User's Manual

How to Use the Commands

- Make sure to type ALL commands in lowercase. Upper case or mixed case will result in an "improper command" error.
- For example, to use the Shutdown command, type "shutdown" in all lowercase, and no quotes.
- For PCB commands, you may use uppercase and lowercase, as well as numbers, to name your PCB.

Command 1) Shutdown

- This command allows the user to shutdown the operating system with the input of y/n. If inputted 'y' then the system shuts down. If inputted 'n' then the system stays on. If anything else is inputted the system will prompt that you have invalid input and take you back to the command line.
- Command Example: Shutdown canceled:

```
shutdown
Are you sure you want to shut down? (y/n)
Shutdown canceled.
```

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Command 2) Version

- This command allows the user to retrieve the operating system's current version and also displays the date it was issued on. This will update with a later version of the operating system.
- Command Example
- :

```
version
MPX Version R2
Compiled on: 2/23/24
>
```

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Command 3) Help

- This command displays the current commands that are available to the user and briefly explains what they perform.
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```
help
Please type your command in all lowercase only. The following are all the commands available to use:
Shutdown – Shut down the system
Version – Display the current version & compilation date
Help – Display all available commands
Echo – Repeats previous message
Get Date – Display current date
Get Time –  Display current time
Set Date – Set date to desired month/day/year
Set Time –  Set time to desired hour/minute/second
Clear – Clear the terminal & redisplay menu
Create PCB – Creates a PCB and puts it in queue
Delete PCB – Removes the requested process from queue
Block PCB – Puts the process in blocked state
Unblock PCB – Puts the process in the unblocked state
Suspend PCB – Puts the process in the suspend state
Resume PCB – Puts the process in the not suspended state
Set Priority – Changes a processes priority
Show PCB – Displays the process's info
Show Ready – Displays all process's info in ready queue
Show Blocked – Displays all process's info in blocked queue
Show All – Displays all process's info
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Command 4) Echo

- This command allows the user to display the most recent prompt/text in case the user didn't see the it and needs reinformed.
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Command 5) Get Date

- This command allows the user to ask for the system's set date, which will output text telling you the current date in 'mm/dd/yyyy' format. If you ever wish to change this date, feel free to use the Set Date command.
- Command Example:

```
get date
Current date: 12/5/01
```

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Command 6) Get Time

- This command allows the user to ask for the system's set time, which will output text telling you the current time in 12-hour format. If you ever wish to change this time, feel free to use the Set Time command.
- Command Example:

```
get time
Current time: 17:7:54
```

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Command 7) Set Date

- This command pulls up a prompt that allows the user to set the date (mm/dd/yyyy) to what they want. This will also overwrite the current date that is stored in the system's memory. This system can only recognize dates that are in the 21st century, so any year that doesn't start with '20' won't be accepted.
- Command Example:

```
set date
Please input the new date (mm dd yyyy):
Current date: 12/5/01
```

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Command 8) Set Time

- This command pulls up a prompt that allows the user to set the time (in 12-hour format, not 24) to what they want. This will also overwrite the current time that is stored in the system's memory.

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Command 9) Clear

- This command allows the user to clear the interface of any outputted text/prompts and redisplays the starting menu, allowing the user to declutter their interface.

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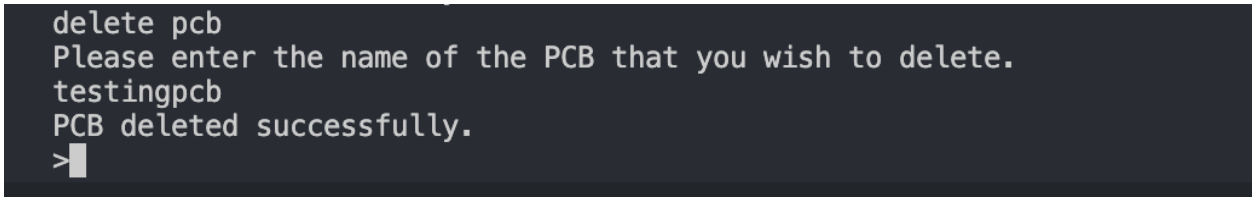
Command 10) Delete PCB

- This command lets the user delete the chosen PCB by inserting the name of the PCB they want to delete, as long as it is not a system process. It will delete the PCB from the queue and free up any associated memory.
- When prompted, type in the name of the PCB you wish to delete.
- Command Example:



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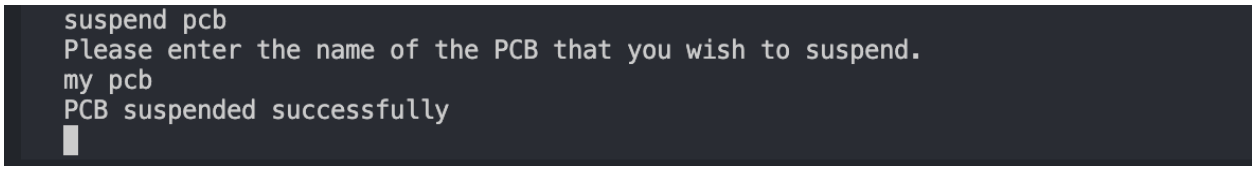
Command 11) Suspend PCB

- The command lets the user suspend a chosen PCB by entering a name, puts it in an suspended state, and moves it to an appropriate queue.
- Command Example:



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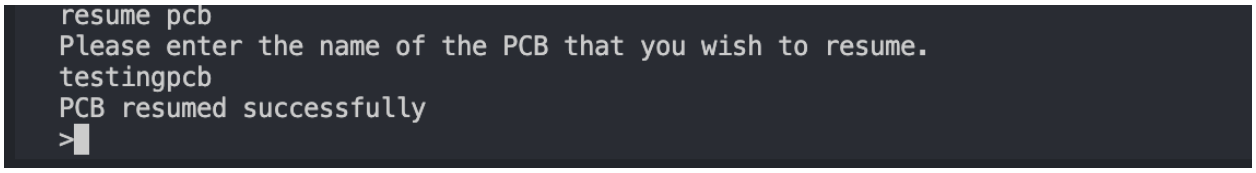
Command 12) Resume PCB

- The command lets the user resume a chosen PCB by entering a name, puts it in an not suspended state, and moves it to an appropriate queue.
- Command Example:



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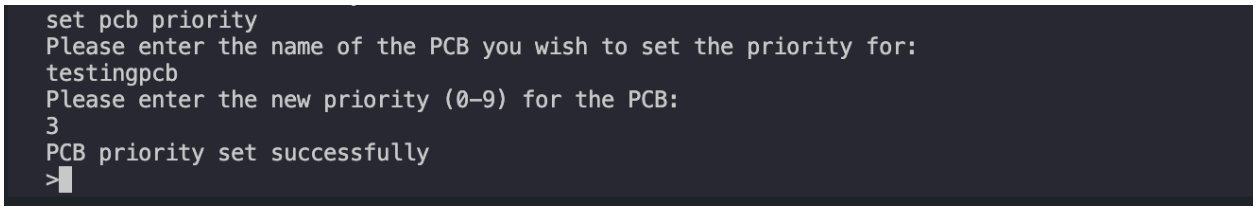
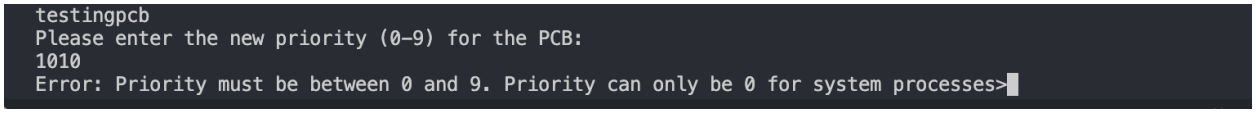
Command 13) Set PCB Priority

- The command lets the user change the priority of a PCB by entering a name and choosing a new priority, moves it to the appropriate place in the appropriate queue
- Command Example:



- Please note the priority *must* be between 0 and 9. Any other digits greater or less than will not be accepted, and will result in an error.
- Error Example:



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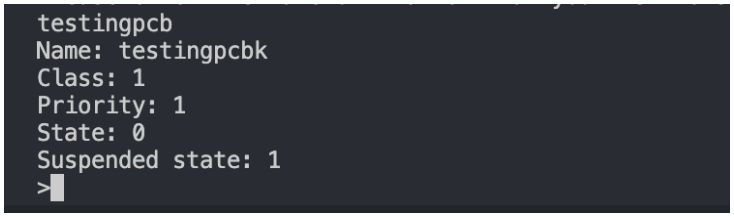
Command 14) Show PCB

- The command displays a PCB's name, class, state, suspended status and priority by letting the user search for a PCB by entering a name.
- Command Example:



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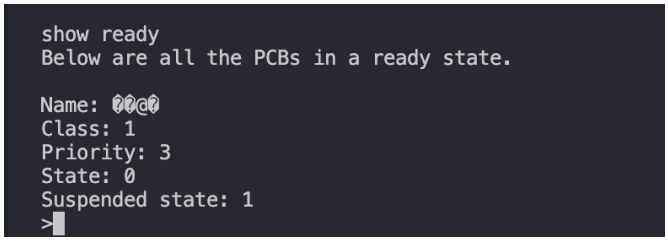
Command 15) Show Ready

- The command displays the PCBs that are in the ready state by showing the names, classes, states, suspended statuses and priorities.
- Command Example:



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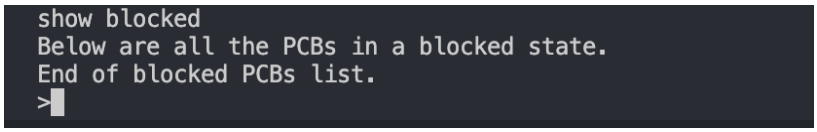
Command 16) Show Blocked

- The command displays the PCBs that are in the blocked state by showing the names, classes, states, suspended statuses and priorities.
- Command Example:



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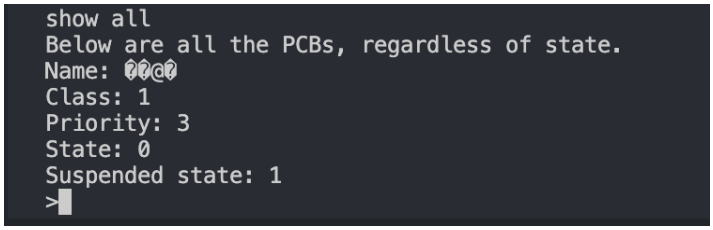
Command 17) Show All

- The command displays all the PCBs (irregardless of state) by showing the names, classes, states, suspended statuses and priorities.
- Command Example:



Command 18) Load R3

- Loads the R3 test processes and are then queued in a non-suspended ready state, the user then names the process and sets the priority as well.
- Command Example:

Command 19) Load R3 Suspended

- Loads the R3 test processes and are then queued in a suspended state, the user then names the process and sets the priority as well
- Command Example:

Command 20) Set Alarm

- Sets an alarm
- Command Example:

Command 21) Remove Alarm

- Remove any alarm that was set
- Command Example:

Command 22) Allocate Memory

- Allocates heap memory and prints the address of the newly allocated block in hexadecimal, or an error message if allocation fails
- Command Example:

```
allocate memory
Enter the size of the block you wish to allocate (in bytes):
Allocated memory at address: 218112305
```

Command 23) Free Memory

- Frees heap memory by asking user to specify the address in which they want to free the memory at
- Command Example:

```
free memory
Enter the memory address you wish to free:
Memory at address 218112305 freed successfully
```

Command 24) Show Allocated Memory

- Prints information for each block of allocated memory which includes the start address of the block in hexadecimal and the size of the block in decimal
- Command Example:

```
show allocated memory
Allocated Memory Block 1
Start Address: 218103836
Size: 4128 bytes
----------------------
Allocated Memory Block 2
Start Address: 218107992
Size: 8 bytes
----------------------
Allocated Memory Block 3
Start Address: 218108028
Size: 4128 bytes
----------------------
Allocated Memory Block 4
Start Address: 218112184
Size: 5 bytes
----------------------
```

*Note: In order to reduce size in the document and maintain consistency in formatting, the screenshot has been cropped.

Command 25) Show Free Memory

- Prints information for each block of free memory which includes the start address of the block in hexadecimal and the size of the block in decimal

- Command Example:

```
show free memory
Free Memory Block 1
Start Address: 218112261
Size: 41547 bytes
----------------------
```

Command 26) Show All

- Prints information for all blocks of memory (free and allocated) which includes the start address of the block in hexadecimal and the size of the block in decimal
- Command Example:

```
show all memory
Memory Block 1
Allocated Memory Block
Start Address: 218103836
Size: 4128 bytes
----------------------
Memory Block 2
Allocated Memory Block
Start Address: 218107992
Size: 8 bytes
----------------------
Memory Block 3
Allocated Memory Block
Start Address: 218108028
Size: 4128 bytes
----------------------
```

*Note: In order to reduce size in the document and maintain consistency in formatting, the screenshot has been cropped.