

```

`7MMF' `7MMF' MMP" "MM" "YMM `7MMF' `7MMF' `7MMF' `7MF' `7MM" "Yp, .g8" "8q. .M" "bgd
MM MM p' MM `7 MM MM MM M MM Yb .dP' `YM. ,MI "Y
MM MM MM MM MM MM MM M MM dP dM' `MM `MMb.
MM MM MM MMmmmmmmMM MM M MM" "bg. MM MM `YMMNq.
MM MM MM MM MM MM M MM `Y MM. ,MP . `MM
A MM MM MM MM MM YM. ,M MM ,9 `Mb. ,dP' Mb dM
6mm9 .JMML. .JMML. .JMML. .JMML. `bmmmd" ' .JMMmmd9 ` "bmmd" ' P"Ybmmd"

```

JitHub Users Manual

Version 2

10/3/2023

Startup

To boot the operating system, navigate to the JitHub directory. Once there, type "make" to compile the program. Finally, type "./mpx.sh" to run the OS

```
loud@loud-VirtualBox:~/Jithub$ make
make: Nothing to be done for 'all'.
loud@loud-VirtualBox:~/Jithub$ ./mpx.sh
```

Menu

Upon startup the operating system provides a menu with a list of commands.

- Enter any of the following to continue.

```
Enter one of the following:
1. Version
2. Get Time
3. Set Time
4. Get Date
5. Set Date
6. Help
7. Shutdown
```

Version

Type "version" or type '1' to retrieve the current version of the operating system

Version includes:

- The module it was updated during
- The compilation date and time

```
>> version
Release Number: 1
Date of most recent compile: Sep  8 2023
Time of most recent compile: 13:18:38
```

Get Time

Type "get time" or '2' to retrieve the current system time

- Retrieves the current time which may be updated using "set time"

```
>> get time
Time is: 17:20:58
```

Set Time

Type "set time" or type '3' to set the system time

- The system will then display a prompt to input the time in hh:mm:ss format

```
>> set time
Enter the time. (hh:mm:ss)
>> 1:44:00
Time set to 01:44:00.
```

Get Date

Type "get date" or type '4' to retrieve the current system date

- Retrieves the current date that may be updated with "set date"

```
>> get date  
Date: 9/08/23
```

Set Date

Type "set date" or type '5' to set the system date

- The system will then display a prompt to input the date in mm/dd/yy format

```
>> set date  
Enter the date. (mm/dd/yy)  
>> 1/1/24  
Date set to 01/01/24
```

Help

Type "help" or type '17' to see a list of commands you can run

```
>> help  
Type "version" or type '1' to retrieve the current version of the operating system  
Type "get time" or type '2' to retrieve the current system time  
Type "set time" or type '3' to set the system time  
Type "get date" or type '4' to retrieve the current system date  
Type "set date" or type '5' to set the system date  
Type "help" or type '6' to see a list of commands you can run  
Type "shutdown" or type '7' to exit the operating system
```

- Additionally, type "help" followed by any menu command to get help specific to that instruction

```
>> help get time  
Type "get time" to retrieve the current system time
```

Shutdown

Type "shutdown" or type '18' to exit the operating system

- A confirmation prompt will appear. Type 'y' or 'n' to confirm or cancel.

```
>> shutdown  
Confirm Shutdown? Y/N  
y  
klogv: Transferring control to commhand...  
klogv: Starting system shutdown procedure...  
klogv: Halting CPU...
```

Create PCB

Type "create PCB" or type "6" to create a new process

- A prompt will appear asking for a name
 - Names must be between 1 and 12 characters
- A prompt will appear asking for a class
 - Enter 0 for a system process
 - Enter 1 for a user process
- A prompt will appear asking for a priority
 - Priorities can be between 0 and 9
 - 0 is the highest priority

```
>> Create PCB
Enter PCB name:
>> JithubPCB
Enter PCB class:
>> 0
Enter PCB priority:
>> 4
Successfully inserted process "JithubPCB".
```

- If the PCB is set up properly, a success message will display

Delete PCB

Type "create PCB" or type "7" to delete a process

- A prompt will appear asking for a process name
 - If the process exists, a success message will be displayed

```
>> delete pcb
Enter PCB name:
>> UserProcess
Successfully deleted process "UserProcess".
```

- If the process does not exist, an error message will be displayed

```
>> 7
Enter PCB name:
>> test
Could not find process "test" to delete.
```

- Only a user process can be deleted
 - An error message will be displayed if a kernel process tries to be deleted

```
>> 7
Enter PCB name:
>> JithubPCB
Error: "JithubPCB" is a system process. Cannot request to delete a system process.
```

Block PCB

Type "Block PCB" or type "8" to block a process

- Blocking a process will move it from Ready to Blocked or from SuspendedReady to SuspendedBlocked
- A prompt will appear asking for a process name
 - If the process blocks, a success message will be displayed

```
>> Block PCB
Enter PCB name:
>> UserProcess
Successfully blocked process "UserProcess".
```

- If the process does not block, an error message will be displayed

```
>> Block PCB
Enter PCB name:
>> otherprocess
Could not find process "otherprocess" to block.
```

- Only a user process can be blocked
 - An error message will be displayed if a kernel process tries to be blocked

```
>> 8
Enter PCB name:
>> JithubPCB
Cannot block system process "JithubPCB".
```

Unblock PCB

Type "Unblock PCB" or type "9" to unblock a process

- A prompt will appear asking for a process name
 - If the process unblocks, a success message will be displayed

```
>> 9
Enter PCB name:
>> UserProcess
Successfully unblocked process "UserProcess".
```

- If the process does not block, an error message will be displayed

```
>> unblock PCB
Enter PCB name:
>> otherprocess
Could not find process "otherprocess" to unblock.
```

- A system process will never need to be unblocked

```
>> 9
Enter PCB name:
>> JithubPCB
The specified PCB "JithubPCB" is already in the ready state. Nothing will be done.
```

Suspend PCB

Type "Suspend PCB" or type "10" to suspend a process

- Suspending a process will move it from Ready to Suspended or from Blocked to SuspendedBlocked
- A prompt will appear asking for a process name
 - If the process suspends, a success message will be displayed

```
>> 10
Enter PCB name:
>> UserProcess
Successfully suspended process "UserProcess".
```

- If the process does not suspend, an error message will be displayed

```
>> suspend pcb
Enter PCB name:
>> otherprocess
Could not find process "otherprocess" to suspend.
```

- Only a user process can be suspended
 - An error message will be displayed if a kernel process tries to be blocked

```
>> 10
Enter PCB name:
>> JithubPCB
Cannot suspend system process "JithubPCB".
```

Resume PCB

Type "resume PCB" or "11" to resume the given process. Resuming a process means "unsuspending" it

- After typing "resume PCB", you will be prompted to provide the name of the PCB to resume
 - If the process resumes, a success message will be displayed

```
>> Resume PCB
Enter PCB name:
>> UserProcess
Successfully resumed process "UserProcess".
```

- The given process must already be in either the "suspended ready" or "suspended blocked" queue
- If the process is in the "suspended ready" queue, it will move to the ready queue
- If the process is in the "suspended blocked" queue, it will move to the blocked queue
- A System process will never need to be resumed

Set PCB Priority

Type "set PCB priority" or "12" to change the priority of a process

- After typing "set PCB priority", you will be prompted to provide the name of the PCB
- The priority must be a valid integer from 0 to 9

```
>> 12
Enter PCB name:
>> UserProcess
Enter PCB priority:
>> 6
Successfully changed priority for UserProcess from 5 to 6.
```

Show PCB

Type "show PCB" or "13" to show a specific PCB

- After entering "show PCB", you will be prompted to provide the name of the PCB to show
- The PCB name must be an existing process in one of the queues

```
>> show pcb
Enter PCB name:
>> otherPCb
Could not find process "otherPCb" to show.
```

- The name, priority, class, and state of the requested process are printed

```
>> show pcb
Enter PCB name:
>> UserProcess
PCB "UserProcess"--
      Name:      UserProcess
      Class:      1
      State:      ready
      Suspended:  No
      Priority:    5
```

Show Ready

Type "show ready" or "14" to show all processes in the ready queue

- Each ready process's name, priority, and class are printed

```
>> show ready
Ready:
|      Name:      Test      |
|      Class:      1      |
|      State:      ready    |
|      Suspended:  No      |
|      Priority:    1      |
```


Show Blocked

Type "show blocked" or "15" to show all processes in the blocked queue

- Each blocked process's name, priority, and class are printed

```
>> show blocked
Blocked:
|      Name:      Test      |
|      Class:      1        |
|      State:     blocked   |
|      Suspended: No        |
|      Priority:   1         |
```

Show All

Type "show all" or "16" to show all processes in all queues

- Each process's name, priority, class, and state are printed
- The queues will be printed in the following order: Ready, Blocked, Suspended Ready, Suspended Blocked

```
>> show all
Ready:
|      QUEUE IS EMPTY      |

Blocked:
|      Name:      Test      |
|      Class:      1        |
|      State:     blocked   |
|      Suspended: No        |
|      Priority:   1         |

Suspended Ready:
|      QUEUE IS EMPTY      |

Suspended Blocked:
|      QUEUE IS EMPTY      |
```