BIG DADDY'S For the Raspberry Pi

echo "Hello World" ☺

TB7 Semi-Essential Raspian Toolbox

7 "Emergency" Pieces of Knowledge Before You Begin

Besides the fact that much you will find on the web in not current.

1 Raspian is case sensitive.
2 Stuck? try **(ctl-c)**. **q** exits most listing.
3 **sudo** gives you higher permissions that allow you to run many other command that an ordinary user level does not.
4 From PIXEL, the 7 command-line environments can be entered with **<Ctl><Alt><F#>** where <F#> is a function key <F1> to <F7>. Use **<Alt><F7>** to return to PIXEL.
5 Raspian hates spaces and capitals - enclose strings with spaces in quotes. Use underscores instead and lower case.
6 **<ctl>l** (lower case L) or **<clear>** clears the screen, and puts the prompt at the top; up/down arrows scroll through previous commands.
7 To get help: **help; help<command>; info; info<command>; "man -k man | less"; <command><spc><--help>[| more]**

Working with Files and Directories

cat<spc><file> lists contents of a file, for long files try **cat | less**
chmod<options><filename> changes the permissions of a file. On a file and directory list from a command, like **ls,** the first 10 characters are the "permissions string". Character 0 defines the

chmod permission string values

character position	directory or file	owner "u"			group"g"			other "o"		
	0	1	2	3	4	5	6	7	8	9
Options										
a file	-									
a directory	r	read	write	execute	read	write	execute	read	write	execute
permission denied		-	-	-	-	-	-	-	-	-
permision granted		r	w	x	r	w	x	r	w	x

entry as a directory (**r**) or a file (**-**). The next 9, in groups of 3, establish **read, write,** and **execute** permission for the owner (**u**) , the group (**g**), and others (**o**) respectively. One way to set them is to define the desired values in string equations for each set separately. **Ex: chmod u=rwx,g=rw-,o=r-- myfile** gives the owner all privileges, the group read or write, and other gets read only with respect to the file "myfile"
cp<spc><file><spc><path or path and file name> copy a file and put it in the directory as specified
curl download or upload a file to or from a server
diff<spc><file1><file2> compares file1 to file2
dir displays a list of directories only, add -a to get everything
sudo **find<spc><options><spc><path-name** */ for root***><spc><file name** *can use wildcards***>** *note: <options> are for advanced users*
grep<spc><"string"><spc><filename> looks for a string pattern
mkdir<spc><new directory name> create a new directory in pwd
mkdir<spc><-P><spc><path/dir name> make a new directory on the path specified
mv<spc><file><spc><newfilename> renames a file
mv<spc><file><spc><path or path and file name> moves a file to the directory specified

3 Commands You Need Immediately

1 **pwd** will display your **p**resent **w**orking **d**irectory – this is the directory you are "in" at any given moment. (If you have not changed your default user from pi, you start out in /home/pi.)
2 **cd<spc><some path modification string>** changes your working directory
3 **ls** lists files and directories in your current directory location. **ls**, like almost all commands, can be modified with "flags" like -l or -a and these flags can be combined.

6 Shortcuts You Really Need to Know

"." an alias for the current directory
".." an alias for the parent directory
"~" is an alias for the absolute path shortcut to the user's home directory. Type "cd ~" to return to your home directory
"/" alias for the root directory
"*" a wildcard character for one or more possible but unknown character(s), "?" is a wildcard for a single character
"|" constructs a "pipe" that joins commands output to input – frequently used with the commands less, more, and cat

The Most Important RPi Command Line Tools?

Special Note: apt is an updated utility that replaced apt-get. Much web documentation still says "apt-get" but should be revised to say "apt".
According to the Raspberry Pi folks, the two most used command line functions are part of the **apt** utility: (1) **apt update** - more likely you will call it with **sudo apt update** (**please see below) and… (2) **apt install <a program or utility>** you may have to use **sudo**. Here is the problem; if you run **apt update**, and think you have updated anything, you have made a bad assumption. **apt update** only gives you a list of the packages that could be updated.
You then need to call **apt upgrade** (if nothing has to be removed) or maybe **apt full-upgrade** (if packages need removal first) – and again you may need to start everything with **sudo** unless you have root privileges to start with. Other important apt commands include: **install, remove, purge, autoremove, search, and show_information.**

rename<spc><current file name><spc><new file name> renames
rm<spc><file> removes a file **Note: Danger Will Robinson - there is no way to recover a deleted file*
rm<spc><file list> removes a list of files
rm<spc><-r><spc><directory name> removes a directory. *Note: it is gone forever.*
rm<spc><-R><directory name> removes everything
rmdir<spc><directory name> removes an empty directory
touch<spc><newfile name> create a new empty file in pwd or change its time stamp
tree show a tree structure of directories and files
vdir verbosely list directories – editor's fav
wget<spc><url of file location> used to download a file to the Pi from the web
whereis finds a command file in standard program location
wc<enter> list the number of lines, words, and characters in a file

BIG DADDY'S For the Raspberry Pi

www.wikipyton.com

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Getting Information About Your System

PEOPLE

groups displays a list
id current user id (uid) group
logname user's name
users everybody logged in
who shows every user logged in by command environment
whoami your log in name

NETWORK ENVIRONMENT

ifconfig network status info
hostname<spc><-I> (the -I is a capital eye) the host ip will be first 4 dot-separated number series. It is also the "inet" number displayed as part of the **ifconfig** command display
ping checks communication with another host
ssh the secure shell that makes your Pi into a command-line client - not enabled by default - can be activated in "interfacing options" using the **raspi-config** utility. For a non-permanent solution use: "**sudo systemctl enable ssh**" and then "**sudo systemctl start ssh**".
tty displays the screen or terminal that is active

HARDWARE

arch you processor name/id
du<spc><filename> shows disk space usage of files and directories, use "du | less"
pinout – this is a fun one for Pi hardware users – a graphic and info list of your Pi.
uname<spc><-a> extensive critical info about your system
lscpu will present summary info on the cpu

SYSTEM AND SOFTWARE

<ps><>space><aux><spc><|><spc><less> view all running processes
df mounted partition usage
ps<spc><-u><spc><your user name> info on your processes, including id needed to **kill** one
stat<spc><filename> get the status information on a file
stty print or change current terminal baud setting
top will list running processes showing real time activity

Find packages installed: (see Debian: https://wiki.debian.org/ListInstalledPackages)

dpkg-query<spc><-l> a very nice table with version and description; "-l" is lower case L.
dpkg-query<spc><-f><spc><'${binary:Package}\n'><spc><-W> one per line
dpkg-query<spc><-l><spc><'search pattern'> add search pattern to list command

NOTE: The Debian site is a good resource. A place to begin is : https://wiki.debian.org/WordIndex. Find a come-back-to-reality look at the Raspberry Pi and some problematic issues is at: https://wiki.debian.org/RaspberryPi

MULTIPLE INFORMATION TYPES

Accessing the **<proc>** information has more than a hundred status and environment attributes to be displayed. Try these four, displayed by adding them as options to the **<cat>** command:
/proc/version RPi version
/proc/cpuinfo processor detail
/proc/meminfo memory use data
/proc/partitions how your sd card is divvied up

Hardware Settings: config.txt

see the Raspberry Pi Foundation's overview at: **https://www.raspberrypi. org/ documentation/ configuration/config-txt/**
option sections include: Memory, Audio, Camera, License Keys/Codecs, Boot, Video/Display, GPIOs Ports and Device Tree, Overclocking, Conditional Filters, Miscellaneous
3 basic info commands using **vcgencmd<spc><get_config>:** <int> (2) <str> (3) *config name*>
*EX: **vcgencmd get_config int***
file location: **/boot/config.txt**

Additional apt Options besides update, upgrade, full-upgrade

apt<spc><install><spc><a program or utility> install new package
apt<spc><remove> package removed - leaves configuration file
apt<spc><purge> removes all remnants that it can find
apt<spc><auto-remove> used to remove auto installed packages

Changing Your Command Line Environment

alias<'command equation'> -create your own command: For example: **alias 'lx=ls -lah'**
<ctl-d> logs a user out, presents log in que
exit or **logout** terminates a session; sometimes **<ctl-D>** will work
kill<PID, i.e., a process id> stop a process
passwd lets you change your password
poweroff – will do just that
reboot will also do just that if you have only one user active
shutdown<spc><-h><spc><now> - the safest way to shutdown
shutdown<spc><-r> gives you 1 minute, then restarts computer
shutdown<spc><-c> cancel a shutdown command
su<spc><alternate user> – change users – must have account
systemctl<spc><reboot><spc><-i> will restart the Pi

Helpful Things to Know

* **pip3<spc><command><[options]>** is the command to install python packages. Commands include: help, install (some options are PyPI, VCS, and Local project directories), uninstall, list, show, search). Options are -h or –help, -v or –verbose, -V or --version
* How to kill your PIXEL session: open terminal and type: **pkill<spc><lxsession>**
* How to start a PIXEL session in the tty you have active: **startx**
* You can open multiple terminals in multiple environments organized by tabs in PIXEL.
* Put yourself in root mode: **sudo -i** *Tip: don't stay long.
* How to give a user sudoer privileges: log in as a root user; type **sudo<spc><usermod><spc><-aG><spc><sudo><user name>**

**** escapes itself and other special characters
[ ] brackets pattern for matching a single character
***** matches any 0 to many characters
? matches any single character
; separates commands on a single line; terminates a pipe
" " contents in quotes treated as one argument
changes line to a comment
& runs a command in the background – the shell is then available in the foreground
< if followed by <spc><filename> it means "take input from this file"
> if followed by <spc><filename> it means "send output to this file"; overwrites file.

Many new Pi owners have complained that the Raspberry Pi site makes it hard to find documentation. The best access is at: **https://www.raspberrypi.org/documentation/**

Text Editors and Other Utilities: recommend text editor is **nano**. Others include: ed, vi, **vim**, and emacs. See wikipython.com. **gzip** (compress), **gunzip** (uncompress), dc (reverse polish calculator), elm (email), talk (chat), **ssh** (secure shell to make pi a client) SEND ERRORS/SUGGGESTIONS TO oakey.john@yahoo.com