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- [1] L. F. A. Arnold, “Transit light-curve signatures of artificial objects,” *The Astrophysical Journal*, vol. 627, no. 1, p. 534–539, Jul. 2005. [Online]. Available: <http://dx.doi.org/10.1086/430437>

## Intro2Astro - Week 1 Assignments

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(Dated: July 14, 2025)

### I. ASSIGNMENT 1

#### A. Bash Script

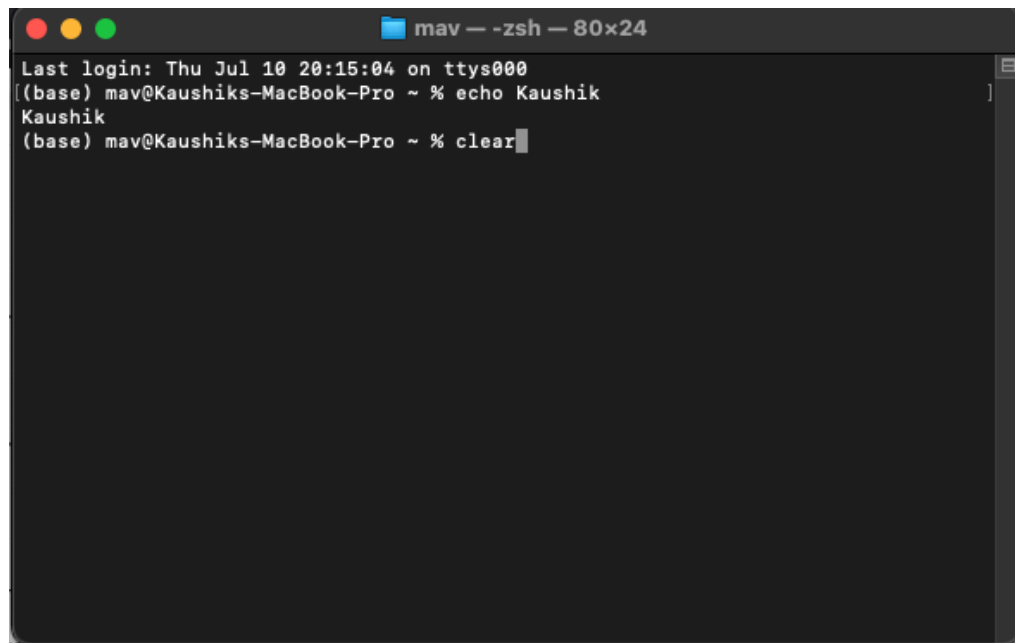
```
#!/bin/bash
mkdir foo_dir
pwd
cd foo_dir
touch week1.txt
echo "Hello, world" > week1.txt
head -n 10 week1.txt
cp week1.txt week1b.txt
mkdir foo_sub_dir
mv week1b.txt foo_sub_dir
```

#### B. Unix Workbench and Data Carpentry

##### 1. Unix Workbench

`clear` - 'clears' the terminal.

`echo` - prints text to your terminal and other places as well using the `>` option.



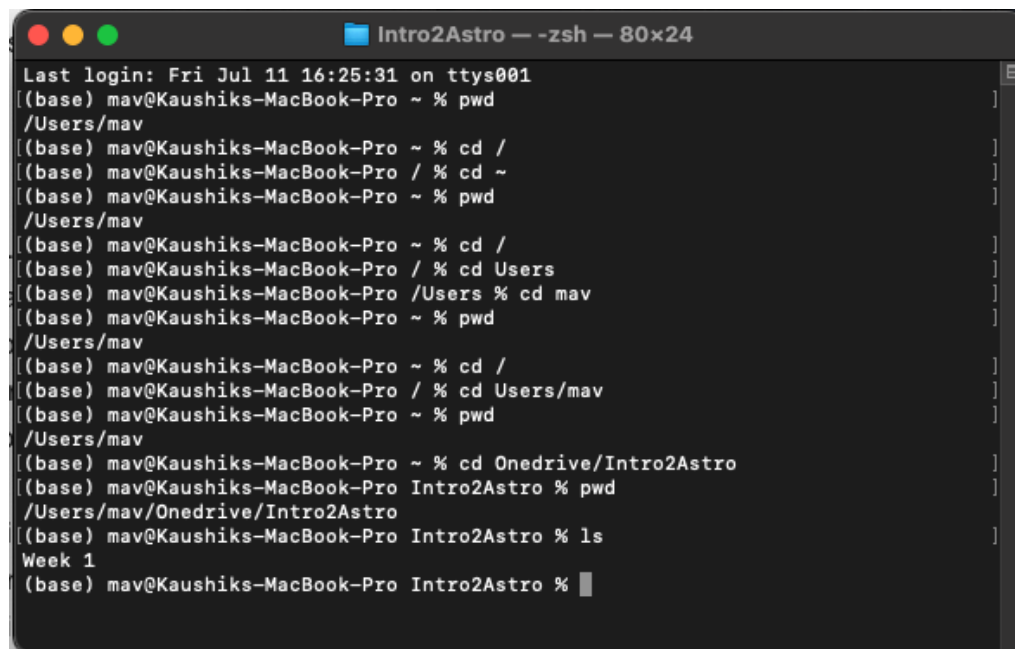
```

Last login: Thu Jul 10 20:15:04 on ttys000
(base) mav@Kaushiks-MacBook-Pro ~ % echo Kaushik
Kaushik
(base) mav@Kaushiks-MacBook-Pro ~ % clear

```

FIG. 1. Solution to exercise 3.1

- `cd` - changes the working directory which you can find using
- `pwd` - prints the working directory
- `ls` - lists all the files and folders in the working directory



```

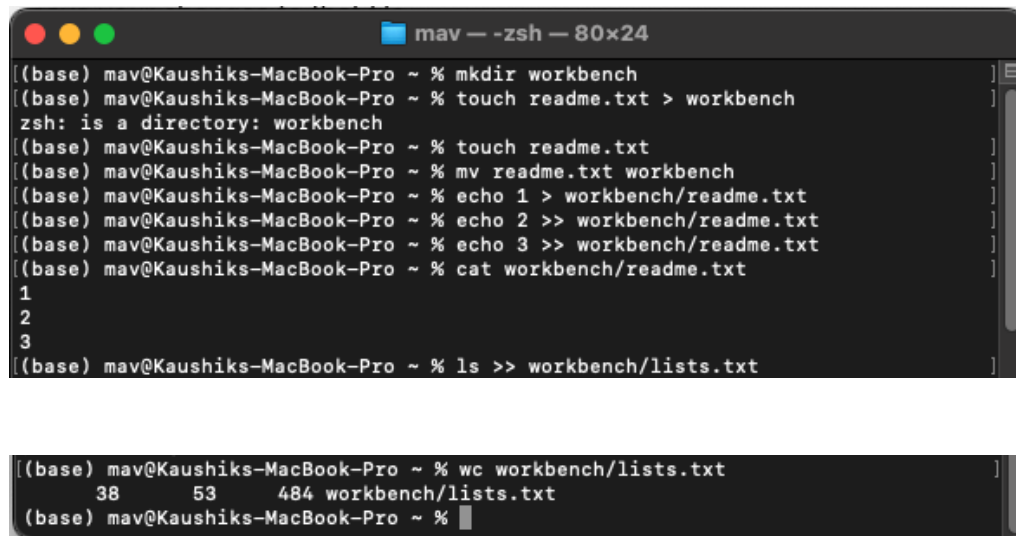
Last login: Fri Jul 11 16:25:31 on ttys001
(base) mav@Kaushiks-MacBook-Pro ~ % pwd
/Users/mav
(base) mav@Kaushiks-MacBook-Pro ~ % cd /
(base) mav@Kaushiks-MacBook-Pro / % cd ~
(base) mav@Kaushiks-MacBook-Pro ~ % pwd
/Users/mav
(base) mav@Kaushiks-MacBook-Pro ~ % cd /
(base) mav@Kaushiks-MacBook-Pro / % cd Users
(base) mav@Kaushiks-MacBook-Pro /Users % cd mav
(base) mav@Kaushiks-MacBook-Pro ~ % pwd
/Users/mav
(base) mav@Kaushiks-MacBook-Pro ~ % cd /
(base) mav@Kaushiks-MacBook-Pro / % cd Users/mav
(base) mav@Kaushiks-MacBook-Pro ~ % pwd
/Users/mav
(base) mav@Kaushiks-MacBook-Pro ~ % cd Onedrive/Intro2Astro
(base) mav@Kaushiks-MacBook-Pro Intro2Astro % pwd
/Users/mav/Onedrive/Intro2Astro
(base) mav@Kaushiks-MacBook-Pro Intro2Astro % ls
Week 1
(base) mav@Kaushiks-MacBook-Pro Intro2Astro %

```

FIG. 2. Solution to exercise 3.2

- `mkdir` - makes a new directory inside the working directory
- `touch` - makes a new empty file
- `>` - redirects the output of a command into a file
- `>>` - appends the output of a command into a specified file
- `cat` - concatenates two files together, can also be used to display the contents of a single file
- `wc` - print the number of lines, number of words and number of characters in a file, and the filename

- `head` - prints the first n lines of a specified text file
- `tail` - prints the last n lines of a specified text file
- `less` - allows you to navigate a long text file in the terminal

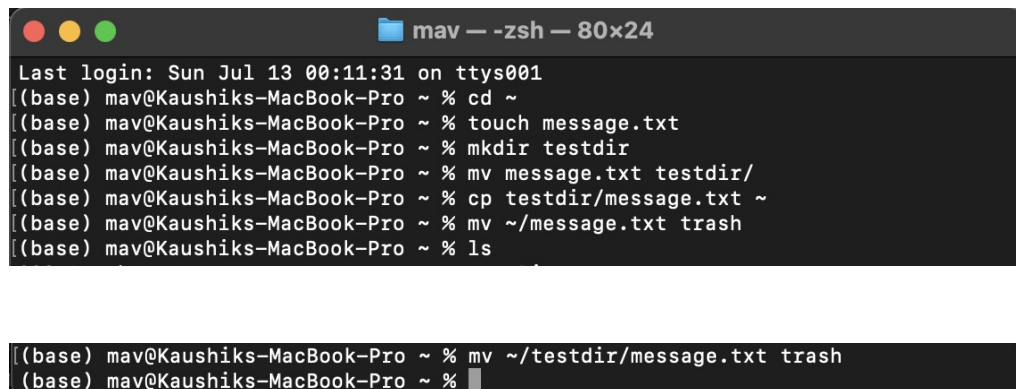


```
mav — -zsh — 80x24
(base) mav@Kaushiks-MacBook-Pro ~ % mkdir workbench
(base) mav@Kaushiks-MacBook-Pro ~ % touch readme.txt > workbench
zsh: is a directory: workbench
(base) mav@Kaushiks-MacBook-Pro ~ % touch readme.txt
(base) mav@Kaushiks-MacBook-Pro ~ % mv readme.txt workbench
(base) mav@Kaushiks-MacBook-Pro ~ % echo 1 > workbench/readme.txt
(base) mav@Kaushiks-MacBook-Pro ~ % echo 2 >> workbench/readme.txt
(base) mav@Kaushiks-MacBook-Pro ~ % echo 3 >> workbench/readme.txt
(base) mav@Kaushiks-MacBook-Pro ~ % cat workbench/readme.txt
1
2
3
(base) mav@Kaushiks-MacBook-Pro ~ % ls >> workbench/lists.txt

(base) mav@Kaushiks-MacBook-Pro ~ % wc workbench/lists.txt
 38   53  484 workbench/lists.txt
(base) mav@Kaushiks-MacBook-Pro ~ %
```

FIG. 3. Solution to exercise 3.3

- `mv` - is used to move or rename files and folders
- `cp` - is used to copy files or folder

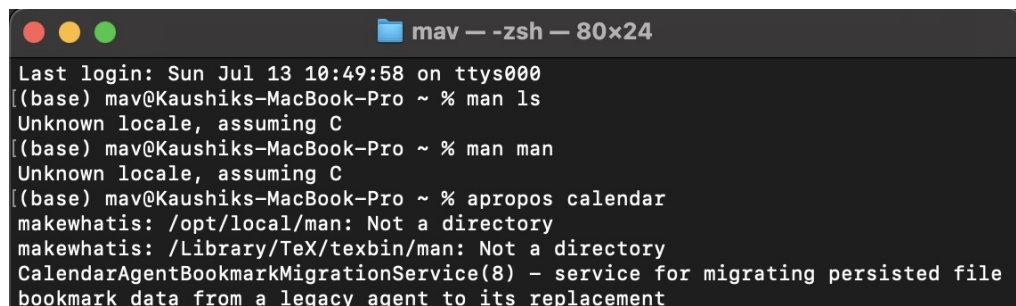


```
mav — -zsh — 80x24
Last login: Sun Jul 13 00:11:31 on ttys001
(base) mav@Kaushiks-MacBook-Pro ~ % cd ~
(base) mav@Kaushiks-MacBook-Pro ~ % touch message.txt
(base) mav@Kaushiks-MacBook-Pro ~ % mkdir testdir
(base) mav@Kaushiks-MacBook-Pro ~ % mv message.txt testdir/
(base) mav@Kaushiks-MacBook-Pro ~ % cp testdir/message.txt ~
(base) mav@Kaushiks-MacBook-Pro ~ % mv ~/message.txt trash
(base) mav@Kaushiks-MacBook-Pro ~ % ls

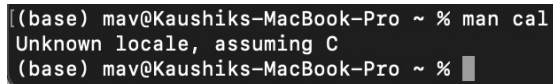
(base) mav@Kaushiks-MacBook-Pro ~ % mv ~/testdir/message.txt trash
(base) mav@Kaushiks-MacBook-Pro ~ %
```

FIG. 4. Solution to exercise 3.4

- `man` - prints the documentation for a command, that you can escape with `q`
- `apropos` - prints a list of commands that are associated with the inputted word



```
mav — -zsh — 80x24
Last login: Sun Jul 13 10:49:58 on ttys000
(base) mav@Kaushiks-MacBook-Pro ~ % man ls
Unknown locale, assuming C
(base) mav@Kaushiks-MacBook-Pro ~ % man man
Unknown locale, assuming C
(base) mav@Kaushiks-MacBook-Pro ~ % apropos calendar
makewhatis: /opt/local/man: Not a directory
makewhatis: /Library/TeX/texbin/man: Not a directory
CalendarAgentBookmarkMigrationService(8) - service for migrating persisted file
bookmark data from a legacy agent to its replacement
```



```

(base) mav@Kaushiks-MacBook-Pro ~ % man cal
Unknown locale, assuming C
(base) mav@Kaushiks-MacBook-Pro ~ % █

```

FIG. 5. Solution to Exercise 4.1

## 2. *Data Carpentry*

## II. ASSIGNMENT 2

The paper that most directly proposes a novel method that could be utilized to attract the attention of, and communicate with extraterrestrial intelligence is [1]. It suggests using Earth or Jupiter sized objects to create artificial dips in lightcurves which could then be used to transmit data.

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