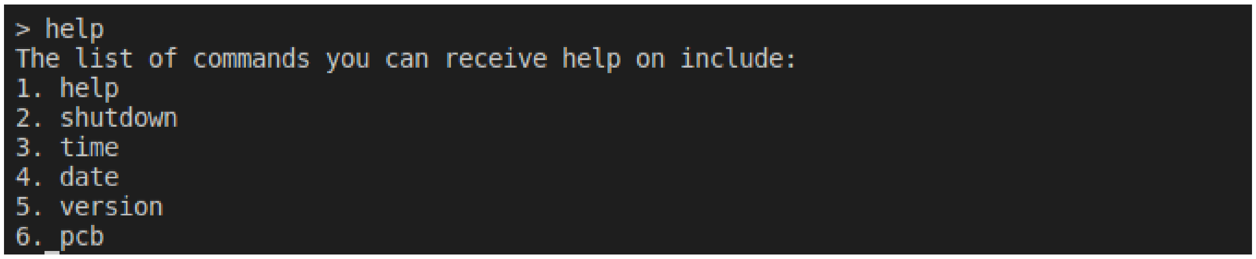
OS-Godz User manual

```
OS_Godz
```

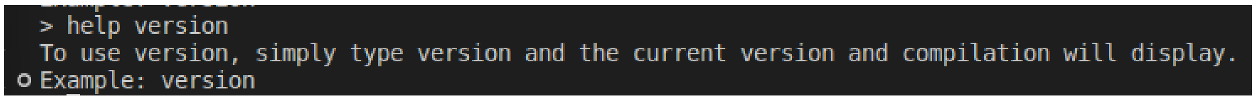
Help

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
```

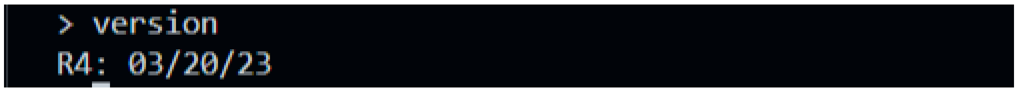
The help function can take one of these additional argument which will provide the user with a more detailed explanation of the specified command.



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

Version

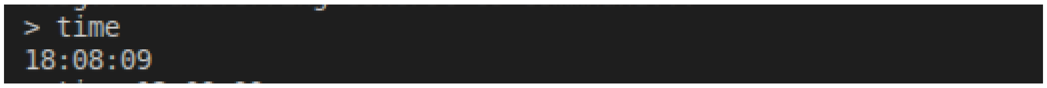
Entering the **version** command to the system will return the current version the system is operating under along with the timestamp the command was executed at.



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

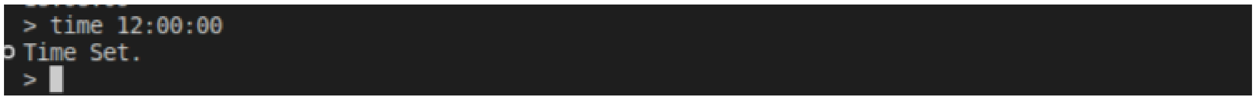
Time

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



```
> time
18:08:09
```

 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.

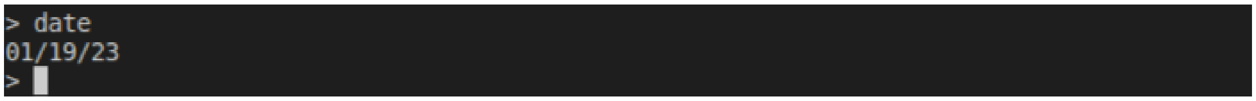


```
 > time 12:00:00
 Time Set.
 >
```

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

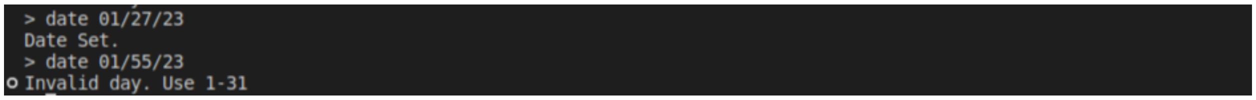
Date

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



```
> date
01/19/23
>
```

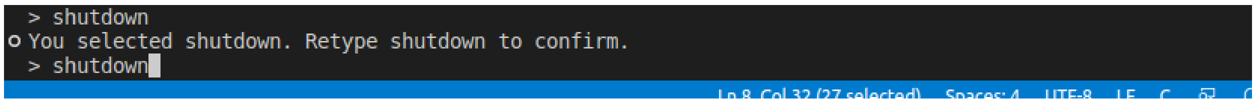
By adding a parameter to the date command, the user can set the date as long as it follows the (MM/DD/YY) format where M is the month, D is the day, and Y is the year. If the format is entered incorrectly or the date is not within an appropriate range, the system will display a message explaining where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



```
 > date 01/27/23
 Date Set.
 > date 01/55/23
o Invalid day. Use 1-31
```

Shutdown

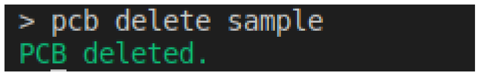
The command used to exit the handler loop is called **shutdown** which will ask the user to confirm their command before executing. In order to confirm this action, retype the shutdown command.



```
 > shutdown
o You selected shutdown. Retype shutdown to confirm.
 > shutdown
```

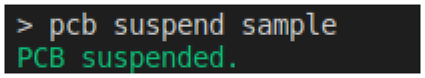
Process Control Block (PCB)

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.



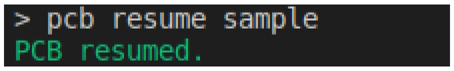
```
> pcb delete sample
PCB deleted.
```

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.

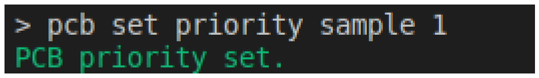


```
> pcb suspend sample
PCB suspended.
```

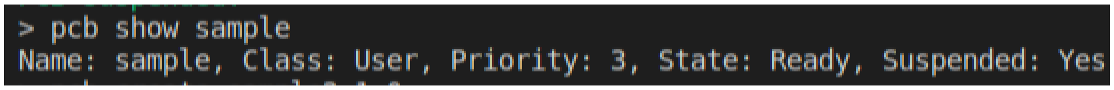
Once the user is ready for a process to resume running once again, they can use the **pcb resume** command followed by the name of the target process in order to remove its suspension.


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

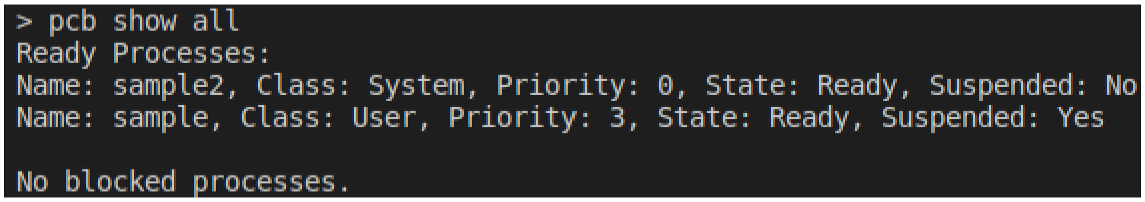
The next pcb command will be useful if the user ever desires to make an alteration to the priority of one of the processes created. This is done using the **pcb set priority** command followed by the name of the target process and new priority they wish to set it as. Keep in mind the priority must be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


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

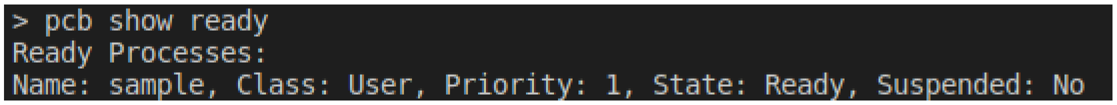
These last few pcb commands are designed to show the user the current status of the processes on the system. First with the **pcb show 'name'** command which takes the name of the process the user wants to observe and displays its current information including its class, priority, and current state.


```
> 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.

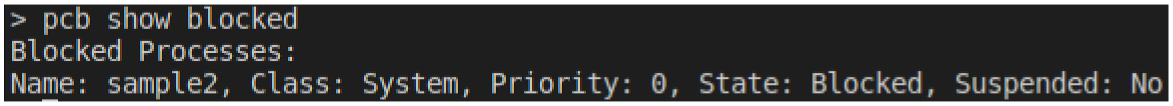

```
> pcb show all
Ready Processes:
Name: sample2, Class: System, Priority: 0, State: Ready, Suspended: No
Name: sample, Class: User, Priority: 3, State: Ready, Suspended: Yes

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
```

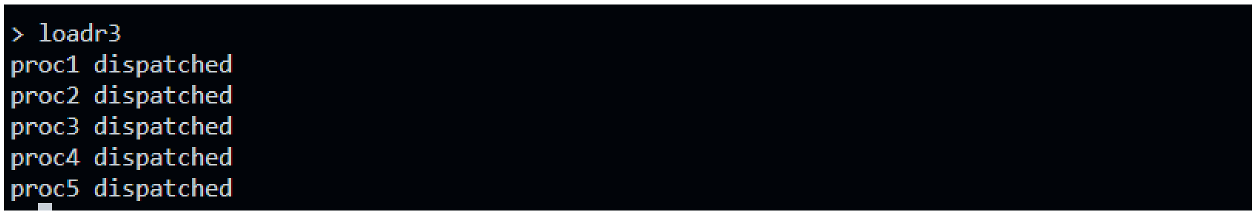
In contrast the **pcb show blocked** command will show the user all of the processes that are currently in the blocked state.



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

Load R3

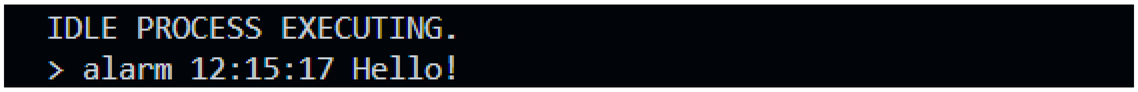
The **loadr3** command will load in the r3 test processes from processes.h and display them to the user. This is meant to display how processes are created, loaded, and dispatched concurrently.



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

Alarm

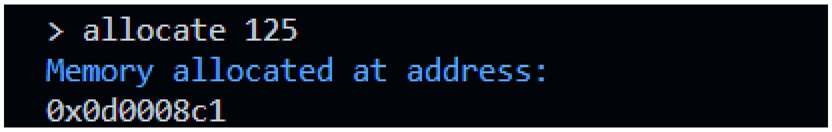
Implemented in version R4, the **alarm** command allows for a message to be entered into the system and then displayed at a time specified by the user. To do so, enter the command alarm followed by the time at which the alarm should go off and the message to be displayed.



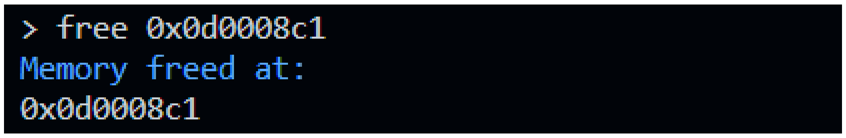
```
IDLE PROCESS EXECUTING.
> alarm 12:15:17 Hello!
```

Memory

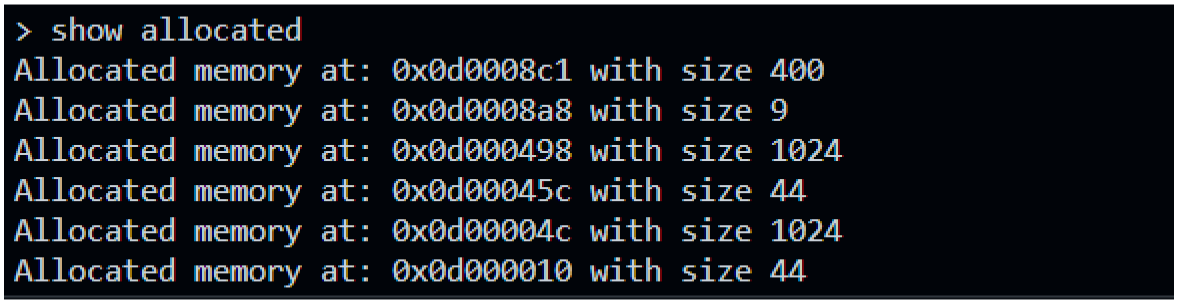
Implemented in R5, there are two commanded that handle the allocation and freeing of memory within the heap. In order to allocate memory, the user must enter the command **allocate** followed by the size of the memory block desired. This size must be an integer value as any other input will not be accepted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

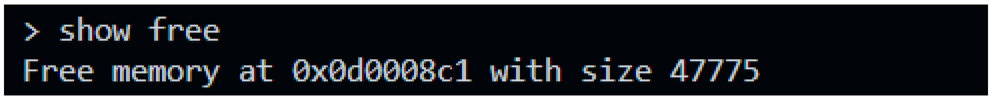
After allocating memory, the user can free this memory by entering **free** followed by the location of the memory block. The location must be entered as the hexadecimal value provided by the allocate command.


```
> 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 sizes.


```
> 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
```