BIG DADDY'S For the Raspberry Pi

echo "Hello World" ☺

TB7 A Basic Raspian Toolbox

8 "Urgent" Things to Know Before You Begin

- ◊ **Much** you will find on the web is not current.
- ◊ Raspian (like all Linux) is case sensitive. Try avoiding spaces and capitals - enclose strings with spaces in quotes or use underscores.
- ◊ Stuck? try **(ctl-c)**. **q** exits many listings.
- ◊ The prefix command **sudo** gives you elevated or "root" permissions. It is frequently essential if you want something to work.
- ◊ From RPi's **PIXEL desktop** 7 command-line environments can be entered with **<Ctl><Alt><F#>** where <F#> is a **function key** from <F1> to <F7>. Use **<Alt><F7>** to return to PIXEL.
- ◊ 2 Sanity savers: #1 **<ctl>l** (lower case L) or **<clear>** clears the screen,
- ◊ and puts the prompt at the top; #2 up/down arrows (↓ and ↑) scroll through previous commands.
- ◊ To get help: **help; help<command>; info; info<command>; "man -k man | less"; <command><spc><--help>[| more]**

Commands You Need Immediately

- ♦ **pwd** displays 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.)
- ♦ **cd<spc><some path modification string>** changes your working directory. **cd /** moves you to root, **cd /mnt** moves to root/mnt
- ♦ **ls** lists 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. Try "ls -lah", "**la** -l" for format
- ♦ **sudo** gives root priveledges; **su<spc><user>** switches user

7 Shortcuts You Need to Know Now

"**.**" 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 replaces **apt-get**. The **aptitude** command suite combines the best of **apt-get** and **apt-cache**.*

According to the Raspberry Pi folks, the two most used command line functions are part of the **apt** utility:

(1) **apt update** - more likely called as **sudo apt update,** but ... **apt update** only gives you a list of packages that could be updated. You need to then call **apt upgrade** (if nothing has to be removed) or maybe **apt full-upgrade** (if packages need removal) – prefix commands with **sudo** unless you have established root privileges (**sudo -i** locks root on).

(2) **apt install <a program or utility>** (again you may require **sudo**)

*Note: Other important apt commands include: **install, remove, purge, autoremove, search, show_information**

#! - "**shebang**" or "**hashbang**" - is an initial character syntax that causes bash to initialize a specific interpreter and run the executed script.

www.wikipython.com

Working with Files and Directories

chmod<spc><options><spc><filename> changes file permissions. In a file and directory listing generated by a command, like **ls -l,** the first 10 characters are the "permissions string". Character 0 defines the 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 (**u**ser) all privileges, the **g**roup read or write, and **o**ther gets read only - with respect to the file "myfile".

	dir or file	chmod permission string values								
		owner "u"			group"g"			other "o"		
character position ☛	0	1	2	3	4	5	6	7	8	9
"-" is a file	-									
Options		read	write	execute	read	write	execute	read	write	execute
"r" is a directory	r									
permision granted (r,w,x)		r	w	x	r	w	x	r	w	x
or permission denied (-)		-	-	-	-	-	-	-	-	-

cat<spc><file> lists contents of a file, for long files try **cat | less**
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><spc><file2> compares file1 to file2
dir displays a list of directories only, add -a to get everything
find<spc><options><spc><path-name */ for root*><spc><file name *can use wildcards*> *note: <options> are advanced.* Also see **locate**.
grep<spc><"string"><spc><filename> looks for a string pattern
head<spc><-##> or **tail<spc><-##>** print first or last ## file lines
locate<spc><*option*><spc><*target*> *not default installed,* must "sudo apt install locate" & maybe"sudo updatedb" - many options.
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** or moves a file
mv<spc><file><spc><path or path and file name> moves a file to the directory specified (☞ ***mv** works; **rename** usually does not*)
rename<spc><current file name><spc><new file name> renames
rm<spc><file> removes a file * *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
shred<spc><file> ultra secure file destruction (paranoid a little?)
tree show a tree structure of directories and files
vdir verbosely list directories *– editor's fav*
wget<spc><url of file location> download a file to 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

R2e p2

www.wikipython.com

For the Raspberry Pi

TB7 A Basic Raspian Toolbox p2

Get Information About

PEOPLE

groups displays a list
id current uid's group
logname user's name
users everybody logged in
who shows users by tty
whoami shows user logged in

NETWORK ENVIRONMENT

ifconfig network status info
hostname<spc><-I> *(capital eye)* the host ip will be first 4, dot separated, number series. It is also the "inet" in ifconfig listing
ping checks communication with another host
ssh the secure shell that makes your RPi 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 active terminal #

HARDWARE

arch you processor name/id
du<spc><"filename"> shows disk space usage of files and directories; ***use "du | less"***
pinout – fun for RPi users – textual graphic diagram of your Pi
lscpu will present summary info on the cpu
uname<spc><-a> extensive critical info about your system
vcgencmd - vast hardware info about RPi, NOT in help or info so Google it *Ex:* ***vcgencmd<spc><get_config><int>***

SYSTEM AND SOFTWARE

df mounted partition usage
ps<>spc><aux><spc><|><spc><less> view all running processes
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. A critical look at the Raspberry Pi : 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, i.e., **cat<spc></proc/version>** ↳ RPi version
/proc/cpuinfo processor detail
/proc/meminfo memory use
/proc/partitions how your sd card is divvied up.

DEVICE SETTINGS - Pixel menu, sudo raspi-config, or a few at config.txt **(*see* /boot/config.txt)**

- Raspberry Pi Foundation has an overview at: **https://www.raspberrypi. org/ documen tation/ configuration/config-txt/**

option sections include: *Memory, Audio, Camera, License Keys/Codecs, Boot, Video/Display, GPIOs Ports and Device Tree, Overclocking, Conditional Filters, Miscellaneous*

Configuring bash

(your command line environment) a lot can be changed in the file ***.bashrc*** (in home directory - back it up first!) but a really good (and fun) place to begin is to open (or create, then open) ***.bash_aliases*** and create your own commands. Try adding alias command ***alias up="cd .."***

more explaination at:

https://www.wikipython.com

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. **Command**s 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

° Kill your PIXEL session: in terminal type: **pkill<spc><lxsession>**

° To start a PIXEL session in your active tty type: **startx**
… and note you can open terminals in multiple environments organized by tabs in PIXEL.

° Put yourself in root mode: **sudo -i** *Tip: considered risky

° How to give a user temp sudoer privileges: log in as a root user; type **sudo<spc><usermod><spc><-aG><spc><sudo><user name>** ...or add a sudo user permanently with the **adduser** command

° **Single Character Shortcuts or Search Commands**

**** escapes itself and other special characters
[ ] brackets pattern for matching a single character
***** matches 0 to many characters **?** matches one character
; separates commands on a single line; terminates a pipe
" " contents in quotes will be 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> means 'take input from this file'
> if followed by <spc><filename> means 'send output to this file';
cavaet: it overwrites the file.

Raspberry Pi documentation **https://www.raspberrypi.org/documentation/**

° Helpful file locations:
/etc/fstab ~/.bashrc /boot/config.txt

Text Editors and Other Utilities: From Pixel use Leaf Pad. From bash (command line) recommended text editor is **nano**. Others include: ed, vi, **vim**, and emacs. **gzip** (compress), **gunzip** (uncompress), dc (reverse polish calculator), elm (email), talk (chat), **ssh** (secure shell to make pi a client)

SEND ERRORS/SUGGESTIONS TO oakey.john@yahoo.com