

# demo-bash

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An example Jupyter notebook illustrating the use of bash code chunks.

## 1 How to generate a document from this file

You can create an HTML or PDF output file by simply selecting File -> Download as -> HTML (.html) or File -> Download as -> PDF via LaTeX (.pdf)

To generate a document from the command line, you can do the following:

```
jupyter nbconvert demo-bash.ipynb --to html # for html
jupyter nbconvert demo-bash.ipynb --to pdf  # for pdf
```

However, when creating PDF, some of the formatting may be messed up.

## 2 Some basic Markdown formatting

Here's an *introduction* to our **critical** discovery. We have some code to display but not evaluate: `exp(7)`, and we can embed the code in a static code block as follows:

```
a = 7 %% 5
b = exp(a)
```

This document will focus on embedding math and code and not on standard Markdown formatting. There are lots of sources of information on Markdown.

## 3 Embedding equations using LaTeX

This can be done with the following syntax.

Here is an inline equation  $f(x) = \int f(y, x) dy$ .

Here's a displayed equation

$$f_{\theta}(x) = \int f_{\theta}(y, x) dy.$$

## 4 Embedding bash code

You can run bash code, though the output appears all combined together, rather than interspersed with the command that generated it.

```
[16]: cd /opt
ls -l
df -h
cd /tmp
pwd
```

```
total 32
drwx--x--x 4 root root 4096 Jun 8 2021 containerd/
drwxr-xr-x 3 root root 4096 Jun 8 2021 google/
drwxr-xr-x 2 root root 4096 Jul 15 2021 libreoffice6.1/
drwxr-xr-x 3 root root 4096 Jun 8 2021 microsoft/
drwxr-xr-x 4 root root 4096 Jun 8 2021 mssql-tools/
drwxr-xr-x 4 1001 docker 4096 Jan 27 15:50 quarto/
drwxr-xr-x 16 root root 4096 Jun 8 2021 shiny-server/
drwxr-xr-x 5 root root 4096 Jun 8 2021 sublime_text/
Filesystem                Size      Used Avail Use% Mounted on
/dev/sda1                  120G       20G   94G  18% /
udev                      7.8G         0   7.8G   0% /dev
tmpfs                     7.8G   399M   7.5G   5% /dev/shm
tmpfs                     1.6G     15M   1.6G   1% /run
tmpfs                     5.0M     4.0K   5.0M   1% /run/lock
tmpfs                     7.8G         0   7.8G   0% /sys/fs/cgroup
/dev/sda2                  240G       37G  191G  16% /var
/dev/sda3                  240G      142G   86G  63% /var/tmp
/dev/loop1                 142M      142M     0 100% /snap/chromium/1708
/dev/loop0                 142M      142M     0 100% /snap/chromium/1691
/dev/loop2                 165M      165M     0 100%
/snap/gnome-3-28-1804/161
/dev/loop4                  56M       56M     0 100% /snap/core18/2128
/dev/loop7                  33M       33M     0 100% /snap/snapd/12704
/dev/loop5                  66M       66M     0 100% /snap/gtk-common-
themes/1515
/dev/loop3                 163M      163M     0 100%
/snap/gnome-3-28-1804/145
/dev/loop6                  56M       56M     0 100% /snap/core18/2074
/dev/loop8                  33M       33M     0 100% /snap/snapd/12883
/dev/sda5                  286G     6.1G  265G   3% /tmp
sauron.berkeley.edu:/pool0/accounts 12T     6.8T   4.9T  59% /accounts
tmpfs                     1.6G     84K   1.6G   1% /run/user/3189
sauron.berkeley.edu:/pool0/system 5.0T     3.8T   1.3T  76% /system
oz.berkeley.edu:/pool0/scratch 84T       26T    58T  31% /scratch
/tmp
```

Later chunks have access to result from earlier chunks (i.e., state is preserved between chunks).

```
[13]: pwd # result is /tmp because state is preserved
```

```
/tmp
```

There is no facility for interspersing inline code and text.

## 5 Reading code from an external file

I'm not aware of a way to directly source code from an external file as the code in a code chunk.

## 6 Formatting of long lines of code and of output

Long lines in the notebook will generally cause a horizontal scrollbar to appear. In the PDF and HTML output, long lines won't generally overflow, but line breaks in HTML output may occur in awkward places.

```
[ ]: echo "Statistics at UC Berkeley: We are a community engaged in research and_
      ↪education in probability and statistics. In addition to developing_
      ↪fundamental theory and methodology, we are actively" > tmp.txt

echo "Second try: Statistics at UC Berkeley: We are a community \
engaged in research and education in probability and statistics. \
In addition to developing fundamental theory and methodology, \
we are actively" >> tmp.txt

cat tmp.txt
```

One does not need to manually format long code lines, as a horizontal scroll bar will appear. But you might want to.

```
[ ]: # Statistics at UC Berkeley: We are a community engaged in research and_
      ↪education in probability and statistics. In addition to developing_
      ↪fundamental theory and methodology, we are actively

# Statistics at UC Berkeley: We are a community engaged in research and
# education in probability and statistics. In addition to developing
# fundamental theory and methodology, we are actively...
```

## 7 References

It's possible to insert references and a bibliography into a Jupyter document, but we don't go into it here.