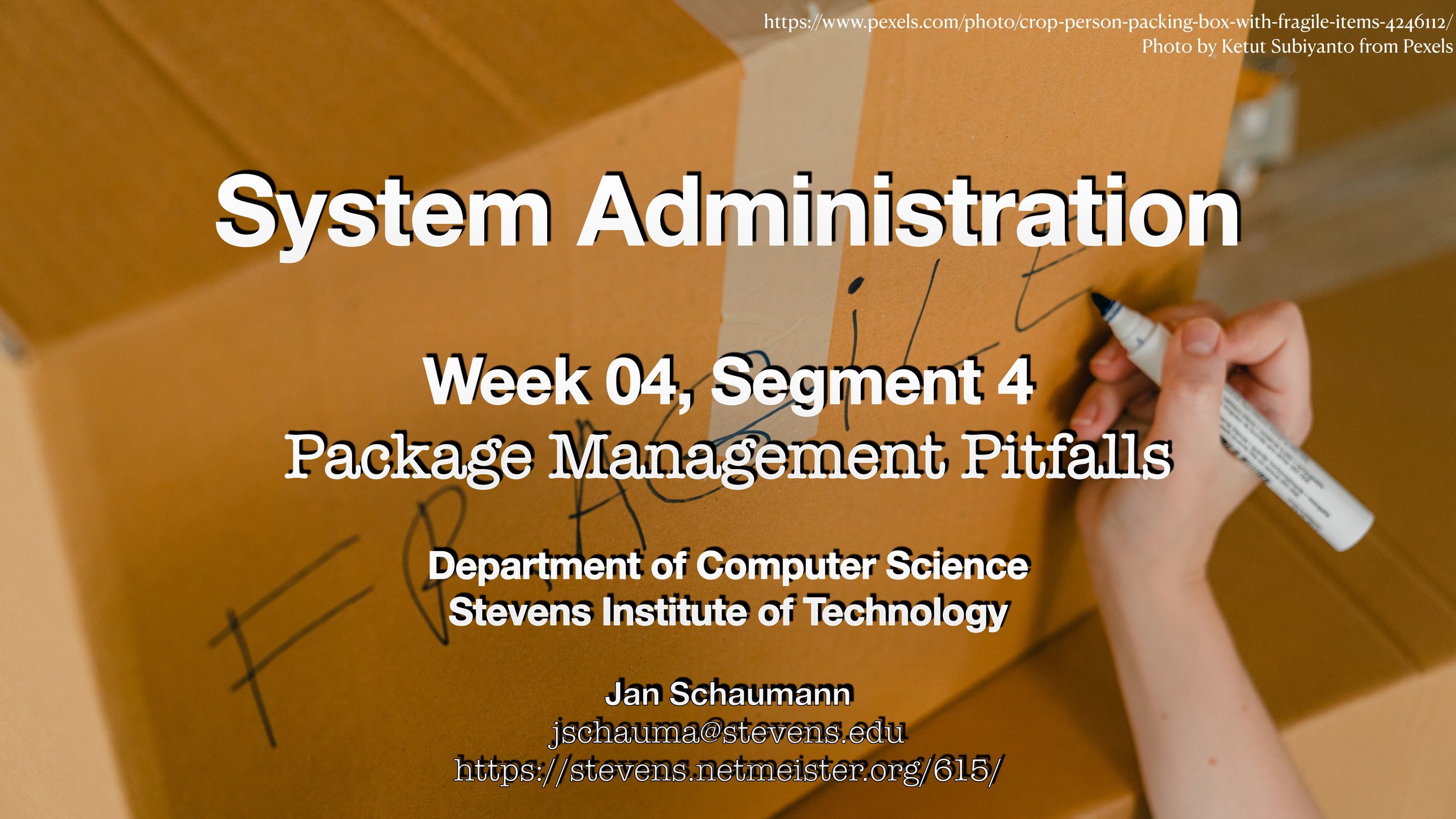

System Administration

Week 04, Segment 4
Package Management Pitfalls

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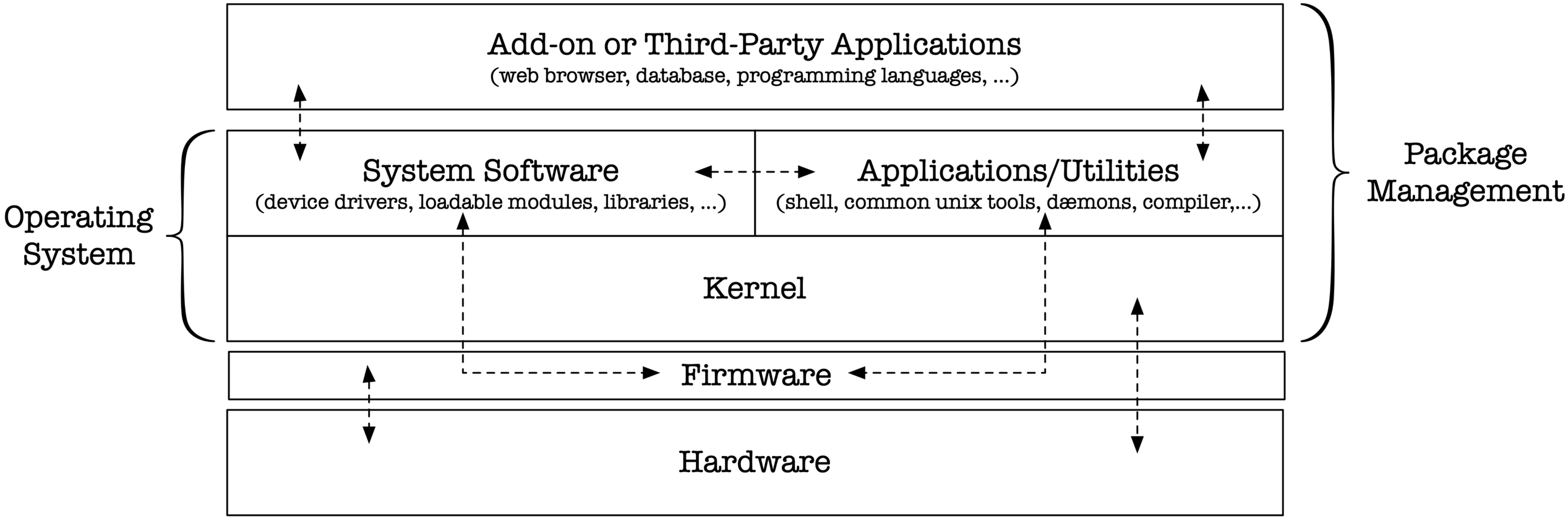
https://stevens.netmeister.org/615/

Software Types



Magic

```
echo “import antigravity” | python
```

“Native” language package managers

“Native” language package managers

“Native” language package managers

Dependencies, Integrity, and Trust

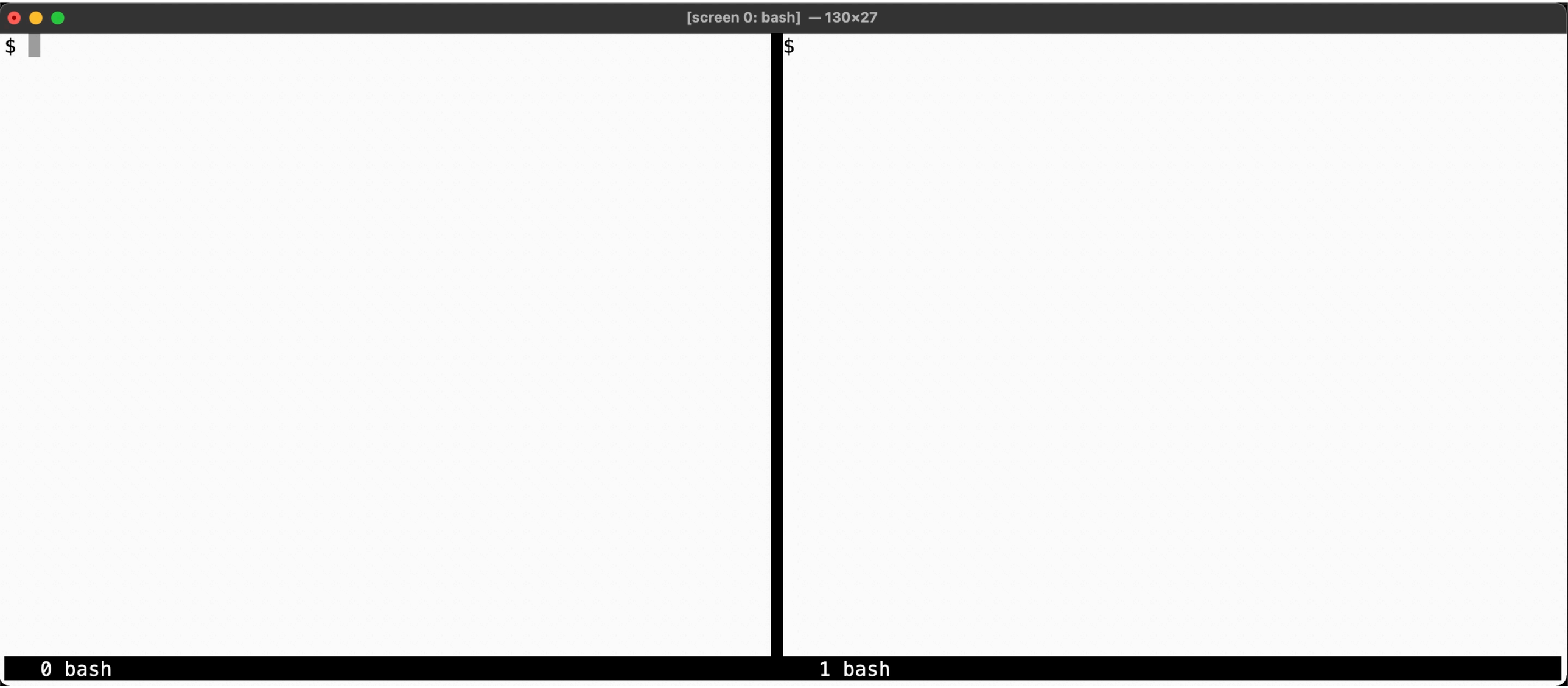
OS provider repositories:

- yum update/yum install
- apt-get
- pkgin

Language-specific community repositories:

- gem install foo
- go get github.com/randomAccount/randomRepository
- npm install -g foo
- perl -MCPAN -e 'install Something::YouWant'
- pip install foo

What could possibly go wrong?


[screen 0: bash] — 130×27
$
$
0 bash
1 bash

Dependencies, Integrity, and Trust

```
$ curl http://somewhere/script.sh | sudo bash
```

isn't any better nor worse than

```
$ wget http://somewhere/some.tar.gz
$ tar zxf some.tar.gz
$ cd some
$ ./configure
$ make
$ sudo make install
```

or

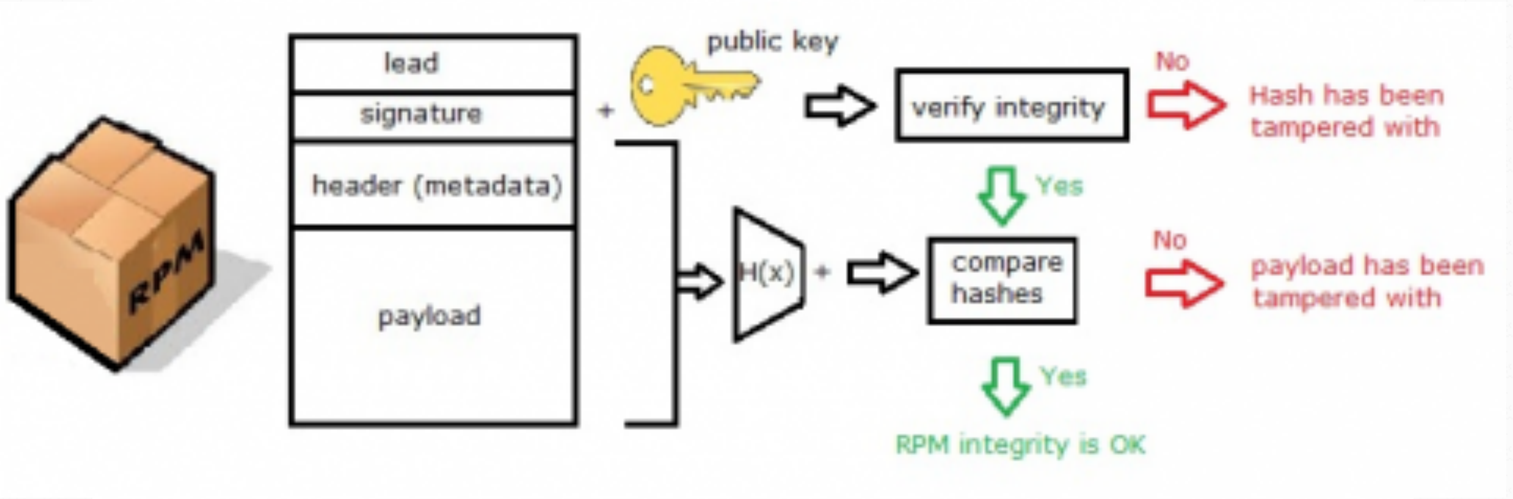
```
$ gem install foo
$ go get github.com/randomAccount/randomRepository
$ npm install -g foo
$ perl -MCPAN -e 'install Something::YouWant'
$ pip install foo
```

or

```
$ brew install whatever
```

Terminal — 80×24

$



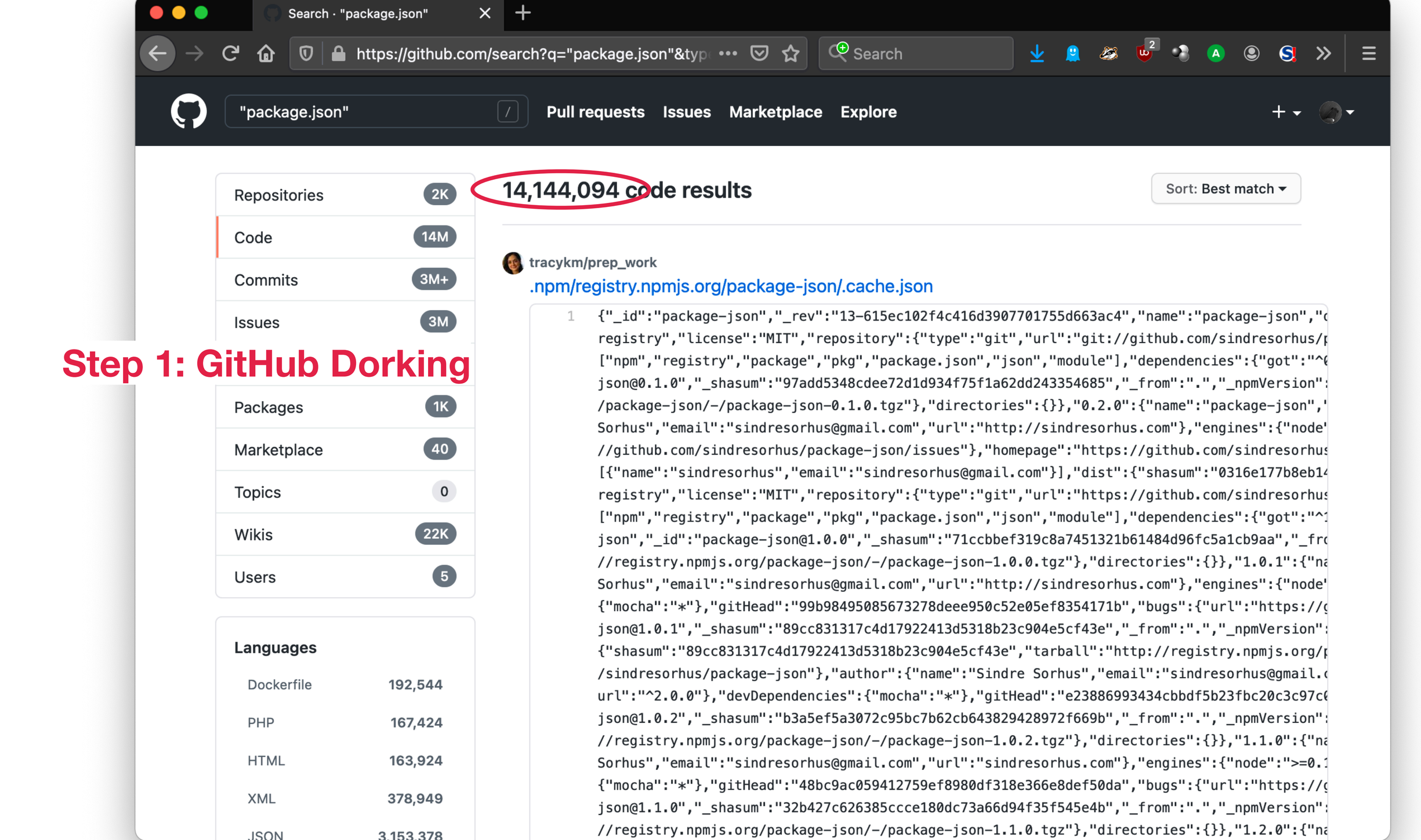
Remember Left-Pad?

```
module.exports = leftpad;
function leftpad (str, len, ch) {
    str = String(str);
    var i = -1;
    if (!ch && ch !== 0)
        ch = ' ';
    len = len - str.length;
    while (++i < len) {
        str = ch + str;
    }
    return str;
}
```

https://www.theregister.co.uk/2016/03/23/npm_left_pad_chaos/

Dependencies, Integrity, and Trust

https://medium.com/@alex.birsan/dependency-confusion-4a5d60fec610



Step 1: GitHub Dorking

Step 2:

npm-publish

Publish a package

Version 7.x (Current release)

Synopsis

```
npm publish [<tarball>|<folder>] [--tag <tag>] [--access <public|rest
|>

Publishes '.' if no argument supplied
Sets tag 'latest' if no --tag specified
```

Description

Publishes a package to the registry so that it can be installed by name.

By default npm will publish to the public registry. This can be overridden by specifying a different default registry or using a `scope` in the name (see `package.json`).

Step 3: …wait…

Photo by Alexandar Todov on Unsplash
https://unsplash.com/photos/AMzC2RVurO4

- `npm install [<@scope>/]<name>`:

  Do a `<name>@<tag>` install, where `<tag>` is the "tag" config. (See `config`. The config's default value is `latest`.)

  In most cases, this will install the version of the module tagged as `latest` on the npm registry.

Step 4:

To resolve packages by name and version, npm talks to a registry website that implements the Common JS Package Registry specification for reading package info.

npm is configured to use the **npm public registry** at https://registry.npmjs.org by default. Use of the npm public registry is subject to terms of use available at https://www.npmjs.com/policies/terms.

You can configure npm to use any compatible registry you like, and even run your own registry. Use of someone else's registry may be governed by their terms of use.

Dependencies, Integrity, and Trust

Dependencies are called dependencies
because you *depend* on them.

Mirroring untrusted, unverified dependencies
does not solve any of your problems.

Integrity verification is meaningless
without assurance of trust.

Dependency trust and integrity is recursive.

Questions

- Research the cited repository incidents — how would you protect your environment from similar compromises or impact?
- What repositories do the different package managers we've seen use by default? How do we know that we can trust them?
- If you use native language package managers, how could you build cross-dependencies with the native OS package manager?

Coming up: multiuser fundamentals and authentication basics

Links

Software Installation and Package Management:

https://www.netmeister.org/book/05-software-installation-and-package-management.pdf

Left-pad: https://www.theregister.co.uk/2016/03/23/npm_left_pad_chaos/

Dependency Confusion: https://medium.com/@alex.birsan/dependency-confusion-4a5d60fec610

RPM File Format Details:

http://ftp.rpm.org/max-rpm/s1-rpm-file-format-rpm-file-format.html