OS-Godz User manual

Help

When passing the **help** command without any arguments the system will return a list of arguments that the user can use in order to gain an understanding of possible commands.

```
> help
The list of commands you can receive help on include:
1. help
2. shutdown
3. time
4. date
5. version
6. pcb
```

The help function can take one of these additional argument which will provide the user with a more detailed explanation of the specified command.

```
  > help version
  To use version, simply type version and the current version and compilation will display.
o Example: version
```

Version

Entering the **version** command to the system will return the current version the system is operating under along with the timestamp the command was executed at.

```
> version
R4: 03/20/23
```

Time

Entering the **time** command with no parameters will get the current time saved in the system and display it onto the console.

Adding an additional parameter after the time command will set the time as long if the input matches the format (HH:MM:SS) where H is the hour, M is the minute, and S is the seconds. Entering the time command with no parameters again will return the current time based off of the time previously set.

An important feature to remember is that the system's clock runs on 24-hour time and is generated in the UTC time zone.

Date

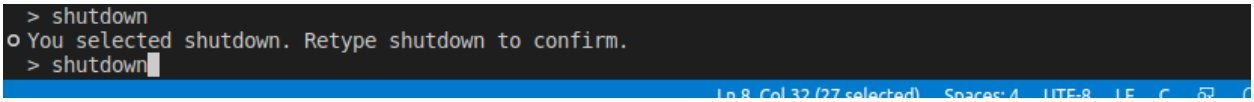
The **date** command without any parameters will get the current date saved within the system and display it on the console.

By adding a parameter to the date command, the user can set the date as long as it follows the (MM/DD/YY) format where M is the month, D is the day, and Y is the year. If the format is entered incorrectly or the date is not within an appropriate range, the system will display a message explaining

where the error occurred and how it can be corrected.

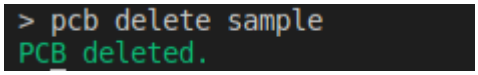
Shutdown

The command used to exit the handler loop is called **shutdown** which will ask the user to confirm their command before executing. In order to confirm this action, retype the shutdown command.



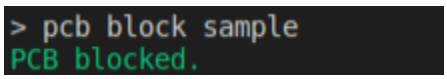
Process Control Block (PCB)

After creating a pcb it may become necessary to delete a process. This can be done using the command **pcb delete** followed by the name assigned to the process that is meant to be removed.

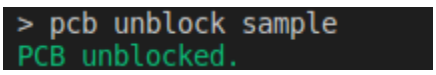


An important feature to remember is that a system process cannot be removed by the user and the command will fail if attempted.

The **pcb block** take the name of the process the user wishes to block as its sole parameter.



In order to remove this block the user can enter the **pcb unblock** command which takes the name of the block process as it's parameter and unblocks it.



There may come a time where the user wishes to suspend a process, in which case they can use the command **pcb suspend** follow by the name of the target process. An important feature to remember is that a system process cannot be suspended by the user.

```
> pcb suspend sample
PCB suspended.
```

Once the user is ready for a process to resume running once again, they can use the **pcb resume** command followed by the name of the target process in order to remove its suspension.

```
> pcb resume sample
PCB resumed.
```

The next pcb command will be useful if the user ever desires to make an alteration to the priority of one of the processes created. This is done using the **pcb set priority** command followed by the name of the target process and new priority they wish to set it as. Keep in mind the priority must be within the range of 0 to 9, otherwise the priority cannot be set.

```
> pcb set priority sample 1
PCB priority set.
```

These last few pcb commands are designed to show the user the current status of the processes on the system. First with the **pcb show 'name'** command which takes the name of the process the user wants to observe and displays its current information including its class, priority, and current state.

```
> pcb show sample
Name: sample, Class: User, Priority: 3, State: Ready, Suspended: Yes
```

In the event the user wants to see all of the active processes created they can alter the previous command to be **pcb show all**. This command will show all of the processes that currently exist and include their information. A useful facet of this command is that it separates the processes from those which are ready and those which are blocked.

```
> pcb show all
Ready Processes:
Name: sample2, Class: System, Priority: 0, State: Ready, Suspended: No
Name: sample, Class: User, Priority: 3, State: Ready, Suspended: Yes

No blocked processes.
```

If the user wants to filter the processes by their current state there are two commands available that will do so. The **pcb show ready** command will show all of the processes created that are in the ready state.

```
> pcb show ready
Ready Processes:
Name: sample, Class: User, Priority: 1, State: Ready, Suspended: No
```

In contrast the **pcb show blocked** command will show the user all of the processes that are currently in the blocked state.

```
> pcb show blocked
Blocked Processes:
Name: sample2, Class: System, Priority: 0, State: Blocked, Suspended: No
```

Yield

By entering the **yield** command, the user can cause the command handler to yield to the CPU and execute any process within the queue.

Load R3

The **loadr3** command will load in the r3 test processes from processes.h and display them to the user. This is meant to display how processes are created, loaded, and dispatched concurrently.

```
> loadr3
proc1 dispatched
proc2 dispatched
proc3 dispatched
proc4 dispatched
proc5 dispatched
```

Alarm

Implemented in version R4, the **alarm** command allows for a message to be entered into the system and then displayed at a time specified by the user. To do so, enter the command alarm followed by the time at which the alarm should go off and the message to be displayed.

```
IDLE PROCESS EXECUTING.
> alarm 12:15:17 Hello!
```

Memory

Implemented in R5, there are two commanded that handle the allocation and freeing of memory within the heap. In order to allocate memory, the user must enter the command **allocate** followed by the size of the memory block desired. This size must be an integer value as any other input will not be accepted as a valid size. Once allocate the location of this block of memory is returned to the user.

```
> allocate 125
Memory allocated at address:
0x0d0008c1
```

After allocating memory, the user can free this memory by entering **free** followed by the location of the memory block. The location must be entered as the hexadecimal value provided by the allocate command.

```
> free 0x0d0008c1
Memory freed at:
0x0d0008c1
```

In order to display a list of the memory allocated thus far, the user can enter the **show allocated** command in the terminal. This command will show all of the memory locations stored along with their size.

```
> show allocated
Allocated memory at: 0x0d0008c1 with size 400
Allocated memory at: 0x0d0008a8 with size 9
Allocated memory at: 0x0d000498 with size 1024
Allocated memory at: 0x0d00045c with size 44
Allocated memory at: 0x0d00004c with size 1024
Allocated memory at: 0x0d000010 with size 44
```

Once a location has freed their memory, the user can use the **show free** command in order to receive a list of the memory locations that have been freed along with the remaining size of the block.

```
> show free
Free memory at 0x0d0008c1 with size 47775
```