

Hello World!

This chapter contains the following exercises:

- Creating a Program
 - Running a Program
 - Correcting Program Errors
 - Stowing a Program
 - Displaying Information about a Program
 - Displaying the Content of the Current Library
 - Setting the Editor Profile Options
-

Creating a Program

You will now write your first short program which displays "Hello World!". It will be stored in the library you have created previously.

To create a new program

1. Make sure that you have logged on to the library named TUTORIAL.
2. Invoke the **Direct Command** window and enter one of the following:

```
EDIT PROGRAM
```

```
E P
```

System commands may be abbreviated. E P is the abbreviated form of EDIT PROGRAM.

The program editor appears. It is currently empty.

When you press ENTER, it may happen that all of your lower-case characters are translated to upper-case characters. This behavior is defined in the editor profile (which is explained later).

Running a Program

The system command `RUN` automatically invokes the system command `CHECK` which checks the program code for errors. If no error is found, the program is compiled on the fly and then executed.

Notes:

1. `CHECK` is also available as a separate command.
2. Natural also provides the system command `EXECUTE` which uses the stowed version of your program (stowing a program is explained later in this tutorial). In contrast to this, the `RUN` command always uses your latest modifications to the program.

To run a program

1. In the program editor's command line, enter one of the following:

```
RUN
```

```
R
```

Note:

In the program editor, you can press PF10 (Home) to place the cursor in the command line.

When your code is syntactically correct, the output contains the text you have defined.

```
MORE
```

```
Page      1
```

```
09-06-30 12:07:25
```

```
Hello world!
```


Like the RUN command, the system command STOW automatically invokes the CHECK command. A program is only stowed when it is syntactically correct.

Note:

If you want to save the changes to your program, even if the program contains a syntactical error (for example, if you want to suspend your work until the next day), you can use the system command SAVE. When a program is saved for the first time, you also have to specify a name. For example: SAVE HELLO.

▶ To stow a program

- In the program editor's command line, enter the following:

```
STOW HELLO
```

where "HELLO" is the name with which your program is to be stored.

Note:

When a program has already been given a name, it is sufficient to enter STOW in the command line (without a program name) or to press PF6.

Displaying Information about a Program

The LIST command is useful to find out whether only the source code or both source code and a generated program are available for an object.

▶ To display information about a program

1. In the program editor's command line, enter one of the following:

```
LIST DIR HELLO
```

```
L DIR HELLO
```

The following screen appears. The information provided with **Cataloged on** is only available when the object has been stowed.

```

>> -----Columns 001 072 <<  Program HELLO      Lines  2      User SAG
Command ==> list dir hello                Mode   Struct Lib  TUTORIAL
***** ***** top of data *****
+----- List Directory HELLO -----+
| Directory of Program HELLO                Saved on ... 2009-06-30 13:32:37 |
|-----|
| Library ... TUTORIAL  User-ID ..... SAG      Mode .. Structured
| OP-System .. OVMS/IA6
| NAT-Ver ... V 6.3.7.1
| Size ..... 36 Bytes
| Encoding ...
|
| Directory of Program HELLO                Cataloged on 2009-06-30 13:32:36
|-----|
| Library ... TUTORIAL  User-ID ..... SAG      Mode .. Structured
| OP-System .. OVMS                OP-Version ..V8.3
| NAT-Ver ... V 6.3.7.1
| Size ..... 329 Bytes
| Endian mode: Little
|-----+
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help Save Exit Run  Rfind Stow  -      +      Check Home Undo Canc

```

2. Press ENTER to return to the program editor.

Displaying the Content of the Current Library

The LIST command can also be used to display a list of all Natural objects in the current library. This is helpful, for example, if you decide at some point during this tutorial that you want to delete one or more of your Natural objects in order to start again from the very beginning.

To display a list of Natural objects

1. In the program editor's command line, enter one of the following:

```
LIST *
```

```
L *
```

The following window appears. It lists the program you have just created.

```

>> -----Columns 001 072 << Program HELLO      Lines 4      User SAG
Command ===> l *                               Mode   Struct Lib  TUTORIAL
***** ***** top of data *****
000010 * The "Hello world!" example in Natural.
000020 *
000030 DISPLAY "Hello world!"
0+----- List * * -----+
*| Cmd Name      Type          SM S/C Userid   SRC Date      GP Date
|-----|-----|-----|-----|-----|-----|
|<DIRECT COMMAND>
|   HELLO      Program      S  S/C SAG     16:37 2009-06-30 16:37 2009-06-30
|-----|-----|-----|-----|-----|-----|
E|
+-----+

```

- To find out which commands are available, enter a question mark (?) in the **Cmd** column next to your program.

The following window appears.

```

+-----+
| C Check
| D Read
| E Edit
| L List
| I List Dir
| H Hardcopy
| R Run
| X Execute
| S Stow
| U Scratch
| . End
+-----+

```

Note:

Scratch is used to delete an object.

- Do not apply any changes right now. Press ESC to close the window without selecting any command.
- Press ESC once more to return to the program editor.

Setting the Editor Profile Options

When working with the Natural program editor, an editor profile can be defined per user. This tutorial uses the default settings of the editor profile named SYSTEM. Some important settings are mentioned below.

▶ **To check the editor profile options**

1. In the program editor's command line, enter the following:

```
PROFILE
```

The main menu of the editor profile appears.

```
13:57:44          **** Program Editor Profile ****          09.06.30
                    Main Menu

Profile Name ... SYSTEM

    _ Save
    _ Modify
    _ Read
    _ Technical Info

Command ==>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help      Exit  Modi  Save  Read  Tech                                Canc
```

When a user-specific editor profile does not exist, the default profile **SYSTEM** is displayed. This default profile can be used to create a user-specific profile. When a user-specific profile exists already, it is displayed instead of the **SYSTEM** profile.

2. Mark the option **Modify** and press ENTER.

Or:

Press PF4.

The following screen appears.


```

14:05:36          **** Program Editor Profile ****          09.06.30
                    Modify Defaults

User ID ..... SYSTEM

  _ PA/PF-Keys
  _ Commands
  _ Find
  _ General

Command ==>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help  Keys  Exit          Ctrl          Find  Genl          Canc

```

3. Mark the option **Commands** and press ENTER.

The following screen appears.

```

14:04:39          **** Program Editor Profile ****          09.06.30
                    Modify Editor Defaults

User ID ..... SYSTEM

aorder ..... OFF          hex ..... OFF
autosave ..... OFF       justify ..... LEFT
caps ..... OFF           limit ..... OFF
cols ..... OFF           log ..... OFF
decimal character ... .   mask line ..... OFF
empty ..... OFF          message line ..... ON
escape ..... OFF         mso ..... ON
escape character .... .   scroll mode ..... PAGE
fix ..... OFF            tabs ..... OFF
fixlen ..... 48          tabulator character . ^

Command ==>
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help          Exit          Canc

```

Check the setting of the following options:

- **caps**
Specifies whether data are to be translated into upper case.

- **empty**
Specifies whether lines containing only space characters are to be deleted automatically.
- **escape**
Specifies whether the escape character is to be used to precede line commands.

This tutorial assumes that the above options are set to "OFF".

4. If "ON" is currently defined for any of the above options, overwrite it with "OFF".
5. Press PF3 or enter `EXIT` in the command line.
6. Press PF3 repeatedly until the main menu of the editor profile is shown again.
7. When a user-specific profile has not yet been created, overwrite the profile name `SYSTEM` with your user ID.

When a user-specific profile exists already, proceed with the next step.

8. Mark the option **Save** and press ENTER.

Or:
Press PF5.

9. Press PF3.

Or:
Enter `EXIT` in the command line.

The program editor is shown again. Any new settings will now be used in the program editor.

You can now proceed with the next exercises: *Database Access*.