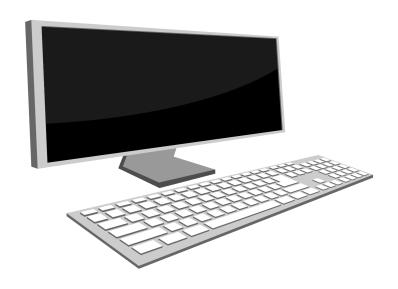
MPX-OS User's Manual V-2.70 2019



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The Menu

MPX-OS is a menu-driven operating system. Once you have booted up MPX, you will be prompted with a menu full of numbered options. Simply type in the number corresponding to the action you would like to take and then hit Enter to execute.

```
klogv: Initializing descriptor tables...
klogv: Initializing virtual memory...
klogv: Transferring control to commhand...

Press Corresponding number to execute command
1. Version
2. Help
3. Shutdown
4. Get time
5. Get Date
6. Set Time
7. Set Date
```

Certain actions will prompt you with another menu that will look similar to this, simply repeat the same process.

Help

If you want to perform a certain action but do not know what the command(s) is to help you accomplish it, you can simply type "help", and you can see a list of all available commands.

```
Press Corresponding number to get information on commands

1. Getting the Version

2. Shutting down MPX-OS

3. Getting the time

4. Getting the Date

5. Setting the Time

6. Setting the Date

7. Exit Help

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Shutdown will power off MPX-OS, you will first be asked for confirmation before powering off by selecting (1) to confirm, or (2) to cancel.
```

To get information on a specific command, type help followed by the name of the command you want information on.

Example:

help set-time

Shutting Down MPX-OS

Shutting down your operating system is a very simple process. Simply type "shutdown", and then you will be prompted again to confirm that you do in fact want power off your device. Type 'Y' for yes and 'N' for no.

If your device shuts down properly, you should see a display similar to that of the image below.

```
shutdown

Are you sure? (Y/N)

Y

MPX is shutting down...

klogv: Starting system shutdown procedure...

klogv: Shutdown complete. You may now turn off the machine. (QEMU: C-a x)
```

Displaying the Current Time

To check the time on MPX, all you will need to do is type "get-time". This will display a time in HH:MM:SS format.

An Example of this is seen below:

```
get-time
the current time is : 14:13:34
```

Checking the Date

Checking the date is a simple and easy as checking the time in MPX-OS! To check the date in MPX, all you will need to do is type "get-date". This will display the current date in MM/DD/YY format.

An Example is seen below:

get-date

The date is : 10/03/2019

Setting your clock

If the time displayed on your device is incorrect, you can change it through MPX's main menu. First, type "set-time" and then you will be prompted to enter in the

Hour, Minute, and Second one at a time. Please note that this uses a 24-hour clock (11 pm = 23).

```
set-time
Enter the hour : 10
Enter the minutes : 17
Enter the second : 0
get-time
the current time is : 10:17:04
```

Also note that if you hit Enter without submitting a number, then MPX will default that value to 0.

Setting the Date

Setting the date is much like setting the time. First,type "set-date" and then you will be prompted to enter in the Month, Day, and Year one at a time, pressing the enter button in between each value. Note that this is in MM/DD/YY format. If a Day value beyond the number of days in the Month is entered, an error message will be displayed and you will have to redo this process. Same if the month exceeds 12 or the Year is less or more than four digits.

```
set-date
Enter a month (MM): 07
Enter a day (DD): 04
Enter a year (1700 - 2100) (YYYY): 1776
get-date
The date is: 07/04/1776
```

Creating a Process Control Block

To create a new process, type "create-pcb" and then enter.

You will then be prompted to provide a name (between 8 and 16 characters in length), a class (1 for user, 0 for system) and a priority.

```
create-pcb

Please Enter a name for the process: system_process32

Please Enter the class [ 0 for system process, 1 for user process]: 0

Please Enter the priority [ 0 being the lowest, and 9 being the highest]: 3
```

The process control block created above can be seen in the MPX OS in the following format. NOTE: All process control blocks are not suspended or blocked by default.

system_process32 | System Process | Ready | not suspended | 03

Deleting a Process Control Block

Deleting a process is very simple. The command takes a process name as an argument in the following UNIX-like format

delete-pcb [process name]

An example is shown below:

```
All Processes:
supersecretpcb
                 System Process | Ready
                                             not suspended
                                   Ready
                                             not suspended
                                                             04
mycomputer
sysprocess5
                                             not suspended
                                                            02
                                   Ready
process1010
                 User Process
                                 Ready
                                           | not suspended
                                                           00
delete-pcb process1010
show-all
All Processes:
supersecretpcb
                 | System Process | Ready
                                           | not suspended | 05
mycomputer
                User Process Ready
                                           | not suspended
                                                           04
sysprocess5
                 System Process | Ready
                                           | not suspended | 02
```

Blocking a Process Control Block

To block a process control block you follow the same set of instructions as you would for deleting one.

The Command is:

block-pcb [process name]

And example is shown below

```
All Processes:
process123 | System Process | Ready | not suspended | 01
block-pcb process123
show-all
All Processes:
process123 | System Process | Blocked | not suspended | 01
```

Notice how the PCB goes from a green "ready" to a red "blocked"

Unblocking a Process Control Block

After you blocked a process, you might say to yourself: "ah gee wiz I sure wish I hadn't blocked that PCB!"

Well don't fret, you can unblock it JUST AS EASILY!

Command:

unblock-pcb [process name]

Example:

```
All Processes:
process123 | System Process | Blocked | not suspended | 01
unblock-pcb process123
show-all
All Processes:
process123 | System Process | Ready | not suspended | 01
```

Updating the Priority of a Process

Once you've created a PCB and set it's priority, you may decide to change it's priority. To do this, you must enter the following command.

set-pcb-priority [process name] [int 0-9] EXAMPLE: set-pcb-priority process 1 3

```
create-pcb

Please Enter a name for the process: process1

Please Enter the class [ 0 for system process, 1 for user process]: 1

Please Enter the priority [ 0 being the lowest, and 9 being the highest]: 1

set-pcb-priority process1 8

show-all

All Processes:
process1 | User Process | Ready | not suspended | 08
```

Suspending a PCB

Suspending a PCB is simple.

Command:

suspend-pcb [process name]

Example:

```
All Processes:

process1 | User Process | Ready | not suspended | 08
suspend-pcb process1

show-all

All Processes:

process1 | User Process | Ready | SUSPENDED | 08
```

Resuming a PCB

Once a PCB is suspended, it will eventually need to be resumed. Doing this is as simple as suspended it.

Command:

resume-pcb [process name]

Example:

```
All Processes:
process1 | User Process | Ready | SUSPENDED | 01
resume-pcb process1
show-all
All Processes:
process1 | User Process | Ready | not suspended | 01
```

Displaying Processes

You may want to display the processes on your MPX OS. You have four different ways you can do this.

Showing 1 process: show-pcb [process name]

Showing all processes: show-all

Showing ready processes: show-ready

Showing blocked processes: show-blocked

```
show-all
All Processes:
process2 | System Process |
                                       not suspended
                                                       04
                                                       03
process3
                                       not suspended
process7 | User Process
                                                       05
process1 | User Process
                                                       01
process5 | System Process
                                       not suspended
                                                       00
                                                       01
process1 | User Process
process6 | User Process
                                       not suspended
                                                       02
process4 | User Process
                                       not suspended
                                                     02
show-ready
process2 | System Process | Ready
                                       not suspended
                                                       04
                                       not suspended
process3
                                                       03
                                                       05
process7 | User Process
                                       SUSPENDED SUSPENDED
                                                       01
process1 | User Process
                                       not suspended
process5 | System Process |
                                                       00
process1 | User Process
                           Ready
                                                      01
show-blocked
process6 | User Process
                                     | not suspended | 02
process4 | User Process
                                     | not suspended | 02
show-pcb process1
process1 | User Process
                                     SUSPENDED
                                                     01
QEMU: Terminated
```