into up to 60 languages, and also define your own error messages.

Which message language a user sees, depends on the `*LANGUAGE` system variable.

For further information on error messages, see *SYSERR Utility* in the *Utilities* documentation.

Edit Masks for Date and Time Fields

The language used for date and time fields defined with edit masks also depends on the system variable `*LANGUAGE`.

For details on edit masks, see the session parameter `EM` as described in the *Parameter Reference*.

Skill-Sensitive User Interfaces

Users with varying levels of skill may wish to have different maps (of varying detail) while using the same application.

If your application is not for international use by users speaking different languages, you can use the techniques for multilingual maps to define maps of varying detail.

For example, you could define language code 1 as corresponding to the skill of the beginner, and language code 2 as corresponding to the skill of the advanced user. This simple but effective technique is illustrated below.

The following map (PERS1) includes instructions for the end user on how to select a function from the menu. The information is very detailed. The name of the map contains the map code 1:

```
MAP PERS1

SAMPLE MAP

Please select a function

1.) Employee information _
2.) Vehicle information _

Enter code: _

To select a function, do one of the following:
- place the cursor on the input field next to desired function and press Enter
- mark the input field next to desired function with an X and press Enter
- enter the desired function code (1 or 2) in the 'Enter code' field and press
Enter
```

The same map, but without the detailed instructions is saved under the same name, but with map code 2.

```
MAP PERS2

SAMPLE MAP

Please select a function

1.) Employee information _
2.) Vehicle information _

Enter code: _
```

In the example above, the map with the detailed instructions is output, if the ULANG profile parameter has the value 1, the map without the instructions if the value is 2. See also the description of the profile parameter ULANG (in the *Parameter Reference*).