

CS 354

Machine Organization and Programming

Lecture 04a

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Summer 2020

The Terminal

The Terminal

```
settern — -bash — 80x24
Last login: Wed Feb 24 10:56:19 on ttys003
new-host-6:~ settern$
```

```
E:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7600]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

E:\Users\ACK>shutdown /?
Usage: shutdown [/i | /l | /s | /r | /g | /a | /p | /h | /o]
[/m \\computer1\ /t xxx1 /d [p1u:lxx:yy /c "comment"]

No args      Display help. This is the same as typing /?.
/?          Display help. This is the same as not typing
/i          Display the graphical user interface (GUI).
            This must be the first option.
/l          Log off. This cannot be used with /m or /d o
/s          Shutdown the computer.
/r          Shutdown and restart the computer.
/g          Shutdown and restart the computer. After the
            rebooted, restart any registered application
/a          Abort a system shutdown.
            This can only be used during the time-out pe
            Turn off the local computer with no time-out
            Can be used with /d and /f options.
/h          Hibernates the local computer.
            Can be used with the /f option.
/e          Document the reason for an unexpected shutdo
/m \\computer Specify the target computer.
/t xxx      Set the time-out period before shutdown to x
            The valid range is 0-315360000 (10 years), w
            If the timeout period is greater than 0, the
            implied.
/c "comment" Comment on the reason for the restart or s
            Maximum of 512 characters allowed.
/f          Force running applications to close without
            The /f parameter is implied when a value greater than 0 is
            specified for the /t parameter.
/d [p1u:lxx:yy Provide the reason for the restart or shutdown.
            p indicates that the restart or shutdown is planned.
            u indicates that the reason is user defined.
            If neither p nor u is specified the restart or shutdown is
            unplanned.
            xx is the major reason number (positive integer less than 256).
            yy is the minor reason number (positive integer less than 65536).
```

```
Windows PowerShell
Copyright (C) 2009 Microsoft Corporation. All rights reserved.

PS C:\Users\NullByte> get-help
TOPIC
Get-Help
SHORT DESCRIPTION
Displays help about Windows PowerShell cmdlets and concepts.
LONG DESCRIPTION
SYNTAX
get-help <CmdletName> [-TopicName]
help <CmdletName> [-TopicName]
<CmdletName> -?
"Get-help" and "-?" display help on one page.
"Help" displays help on multiple pages.
Examples:
get-help get-process : Displays help a
get-help about_signing : Displays help a
help about_ahash : Displays help a
help about_ayatch : Displays help a
set-service -? : Displays help a
You can use wildcard characters in the help
If multiple help topics match, PowerShell l
topics. If only one help topic matches, Pow
Examples:
get-help * : Displays all help topic
get-help get-* : Displays topics that be
help *object* : Displays topics with "
get-help about* : Displays all conceptua
For information about wildcards, type:
get-help about_wildcard
REMARKS
To learn about Windows PowerShell, read the
get-command : Gets information about cm
get-alias : Gets the properties and na
where-object : Filters object properties
about_ahash : Explains the use of about
about_remote : Tells how to run commands.
```

```
hello world
stuart@stuart-desktop:~$
```

History: the original terminals



Mainframe
(powerful computer)

History: the original terminals



**Mainframe
(powerful computer)**



**dumb terminals
(text based)**



Terminal emulators



Terminal emulators



Terminal emulators

Career Tip 1: know the difference between **familiar** tools and **good** tools

Practice using good tools that are unfamiliar

Investment is more important than working hard

```
drwxr-xr-x  2 daemon  wheel   64 Oct  2  2017 rwho
drwxr-xr-x  6 root    wheel  192 Dec  1  2017 spool
drwxrwxrwt  5 root    wheel  160 Jul 30 10:40 tmp
drwxr-xr-x  4 root    wheel  128 Aug 16 09:51 vm
drwxr-xr-x  4 root    wheel  128 Dec 26  2017 yp
```



slow



local computer
(e.g., personal)

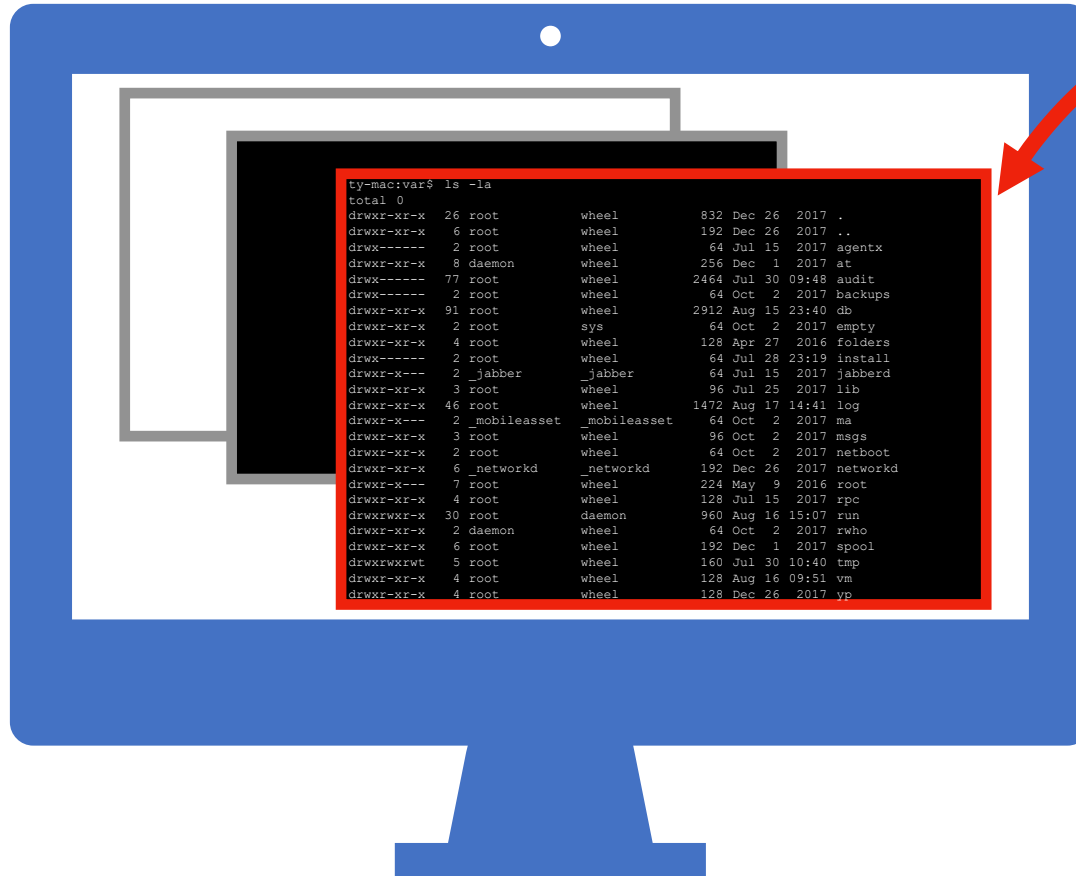
Terminal emulators

Career Tip 2: master the tools that let you work from anywhere

Work for the highest-paying place from the most enjoyable place (home? beach?)

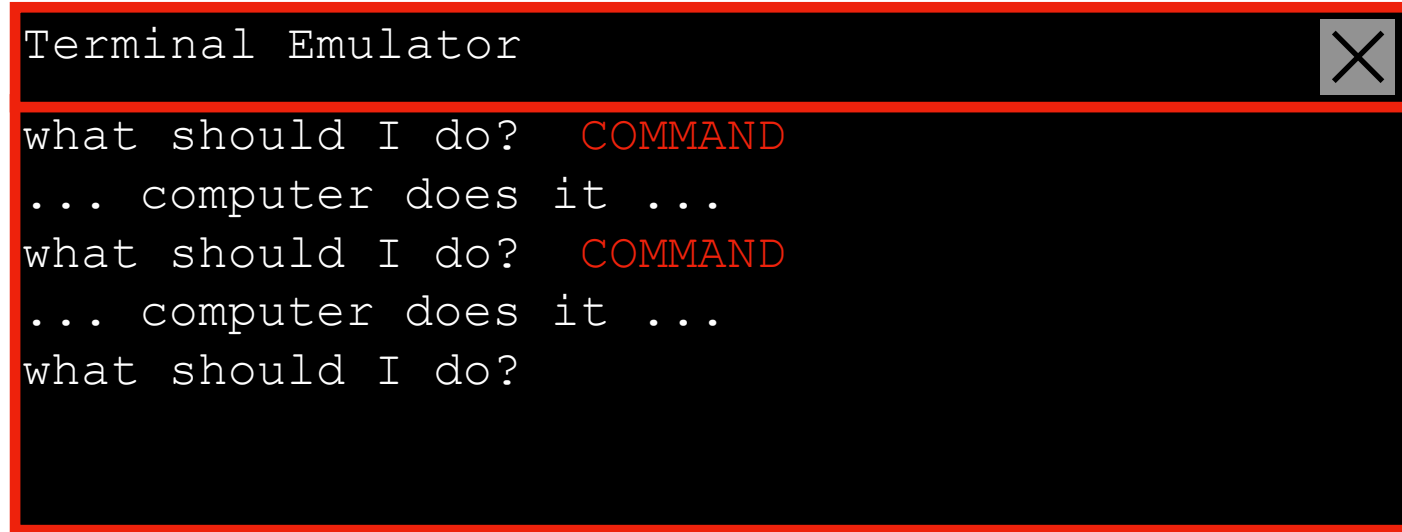


Terminal emulators



programming running in
the terminal emulator
is called a "shell"

Shell: the most helpful program

A screenshot of a terminal emulator window with a black background and a red border. The title bar at the top says "Terminal Emulator" and has a close button on the right. The terminal content shows a prompt "what should I do?" followed by the word "COMMAND" in red. Below this, the text "... computer does it ..." is displayed. This sequence is repeated once more, ending with the prompt "what should I do?".

```
Terminal Emulator
what should I do?  COMMAND
... computer does it ...
what should I do?  COMMAND
... computer does it ...
what should I do?
```

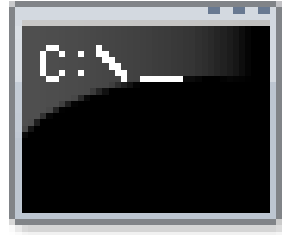
- 1 **navigate:** dig through folders and files
- 2 **run programs**

You have a few options when it comes to shells...



<https://en.wikipedia.org/wiki/Seashell>

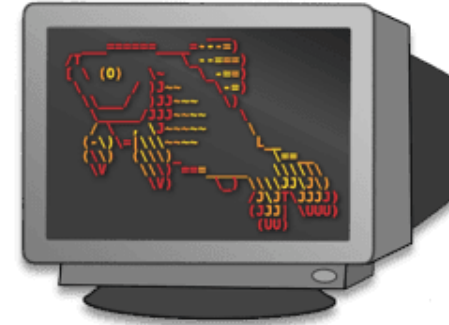
You have a few options when it comes to shells...



cmd



PowerShell



fish



ksh

today

zsh

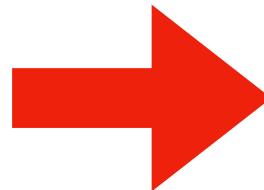
csH



Stephen Bourne

/bin/sh
Bourne Shell

1979



BASH
THE BOURNE-AGAIN SHELL

Demo
Time

CS 354

Machine Organization and Programming

Lecture 04b

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Vim tutorial