# Strapi.io

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Headless CMS

## Headless

- Supports APIs without dependency on the presentation layer [1]
- Separates the Model from the View
- Manage content separately from delivery
- Can serve more than one website[2]

## CMS

- Adds scalability to content - changes can be applied globally or granularly by adjusting the model logic
- Simplifies management tasks by exposing them through well defined GUI or CLI processes
- Simplifies access restriction setting and checking through user roles and permissions [3]

# Strapi Features

## Content Management

- CRUD operations through admin panel can then be exposed to API
- API requests can be RESTful or GraphQL
- Endpoints secured by setting user roles
- File uploads locally or through external provider (AWS S3, Cloudinary, etc) [1]

## Content Type Structure

- Content constructed from pre-defined field types, custom fields are on the roadmap [2]
  - String, Text, Number, Boolean, Date, JSON, Email, Password (hashed with bcrypt [3], Media (images, videos, PDFs, etc.), and more [1]
- Validation
  - Private - boolean, attribute removed from response if true
  - Required - boolean, must be present for creation of the model
- Relations
  - Many-to-many, One-to-Many, One-to-one, One-way

# Compared to Other Self-Hosted Headless CMS Options

## Strapi

- Allows full JavaScript stack
- Databases supported [3]
  - PostgreSQL, MongoDB, SQLite, MySQL, MariaDB
- RESTful or GraphQL API
- GUI content manager
- In alpha, frequent bug reports, under active development [8]
- Community forum has 123 members [11]

## Wordpress REST API [1]

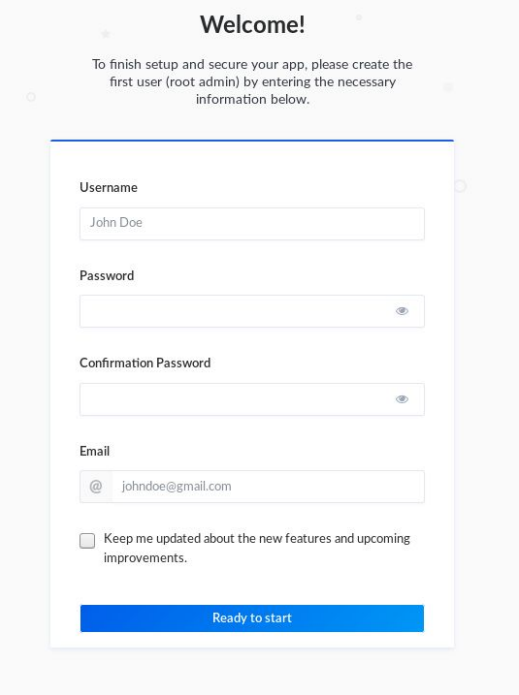
- PHP based
- Databases supported
  - MySQL[4]
- RESTful API
- GUI content manager
- Released with WordPress Core in version 4.4 [7]
- Wordpress overall is very popular, and the REST API is well documented [9]
- Violates MVC design pattern [1]

## Cockpit [2]

- PHP based
- Databases supported
  - SQLite, MongoDB [5]
- RESTful API, with GraphQL add-on [6]
- GUI content manager
- Released in 2015, but under active development
- Community forum has 248 users [10]

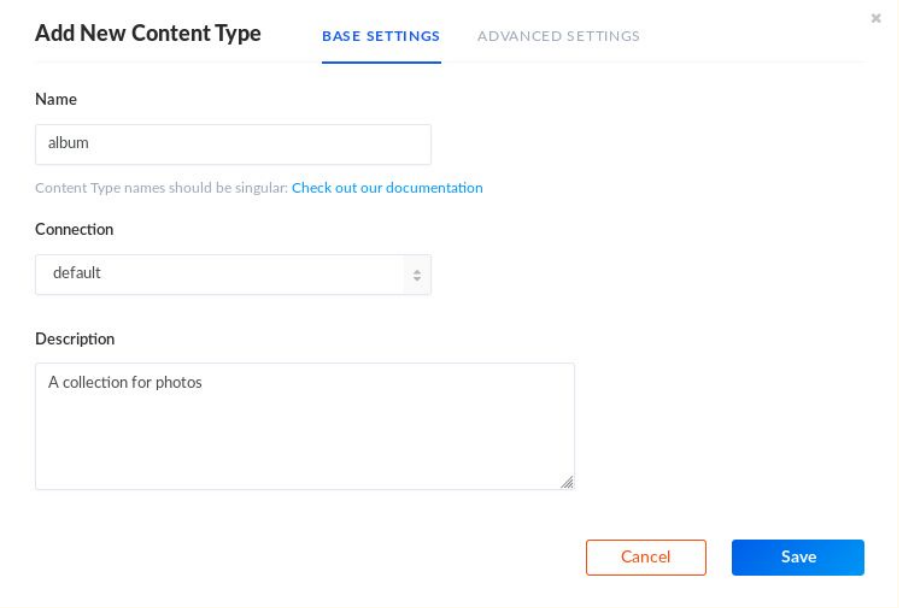
# Installation

1. Insure Node.js and npm are installed
2. Run “npm install strapi@alpha -g” to install Strapi globally
3. Run “strapi new cms --quickstart” within desired parent folder for the project
4. Navigate to http://localhost:1337/admin, and complete the form



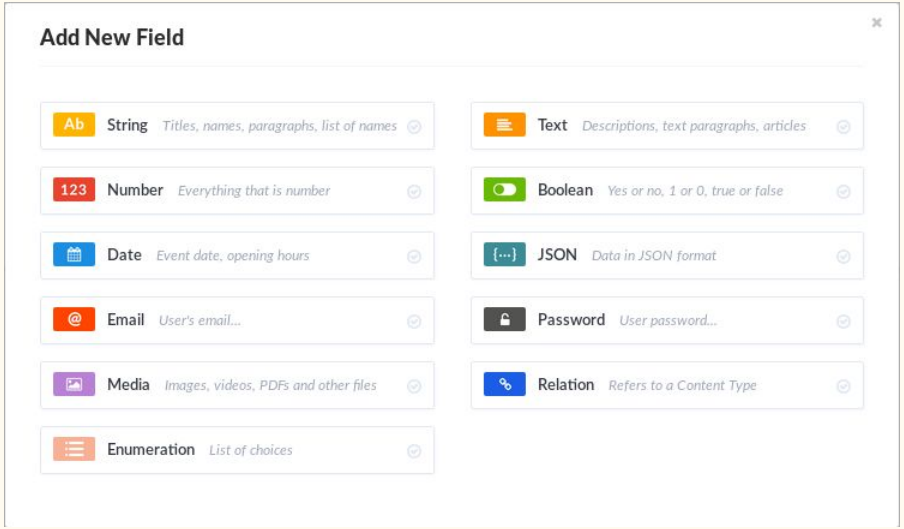
# Create Content Type (A.K.A. Model)

1. Click “+ Add Content Type” button in Content Type Builder plugin
2. Enter the Name of the New Content Type
3. Enter a brief description
4. Advanced Settings
    a. Collection Name - Useful when the name of your Content Type and your table name differ



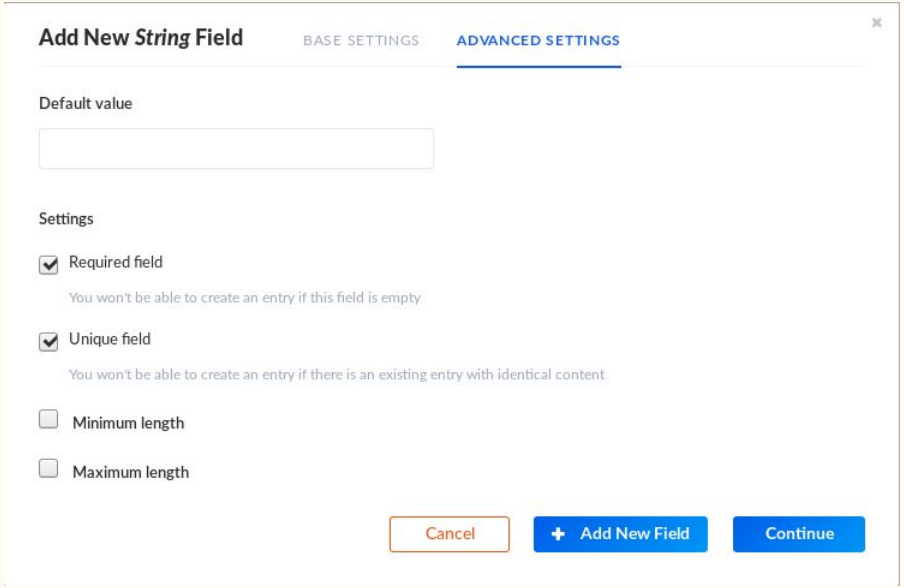
# Add Content Type Fields

1. Click “+ Add New Field” button
2. Click desired field type, e.g. “String”



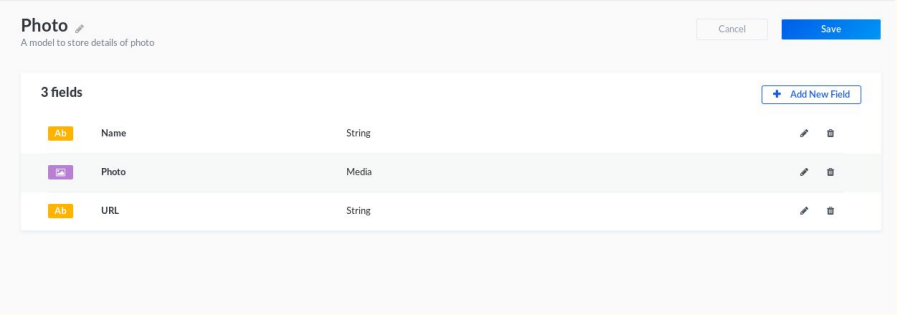
# Add Content Type Fields

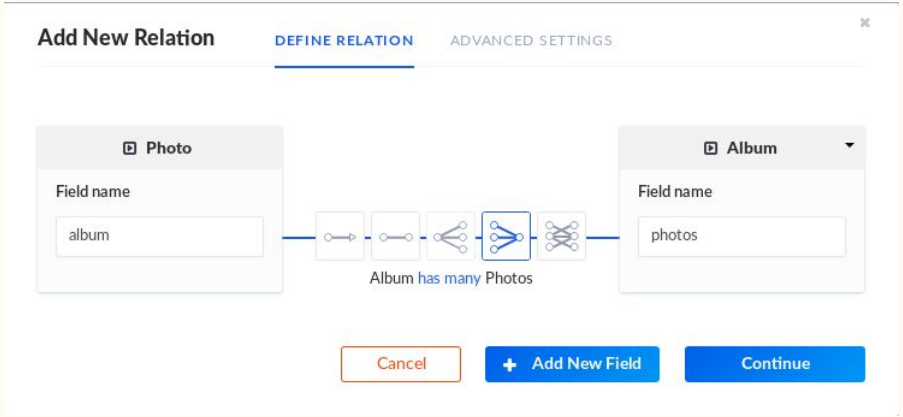
1. Click “+ Add New Field” button
2. Click desired field type, e.g. “String”
3. Enter desired name of the field
4. Enter desired Advanced Settings
    a. Default value
    b. Required field
    c. Unique field
    d. Minimum length
    e. Maximum length
5. After all fields are added, click “Save”



# Create Content Type

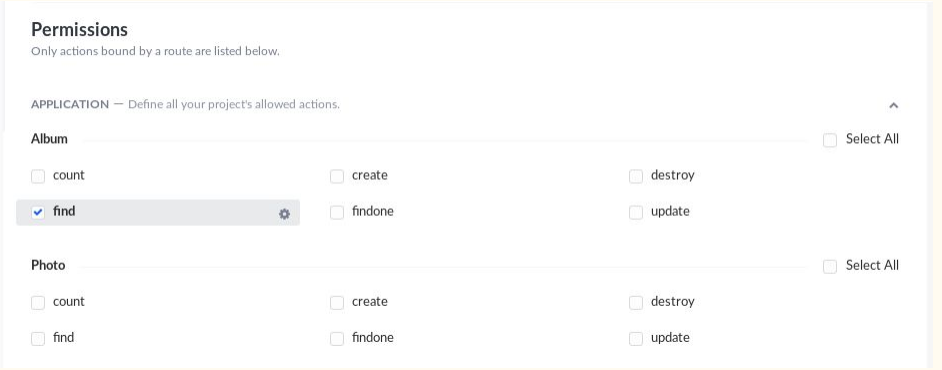
1. Repeat for Photo Content Type
    a. Add String field for Name
    b. Add Media field for Photo
    c. Add String field for URL
    d. Add Relation field for Album
2. Relation
    a. In this case, an Album has many Photos
    b. Other options
        i. ___ has one ___
        ii. ___ has and belongs to one ___
        iii. ___ belongs to many ___
        iv. ___ has and belongs to ___



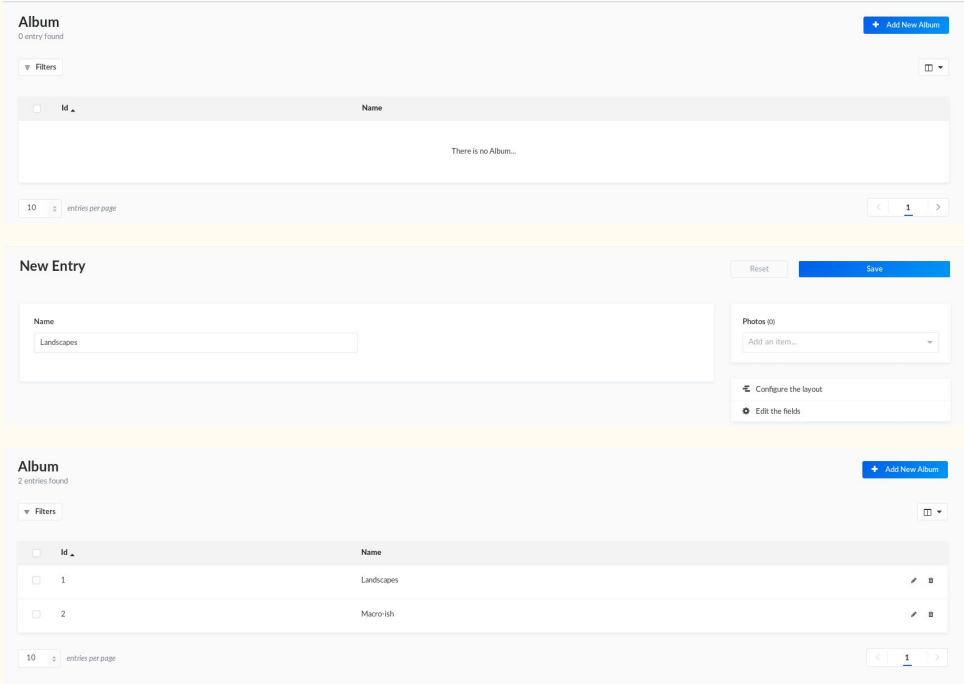
# Set roles and permissions

1. By default, Strapi publishes all Content types with restricted permissions.
    a. Authentication can be accomplished by password (hashed with bcrypt [1]) or using OAuth to receive jwt token [2].
2. Each created Content Type must explicitly be given permissions
3. The Album type might be given “find” access for the Public Role



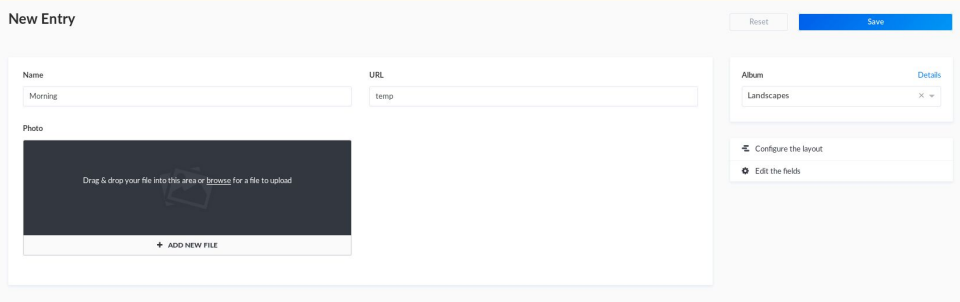
# Add Content

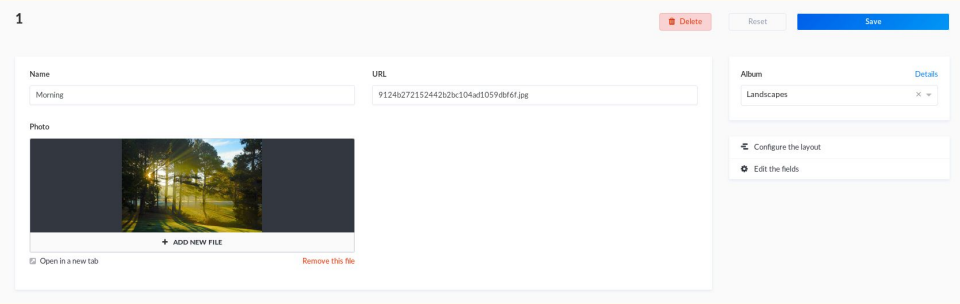
1. Two Albums were created
    a. Name: Landscapes
    b. Name: Macro-ish



# Add Content

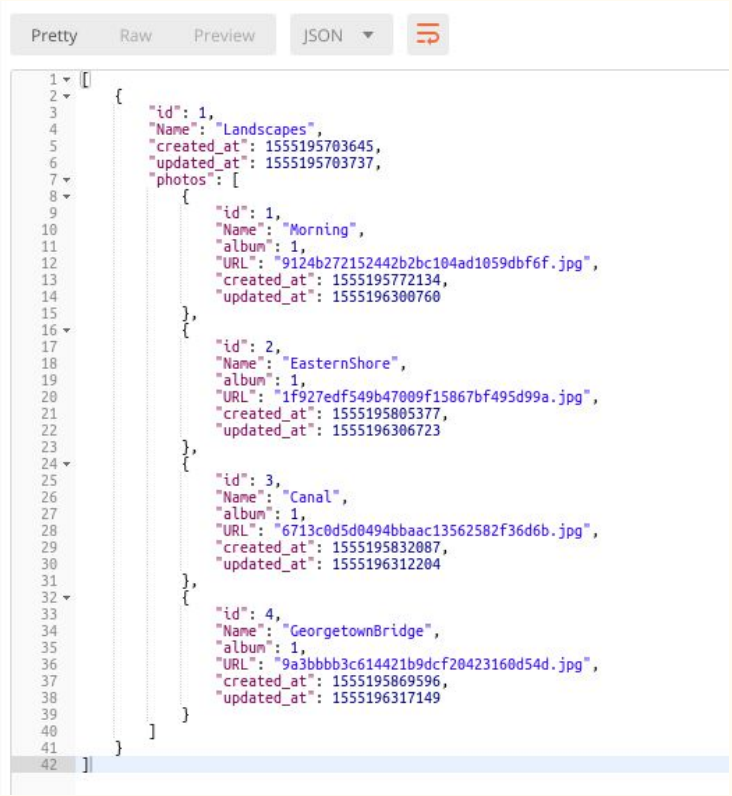
1. Two Albums were created
   a. Name: Landscapes
   b. Name: Macro-ish
2. Photos were added
   a. Name entered
   b. Photo asset dragged to upload area
   c. “temp” entered for URL
   d. Album selected and Photo saved
3. Hash given to the media asset was noted from the Files Upload plugin, and added as the URL field of the Photo model with the media type, “.jpg”, appended



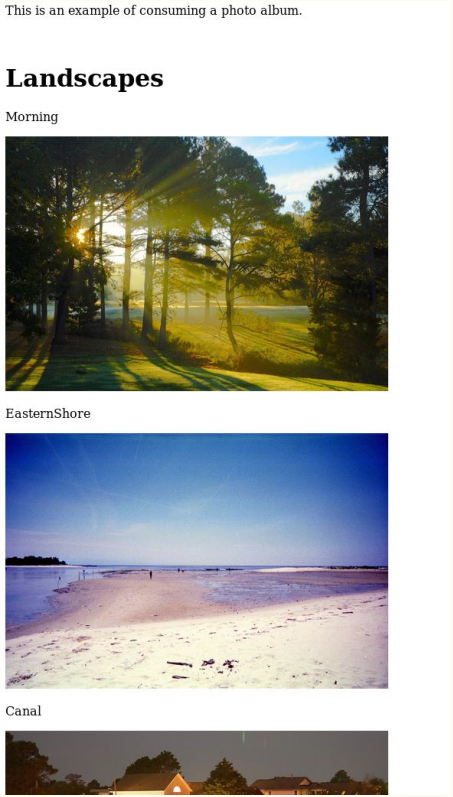
# Consume Content

1. Using Postman
   a. Issue GET request for album with name “Landscapes”
   b. Examine JSON response



# Consume Content

1. Using Postman
   a. Issue GET request for album with name “Landscapes”
   b. Examine JSON response
2. Prototype simple HTML/JavaScript page



# The Breakdown

- While Strapi is full-featured and occupies an attractive niche as an open source, free, JavaScript, headless CMS, it is not without shortcomings
- Two very impactful bugs were experienced while creating this simple demo
  - The first was a failure in SQLite when adding the “Required Field” setting to a content type. This is a known issue [1], and it was experienced twice.
  - The second was a shift of the elements in the albums. The first three Photo content types in the first album had no image asset, but these assets had been shifted to other Photo containers such that what had been the first asset was now held by the fourth Photo container. This is not believed to be a known issue, and it was experienced once during this project.
- There is an interesting reddit exchange from three months ago (written Apr 2019) with a co-creator of Strapi [2] in which many shortcomings (“frequent development blocking bugs” is a standout) are acknowledged

# Citations

## Slide Two


[1] G. Luciano, “Does Your CMS Support Omnichannel?,” *Contentstack.com*, 06-Dec-2016. [Online]. Available: https://www.contentstack.com/blog/all-about-headless/does-your-cms-support-omnichannel [Accessed: 13-Apr-2019].

[2] “Decoupled Content Management Systems,” *npgroup.com*. [Online]. Available: https://www.npgroup.net/services/development/headless-decoupled-content-management-systems/. [Accessed: 13-Apr-2019].

[3] S. Streuli, “The Benefits of a Content Management System,” *Blog*, 03-Oct-2017. [Online]. Available: https://www.zivtech.com/blog/benefits-content-management-system. [Accessed: 13-Apr-2019].

# Citations

## Slide Three


[1] “Customizable API,” *Looking for an efficient open source Headless CMS?* [Online]. Available: https://strapi.io/overview. [Accessed: 13-Apr-2019].

[2] “Content,” *Public Roadmap*. [Online]. Available: https://portal.productboard.com/strapi/tabs/2-under-consideration. [Accessed: 13-Apr-2019].

# Citations

## Slide Four


[1] D. Žoljom, “Headless WordPress: The Ups And Downs Of Creating A Decoupled WordPress,” *Articles*, 26-Oct-2018. [Online]. Available:https://www.smashingmagazine.com/2018/10/headless-wordpress-decoupled/#working-with-default-wordpress-rest-api. [Accessed: 13-Apr-2019].

[2] A. Heinze, “About,” *Cockpit*. [Online]. Available: https://getcockpit.com/about. [Accessed: 13-Apr-2019].

[3] “Databases,” *Strapi Documentation*. [Online]. Available: https://strapi.io/documentation/3.x.x/guides/databases.html. [Accessed: 13-Apr-2019].

[4] “Creating Databases for WordPress,” *Support*. [Online]. Available: https://wordpress.org/support/article/creating-database-for-wordpress/. [Accessed: 13-Apr-2019].

[5] “Some Key Features,” *Simple Content Platform to manage any structured content*. [Online]. Available: https://getcockpit.com/. [Accessed: 13-Apr-2019].

[6] A. Heize, “Readme,” *CockpitQL*. [Online]. Available: https://github.com/agentejo/CockpitQL. [Accessed: 13-Apr-2019].

[7] R. McCue, “REST API: Welcome the Infrastructure to Core,” *Make WordPress Core*, 28-Oct-2015. [Online]. Available: https://make.wordpress.org/core/2015/10/28/rest-api-welcome-the-infrastructure-to-core/. [Accessed: 13-Apr-2019].

# Citations

## Slide Four (continued)


[8] “Issues,” *Strapi*. [Online]. Available: https://github.com/strapi/strapi/issues. [Accessed: 13-Apr-2019].

[9] “Rest API Resources,” *Documentation*. [Online]. Available: https://developer.wordpress.com/docs/api/. [Accessed: 13-Apr-2019].

[10] “Community,” *Cockpit Community*. [Online]. Available: https://discourse.getcockpit.com/. [Accessed: 13-Apr-2019].

[11] “Posts,” *Strapi Community*. [Online]. Available: https://spectrum.chat/strapi?tab=posts. [Accessed: 13-Apr-2019].

# Citations

## Slide Ten


[1] “User.js,” *Strapi*. [Online]. Available: https://github.com/strapi/strapi/blob/196fa038bd213710798d3bb5b8e7602fc00e9f5d/packages/strapi-plugin-users-permissions/services/User.js. [Accessed: 13-Apr-2019].

[2] “Authentication,” *Strapi Documentation*. [Online]. Available: https://strapi.io/documentation/3.x.x/guides/authentication.html#registration. [Accessed: 13-Apr-2019].

# Citations

## Slide Fifteen


[1] “SQLite error when adding required field with blank default ,” *github.com*. [Online]. Available: https://github.com/strapi/strapi/issues/2941. [Accessed: 13-Apr-2019].

[2] “Learn Strapi (node.js headless CMS) in 12 minutes,” *reddit.com*. [Online]. Available: https://www.reddit.com/r/node/comments/afaf5n/learn_strapi_nodejs_headless_cms_in_12_minutes/edwxtk4/?context=3. [Accessed: 13-Apr-2019].