Learning as We Go

Decomposing Dev Environments with Lando

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post-conference workshop
Friday March 26, 2021

https://git.io/JqLaG

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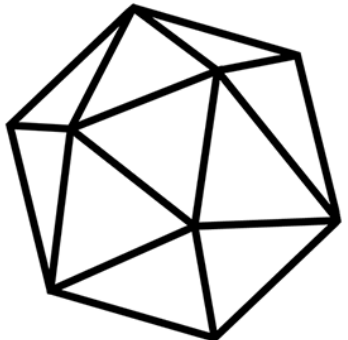
Decomposition: "Bringing Order to Chaos"

"When designing a complex software system, it is essential to **decompose it into smaller and smaller parts,** each of which we may then refine independently...

...to understand any given level of a system, we need only comprehend a few parts (rather than all parts) at once."

-- Grady Booch, *Object-Oriented Analysis and Design 2nd Edition,* pg 14

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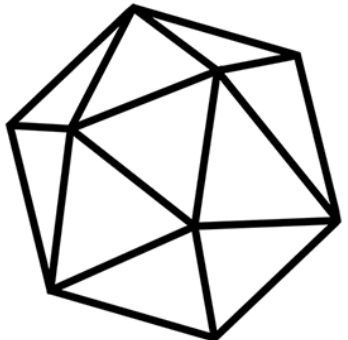
Dev Environment Chaos

Wiki page of detailed instructions,
Was working at time of writing

Vagrant

Docker

Docker-Compose

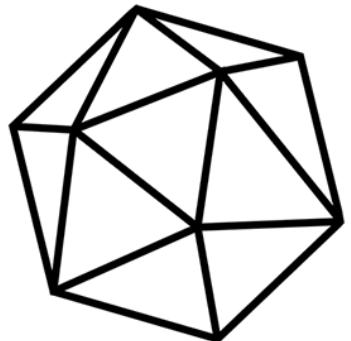Lando

"Good luck, kid"

Wiki page of steps hastily written
from memory, as yet untested

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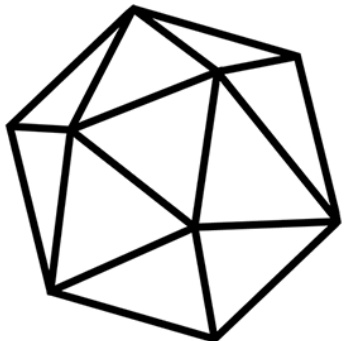
Parts: today's agenda

- Docker
- The Perils of Cathedrals
- Introducing Lando

about 30 minutes of intro

1. Start Small, just a database
2. Let's build: Omeka-S
3. Let's build: Django
4. Let's build something together!

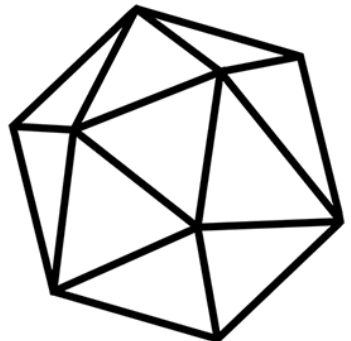about 140 minutes of building stuff

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Docker: containers are handy

- Docker is a collection of products that work together to deliver software in packages called containers

- Containers allow us to decompose a development environment into the parts we require
  - A Database
  - A Job Queue
  - A Search Index
  - An Application server

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Docker is both awesome, and awful
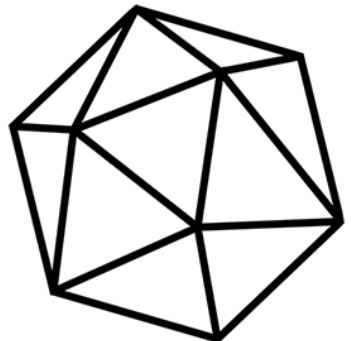
Awesome

- it gives you the building blocks for a development environment
- it can run on modest hardware

Awful

- the commands required to do useful things with it are complicated
- getting details right is hard, and requires deep knowledge of the system
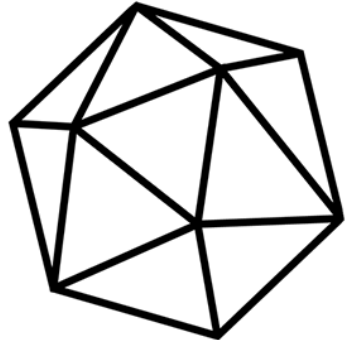
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The Peril of Cathedrals

- "Perfect" may not be attainable
- Searching for perfection has a cost
- Docker can be used to build cathedrals
- We will not be building cathedrals
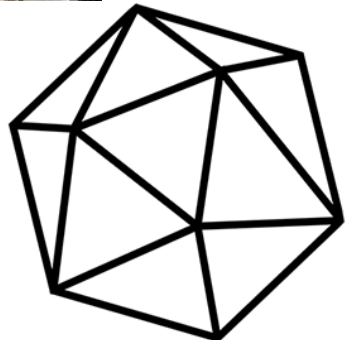- We will be building dev environments

Docker Cathedrals

- You *can* use the same docker image...
  - in a development environment
  - in staging
  - in prod

- We will not be building production-ready containers

- Please do not try to use Lando in production

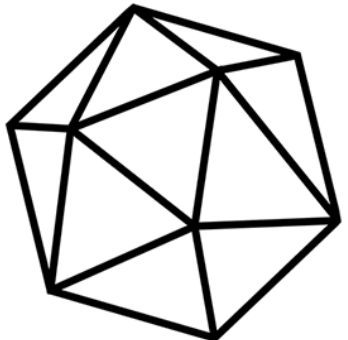- If you want this, Lando is probably the wrong tool for you, but there are options

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What's the point?

- Wanting a container you can run in production and in development is *scope creep*

- We're here to build development environments

- We should get to work

Lando is

Per app, single config file, containerized everything, local dev tool

- Simple in repo config file: .lando.yml
- Use basic preconfigured stacks
- Add in additional services eg solr
- Add in additional tools eg node
- Build and automation steps
- Hosting integrations (Pantheon)
- Docker compose abstraction layers
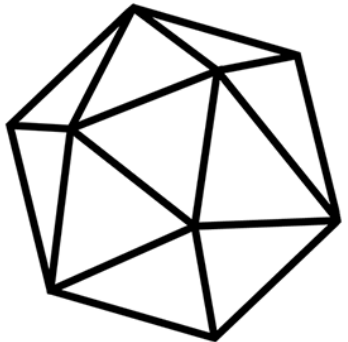- Cross platform
- **Local dev dependency management**
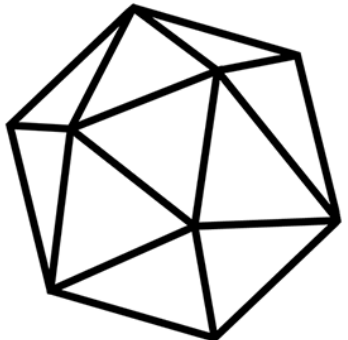
Stacks on Stacks on Racks (docs.lando.dev)

- Lando
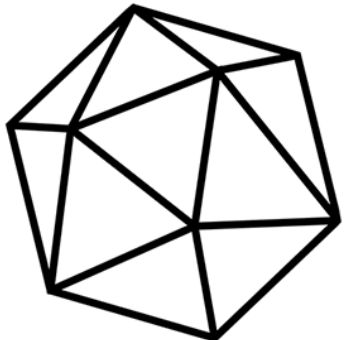- Docker Compose
- Docker
- Containers
- Your Operating System
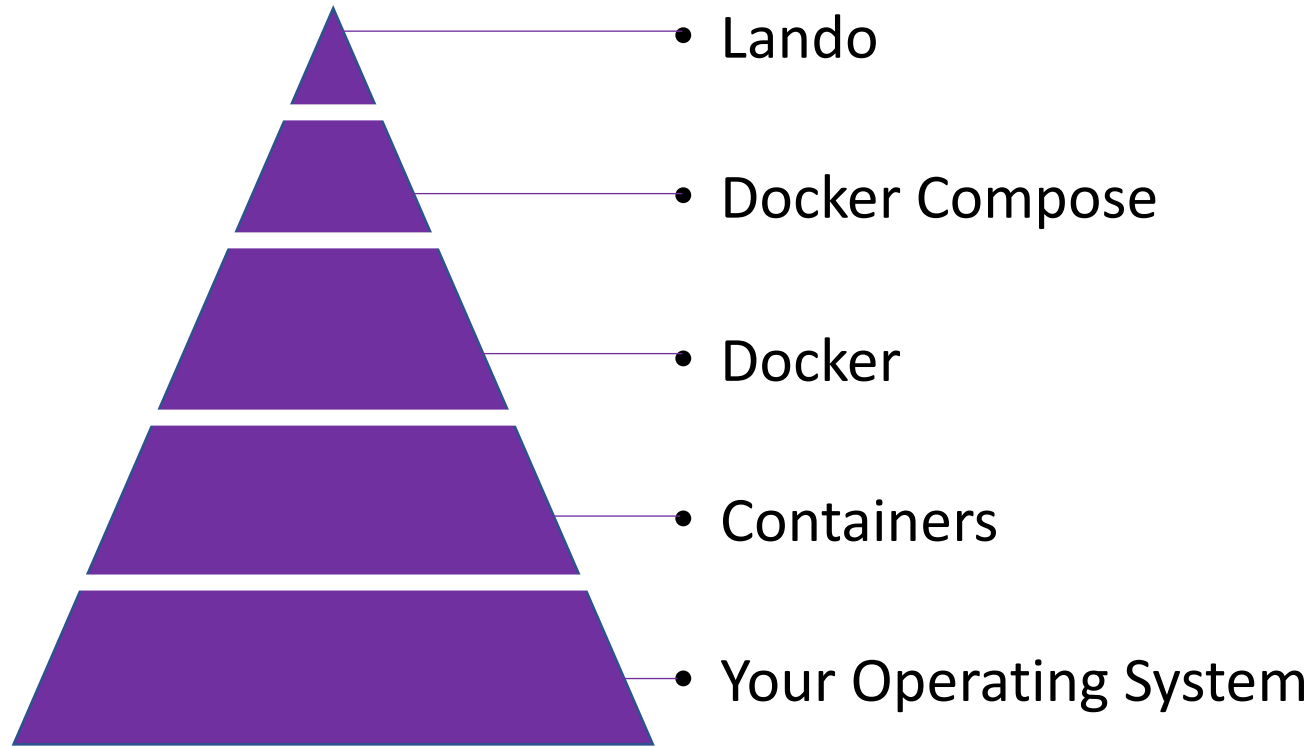
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Core services/languages supported

- Ruby
- PHP
- Python
- Node
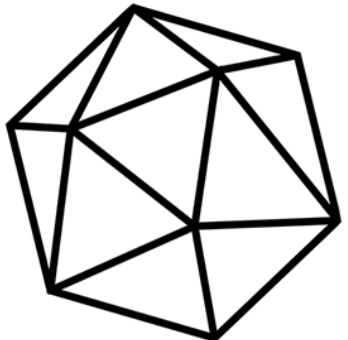- Go
- MySQL
- PostgreSQL
- Solr
- Elasticsearch
- Tomcat

More Services! (configurable and swappable)

- Apache
- Mailhog
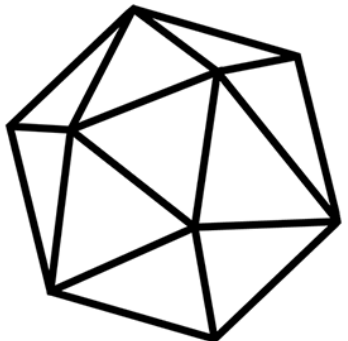- Memcached
- MongoDB
- Nginx
- PHPmyAdmin
- Redis
- Varnish

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Pre-baked **recipe** start states

- Backdrop
- LAMP/LEMP
- MEAN
- Drupal 6/7/8
- Pantheon
- Wordpress
- Laravel
- Joomla

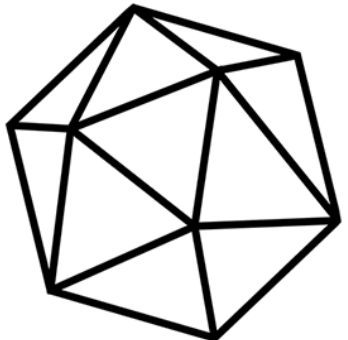# Installing Lando: one-click installers for Windows, OSX, Linux

- Download: https://github.com/lando/lando/releases

- Docs: https://docs.lando.dev/basics/installation.html

- Installers include Docker and Docker-Compose

- You do not have to reinstall Docker/Compose/Desktop
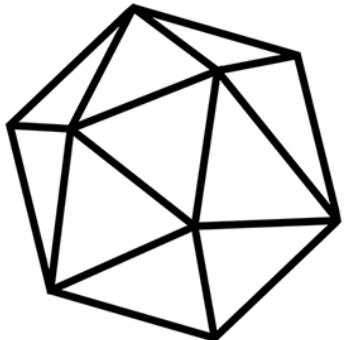
- Check your version numbers!

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.lando.yml (The Landofile)

- One config file

- Specifies all the services your app needs for development

- Goes in your project code repository next to all your source code

- It's small and hidden, it won't get in the way

```
---

name: demo-project
env_file:
keys:
services:
  appserver:
    type: ruby:2.5
    volumes:
    ports:
      - '3000:3000'
    overrides:
    command:
    build_as_root:
```
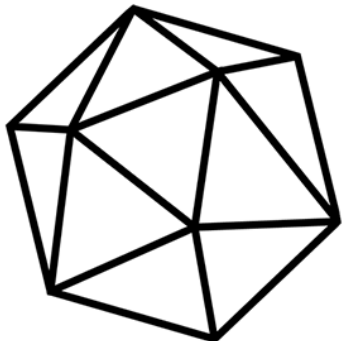
```
    build:
    run:
    run_as_root:

  db:
    type: mysql
    portforward: true
    creds:
      user: dba
      password: random
      database: sample

tooling:
  ruby:
    service: appserver
```

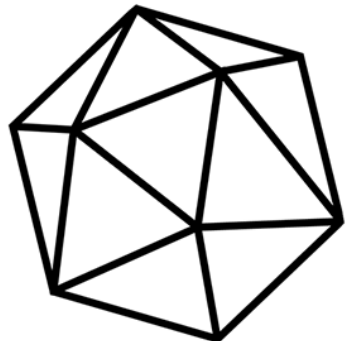Inside the
.lando.yml file

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```
---

name: demo-lamp-project

recipe: lamp

config:
  php: 5.6

  webroot: web

  database: mysql:5.7
```
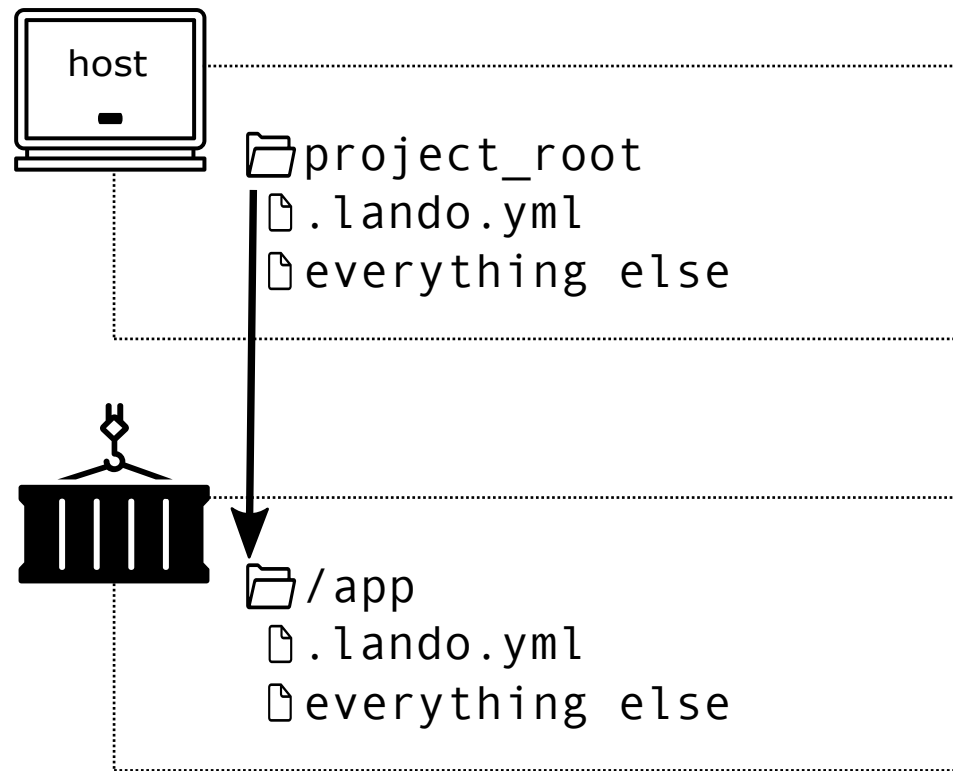
Inside the
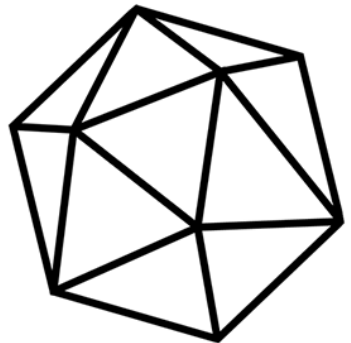**.lando.yml** file
(recipe version)

Lando Cheat Sheet: https://git.io/JqLaI

host

📂project_root
📄.lando.yml
📄everything else

📂/app
📄.lando.yml
📄everything else

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Is this even real? Who even uses Lando?

- **CDL**
  https://github.com/eScholarship/jschol/blob/master/.lando.yml
- **Janeway**
  https://github.com/BirkbeckCTP/janeway/blob/master/.lando.yml
- **Princeton**
  https://github.com/pulibrary/pulfalight/blob/main/.lando.yml
- **Every Landofile in GitHub**
  https://github.com/search?q=filename%3A.lando.yml&type=Code
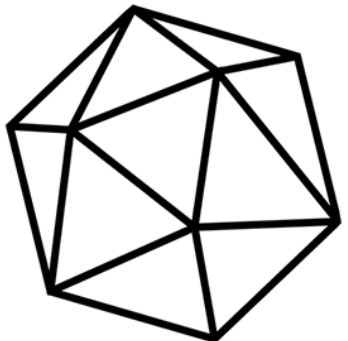
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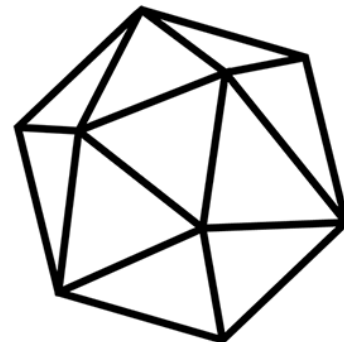
Questions?

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Demo: Using Lando
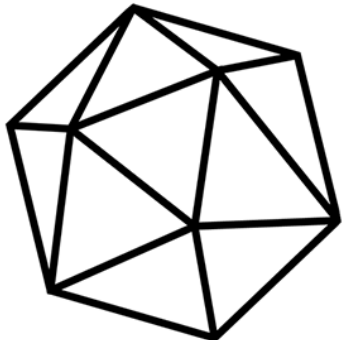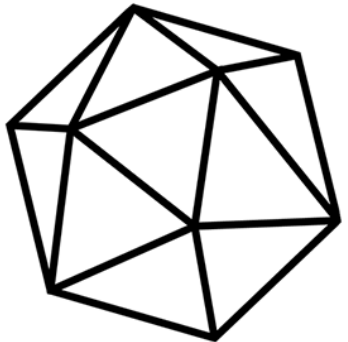
Questions?

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Exercise 1: MySQL
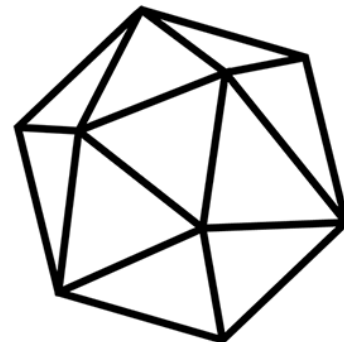
Let's make a database and import a backup from prod.

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Questions?

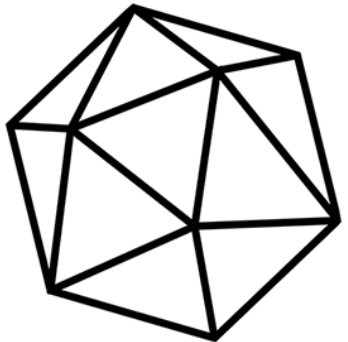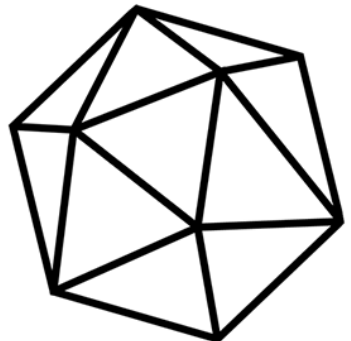C⬡DE 4 LIB ◁ 2021 ▷

Exercise 2: Omeka-S

OK, fine, it's a LAMP application. Let's use a recipe.

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Questions?

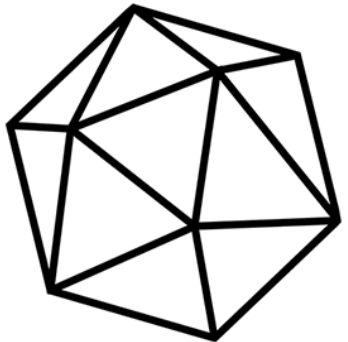C⬡DE 4 LIB ◁ 2021 ▷

Exercise 3: Django

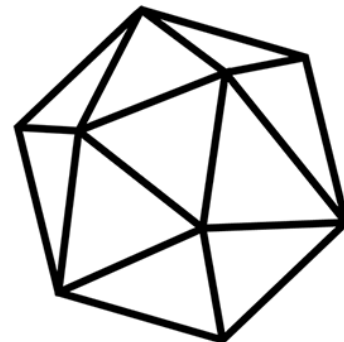Questions?

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Exercise 4: Live Coding!

Let's build a dev environment together!

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Extra Credit

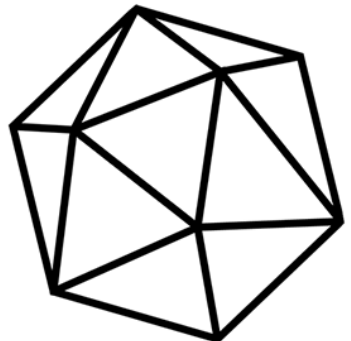- https://docs.lando.dev/guides/frontend.html
Need grunt, gulp, etc? You can haz.

- https://docs.lando.dev/guides/lando-101/lando-overview.html
More Lando learning.

- Interesting topics
    - Proxy (pick a domain name, or work offline)
    - Events (more automation)
    - Compose (custom) service (make your own service)

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Questions?

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Credits

- *tangle* by Trinity
- *sagrada família: more cranes* by cygnoir
- *Temple Expiatori de la Sagrada Família* by PHOTOGRAPHRdotNET
- *Computer* created by Med Marki from the Noun Project
- *Container* created by ProSymbols from the Noun Project
- *Folder* created by Landon Lloyd from the Noun Project
- *File* created by Ranah Pixel Studio from the Noun Project

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