

Exercise

Find Amenities in Denver, CO

Section 1 Exercise 1

March 26, 2021



Find Amenities in Denver, CO

Instructions

Use this guide and ArcGIS Online to reproduce the results of the exercise on your own.

Note: ArcGIS Online is a dynamic mapping system. The version that you will be using for this course may be slightly different from the screen shots you see in the course materials.

Time to complete

Approximately 25-45 minutes.

Technical note

To take advantage of the web-based technologies available in ArcGIS Online, use the latest version of Google Chrome, Mozilla Firefox, Apple Safari, or Microsoft Edge. Other browsers may not display your maps and apps correctly.

Introduction

In this exercise, you will build on the lectures from this section to make a web map and a web app. You will add data to a web map using ArcGIS Online, configure a layer's pop-up window, and publish a geo app that highlights amenities within a certain distance from a location using an instant app template.

There are three steps to building your web app. First, you start with the data, like any analysis. The data must be online, in the form of feature layers (<https://bit.ly/2kE916h>). A hosted feature layer is a collection of geographic data in the form of points, lines, or polygons that support vector querying, visualization, and editing. Second, you add layers to make a web map (<https://bit.ly/1qERGr4>). Hosted feature layers are powerful because you can add them to one or more maps. Third, from the map, you create a web app (<https://bit.ly/2DP4Plh>) for the best way to share the information. Apps are an integral part of ArcGIS.

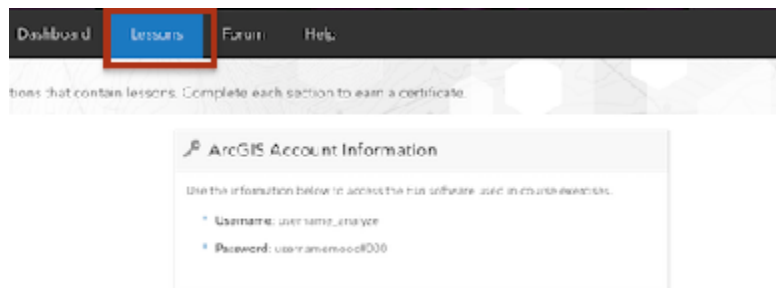


Throughout this exercise and the rest of the course, try to keep this workflow in mind. Also, remember the three principles that Ian mentioned in his lecture: purpose, functionality, and aesthetics. Lastly, think in terms of iterative development. DIY means that your apps may not be perfect on the first try. Iterative development allows you to configure web maps and geo apps the way you like. Make small changes, check the results, and then add more elements or make additional changes. You will need to try different approaches in your web maps and apps before you finally decide how you want to present information and how you want users to interact with your map. We will show you one pathway to app creation in this exercise, but we highly encourage you to experiment with new things along the way.

Step 1: Sign in to your course ArcGIS Online organizational account

This course uses ArcGIS Online, a web-based GIS system. Every registered student receives a user name and password to access ArcGIS Online during the course. Collectively, this user name and password are known as your "course ArcGIS credentials." The first step of this exercise explains where to find your course ArcGIS credentials and how to sign in for the first time.

- a In the MOOC platform, on the black navigation bar, click the Lessons tab to locate your credentials.



If you registered in the last few hours, your credentials may not be ready. You will see a message asking you to check back later.

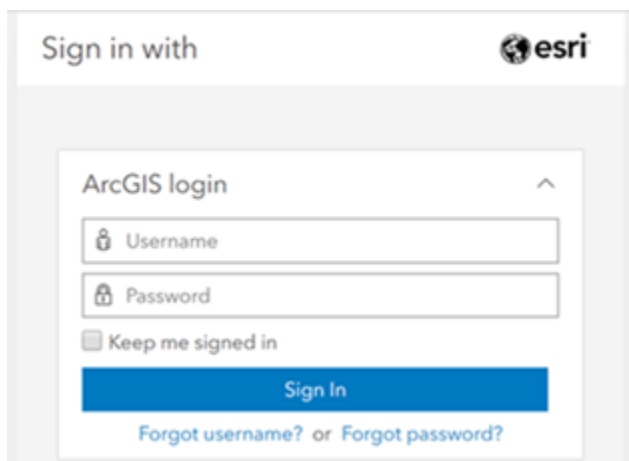
Note: You will need to refresh the web page to check whether your credentials are available. We will do our best to provide your credentials within one business day after you register.

After you locate your course ArcGIS credentials on the Lessons tab, you may sign in to ArcGIS Online for the first time.

- b Open a new private or incognito browser window (<https://bit.ly/2qTQdQL>).
- c Go to **www.arcgis.com**.



- d Click Sign In.

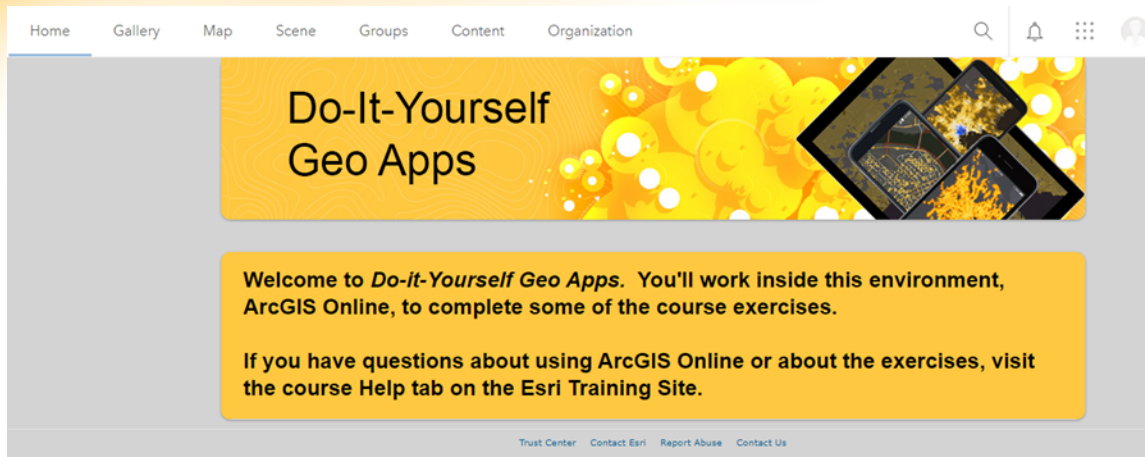


- e Under ArcGIS Login, either copy and paste or type your course ArcGIS credentials (user name and password).
- f Click Sign In.

The first time that you sign in you will be asked to set a security question. Follow the instructions on-screen to set your security question.

Note: An automated email will be sent to the email address associated with the account, telling you that your account was recently modified. No action is required.

After you set your security question, you will see the home page of the MOOC organization.



Note: ArcGIS Online is a dynamic mapping system, so the organization's home page may look slightly different from the graphic.

You will leave the private or incognito browser window open for the rest of the exercise. However, if you plan to finish the exercise later, you may close the browser window now.

Each exercise will instruct you to open a new private or incognito browser window and sign in to ArcGIS Online (or another website) with your course ArcGIS credentials.

You will use your course ArcGIS credentials to access ArcGIS Online **only**. If you or your computer accidentally uses your course ArcGIS credentials to sign in to an Esri.com website, you may see the following message: "Your active ArcGIS organizational account <user name>_geoapps is not enabled for esri.com websites."

If you see that message, follow these steps:

- Choose the option Sign Out Of This Account.
- Go to the website you are trying to reach.
- Choose Sign In, and then sign in with the correct user name and password (that is, *not* your course ArcGIS credentials).

Note: The setting that shows that your course ArcGIS account "is not enabled for esri.com websites" is correct. The account administrator is not able to change this setting.

Now that you are familiar with your ArcGIS Online course credentials, you will create a new web map.

Step 2: Add data to a web map

Note: Due to changes planned for the ArcGIS Online April 2021 update, the interface shown in screen shots may differ slightly from what you see on-screen.

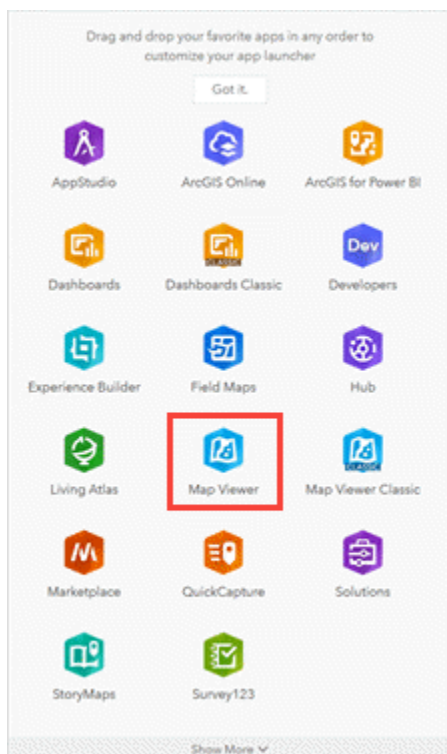
To create a geo app, you first need to create a web map. You will create a web map using layers that show amenities in Denver, Colorado. You will use layers that already exist and are shared publicly.

- a At the top right, click the App Launcher button.



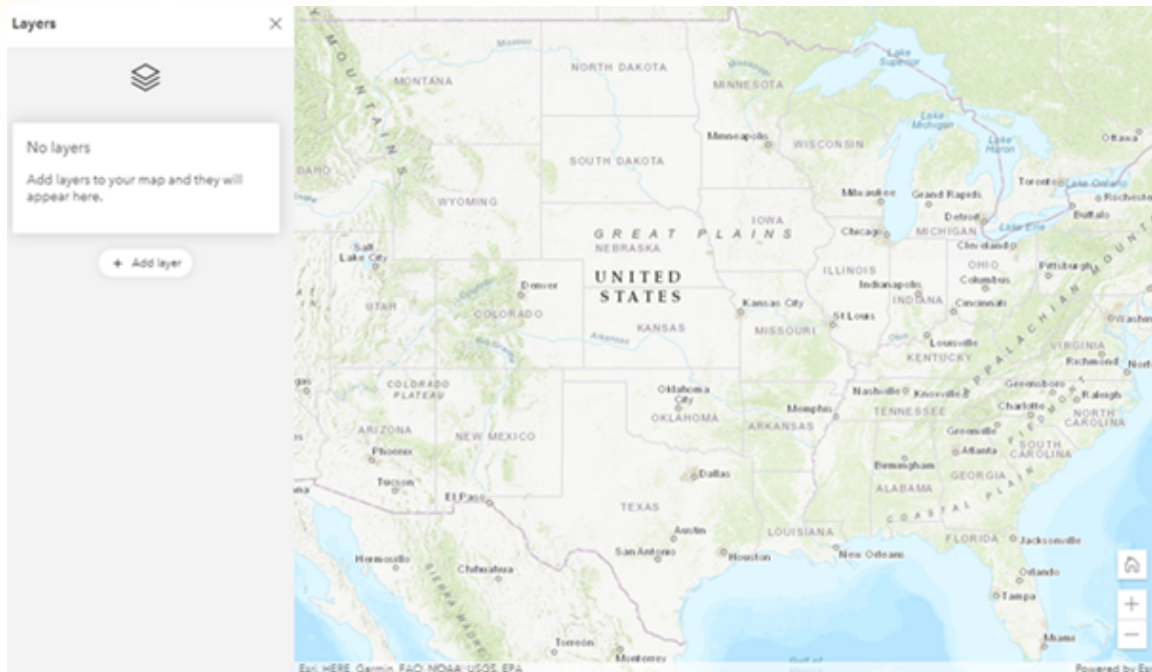
- b From the list of apps displayed, click Map Viewer.

Note: If you do not see Map Viewer, click Map Viewer Beta. The app icons may appear in a different order than what is shown in the graphic.



Map Viewer is the primary map-making tool for ArcGIS Online. You will use Map Viewer to create your map.

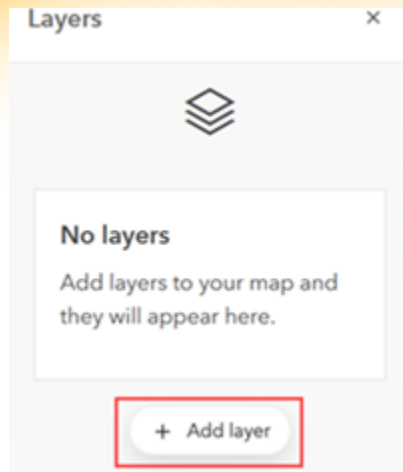
- c On either the Map Viewer Is Out Of Beta or the Welcome To Map Viewer Beta message, click OK.



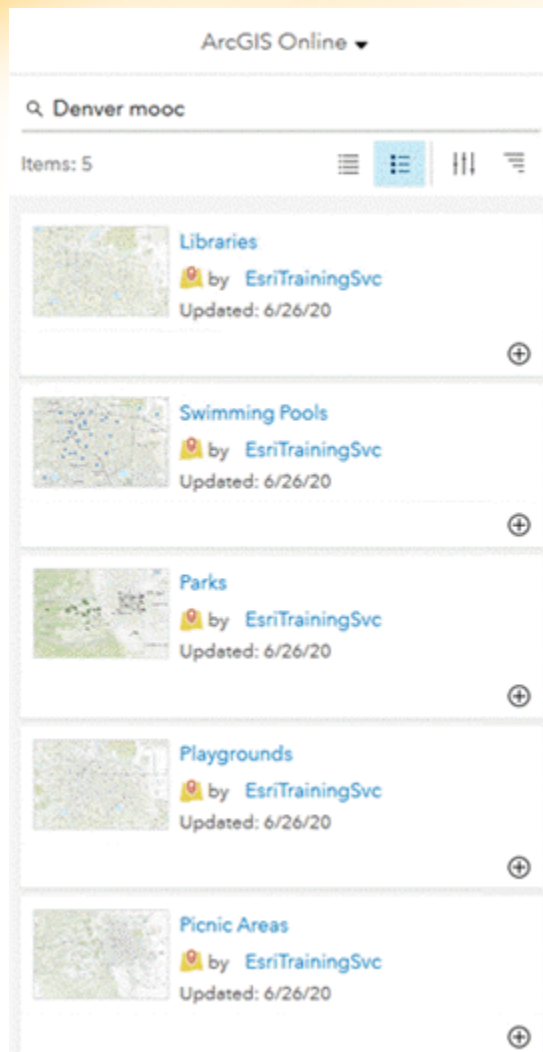
You should now see a blank web map ready for you to begin adding data to.

You will add layers to the map. You can search for layers that have been publicly shared in ArcGIS Online, layers that have been shared within your organization only, and private layers that you own or that have been shared with you through a group. You can search using keywords and apply a spatial filter to limit the results of your search to the map extent. You can also use ArcGIS Online groups to organize data layers and access the layers directly in the map.



- d Under Layers, click Add Layer.



- e Under Add Layer, click the My Content down arrow and choose ArcGIS Online.
 - f In the Search For Layers field, type **Denver mooc** and press Enter.
- Five layers representing local Denver amenities appear in the results.



Note: If you do not see the Denver items, first confirm that you are signed in to ArcGIS Online with your course credentials (where your user name includes _geoapps). If you are signed in to the correct account, please go to the Help tab in the MOOC platform.

- g** Next to each of the five layers owned by EsriTrainingSvc (Libraries, Swimming Pools, Parks, Playgrounds, and Picnic Areas), click the Add button  to add the layers to the map.
- h** At the top of the Add Layer pane, click the Back button  to return to the Layers pane.

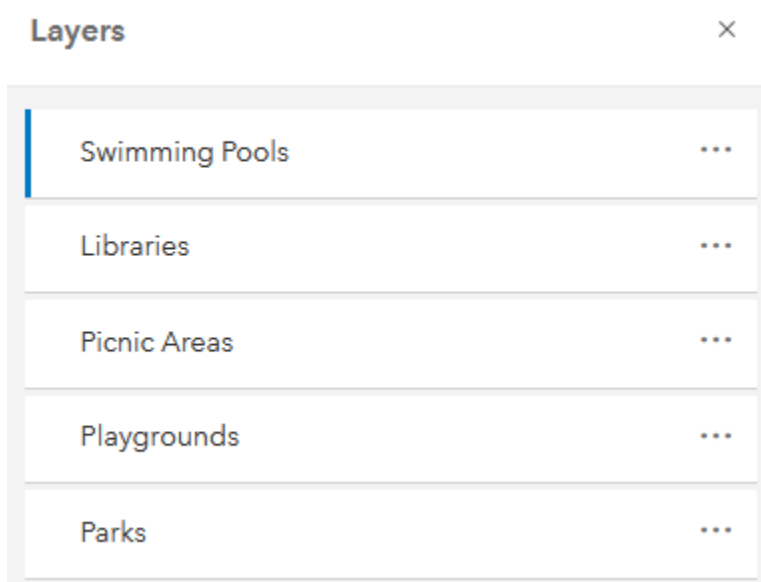
You have added web layers from ArcGIS Online to your web map. Now you can use this data and configure your web map.

Step 3: Reorder map layers

In the map, you do not want the Playgrounds or Parks polygons to obscure the other amenity point features, so you will move these layers to the bottom of the Layers pane.

- a In the Layers pane, click and drag the layers up or down so that the layers appear in the following order: Swimming Pools, Libraries, Picnic Areas, Playgrounds, and Parks.

Your Layers pane should match the graphic below.



Note: It's OK if you are not able to rearrange the layers if, for example, you are completing the exercise on a tablet device. You can still finish the exercise even if the layers are in a different order.

- b Zoom out or pan the map as necessary to view all of the features.

Question: It is easy to visualize the different geometries for the layers that you have added to the map. But when you use GIS, your features can contain both location information and attribute information, which allows you to learn more about each feature. How can you find this attribute information?

Answer: If you want to see the attribute data associated with these geometries, you must explore the geometries' tables.

Step 4: Examine attribute data in a table

You will open the table for the Libraries layer to view the attribute information.

- a In the Layers pane, for the Libraries layer, click the Open Actions button ...
- b Click Show Table.

The table displays all of the attribute data associated with the features in the Libraries layer, including the name and address of each library.

Tables have many capabilities:

- Sorting on a field
- Dragging columns to reorder fields
- Changing the column widths
- Showing and hiding fields
- Expanding the table to see more rows
- Getting field information, including field type and description
- Applying a filter
- Editing records, if editing is enabled

- c In the upper right of the table, click the Close button.



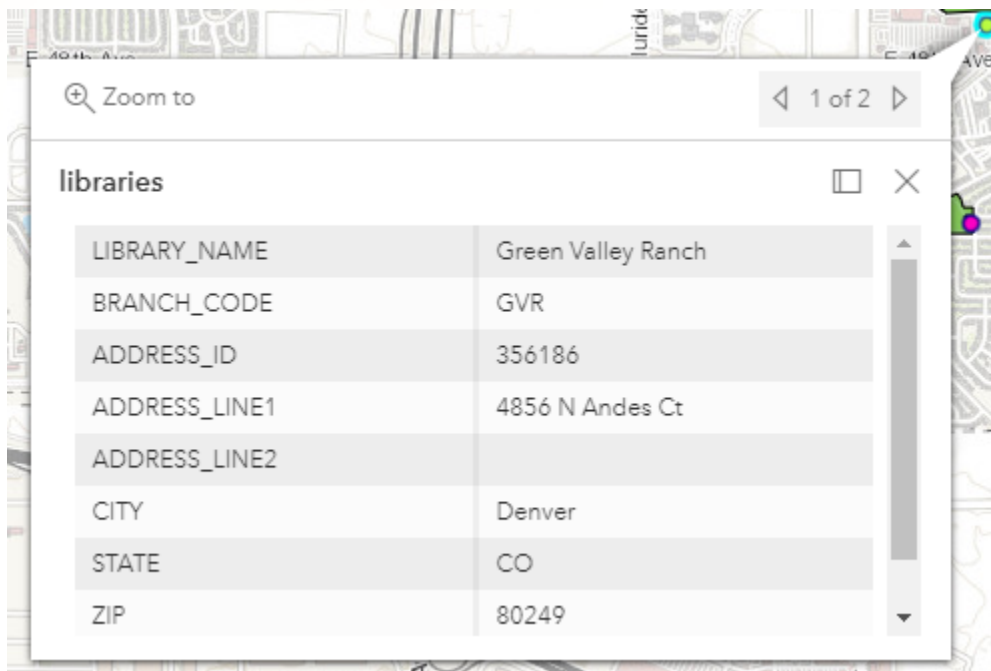
If you own or have editing privileges for a layer, you can work with its data in the attribute table or in the [item page](https://bit.ly/2RGX5jn) (<https://bit.ly/2RGX5jn>), under the Data tab. You can also work with a layer's data in a pop-up window.

Step 5: Configure pop-up windows

Now that you know what information is available about each library, you will configure the pop-up window with a subset of the available attributes. It is a best practice to always configure the pop-up windows in your web map.

- a In the map, click a feature of your choice to open its pop-up window.


When you explore your feature pop-up window (like the one in the following graphic), you may notice that you cannot edit the data. You cannot edit the data because you do not own the layer, and the owner of the layer did not enable editing.




Pop-up windows are useful because they are how users receive information from your map. In this course, it is especially important to remember that the pop-up configuration of your web map's layers influences the behavior of the geo apps that you publish.

- b Close the pop-up window.
- c If necessary, in the Layers pane, click the Libraries layer to select it.
- d On the right Settings toolbar, click Configure Pop-ups.


 Properties

 Styles


 Filter

 Clustering

 Configure pop-ups

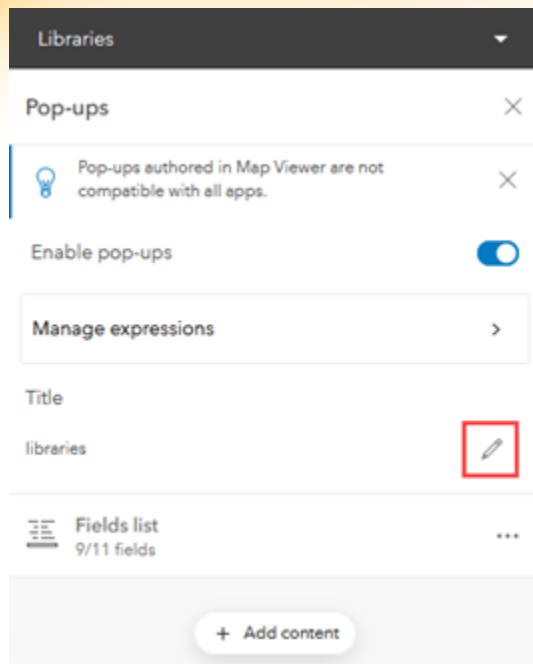
 Configure fields

 Labels

 Configure charts

Here, you will use the layer attribute data to control what information is shown when a feature is selected on the map as well as how certain geo app components behave. You will see the geo app component later. For now, you will configure the Libraries layer pop-up window.

- e In the Pop-ups pane, under Title, click the Edit button.



- f From the Title field, delete the word *libraries*.

You will configure the pop-up title to show the name of each library instead of the word *libraries*.

- g To the right of the Title field, click the Add Field button `{ }`.
- h From the list that opens, select `{LIBRARY_NAME}`, and then click OK to add it as the title of the pop-up window.

Title

`{LIBRARY_NAME}`



- i In the Fields section, click the Expand button `≡`.

Here you can choose the fields to display in your pop-up window. You will remove all of the display fields *except* ADDRESS_LINE1 and CIRCULATION.

- j Click the X to the right of each field except ADDRESS_LINE1 and CIRCULATION.

You can rename the fields using a display name that better describes your data.

- k On the Settings toolbar, click Configure Fields.

- l Click the ADDRESS_LINE1 field.
- m Under Display Name, replace the text with **Address** and then click Done.
- n Click the CIRCULATION field.
- o Under Display Name, replace the text with **Circulation**.
- p For Show 1000 Separator, turn the option on if necessary, and then click Done.

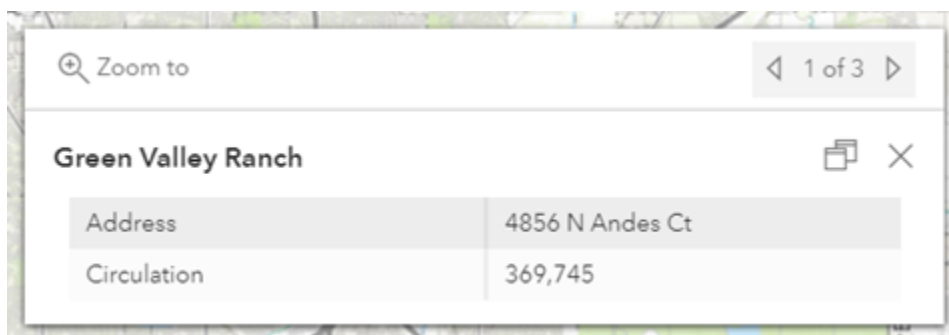
Address {ADDRESS_LINE1}	abc
CITY {CITY}	abc
STATE {STATE}	abc
ZIP {ZIP}	abc
Circulation {CIRCULATION}	int

You have updated the display names that are shown in the pop-up window. Let's take a look at the result.

- q In the map, click a library feature.

Hint: On the left toolbar, click Legend to determine which features are libraries.

The pop-up window for the feature should resemble the following graphic.



Configuring pop-up windows allows you to control the information that is delivered to someone who is viewing your web map or geo app.

Step 6: Save your map

To create your geo app, you must first save your web map.

- a On the left toolbar, click Save.
- b In the Save Map window, in the Title field, type **Denver Amenities**, followed by an underscore and your first and last names so that the map has a unique name.

Note: Because many other students are creating a similar map, adding your first and last names ensures that you can find your map later.

It is also a good idea to add *metadata*—tags and other identifying information about the data—to your items. This information helps you and others find this map, either in your organization or the general public, depending on how you share the map. Tags also help organize different types of items together (such as maps, map layers, or apps) so that they can be easily searched.

- c In the Tags field, type **Denver, amenities, swimming pools, libraries, parks**, and any additional tags you would like.

Note: Press Enter after each tag to save it in the Tags field.

- d If you like, you can add a summary description of your map in the Summary field (for example, **Web map with layers showing amenities in Denver**).

Save map

×

Title

Denver Amenities_JohnStudent

Tags

Denver ×

amenities ×

swimming pools ×

libraries ×

parks ×

Add tag(s)

Summary

Web map with layers showing amenities in Denver

- e Click Save Map.

Note: ArcGIS Online is a dynamic system, so we recommended periodically saving your map as you work.

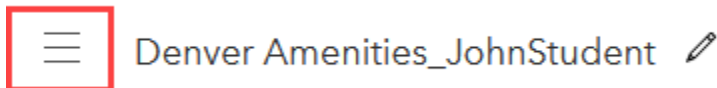
The map will be saved to your Content collection, which contains all the content you have created in ArcGIS Online. You can access your content at any time by signing in to your course account and clicking on Content.

Now that the pop-up configuration is stored in the web map, you will see how the pop-up window influences the behavior of a geo app. A geo app is one type of web app that has a spatial component, giving you a better way to share information.

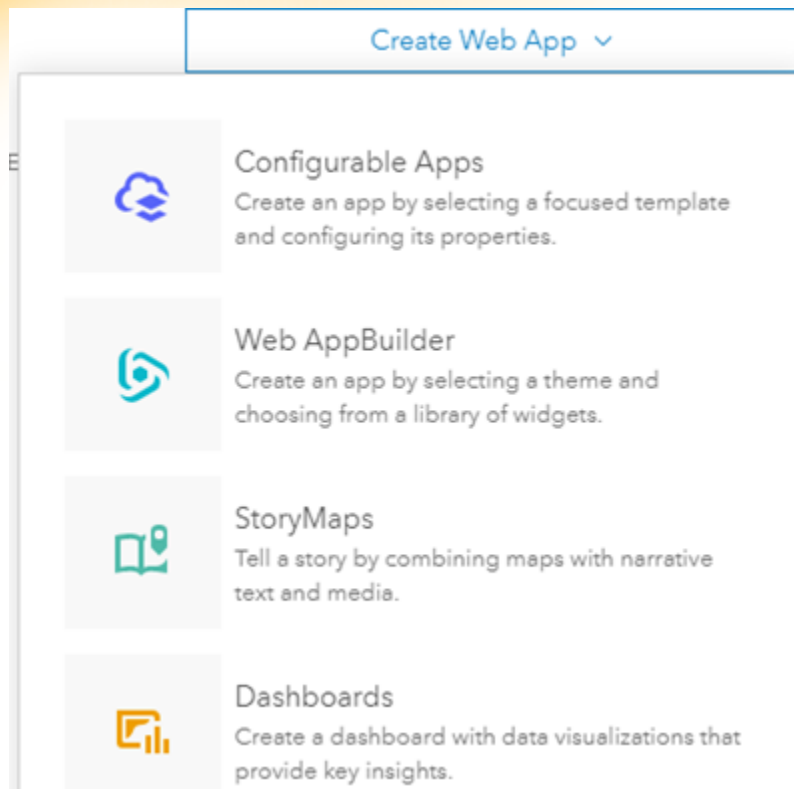
Step 7: Create a web app

Although you can author and share maps, geo apps are better for sharing geographic data with your organization or the general public, especially for non-GIS users. You must think about your reasons for making an app, just as you would analyze the purpose of a map. Whether you are sharing spatial information with an offline audience, such as field workers, or informing nontechnical users who would rather use an app than a map, different tools suit different purposes.

- a Next to the name of your map, click the Menu button.



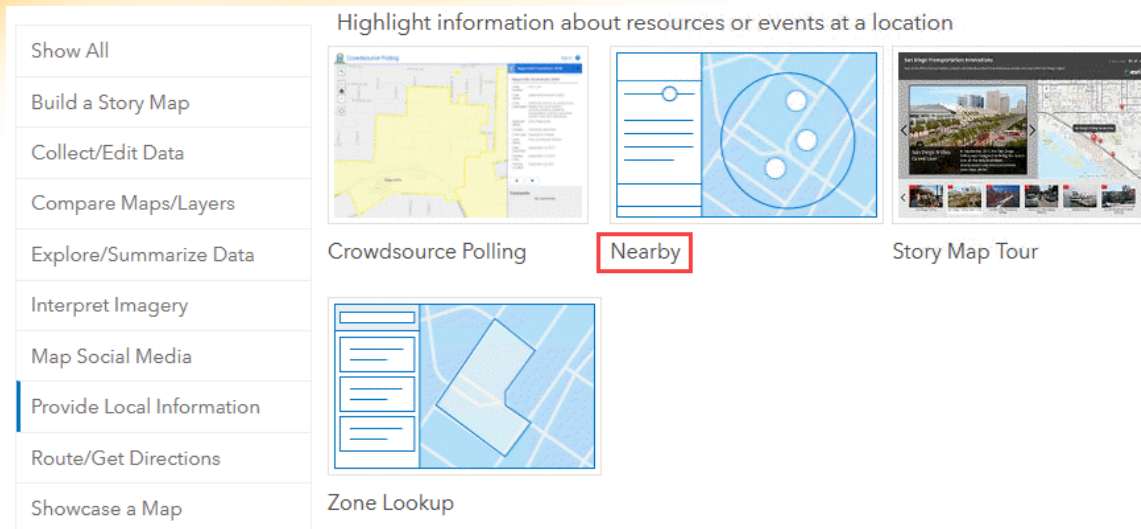
- b Click Content.
- c Click the title of your Denver Amenities web map.
- d On the right, click Create Web App.
- e Note the different options shown.



The Create Web App menu shows some of the options for creating geo apps from maps. You can create a web app with a map using ArcGIS Configurable Apps, ArcGIS Web AppBuilder, ArcGIS StoryMaps, or ArcGIS Dashboards. Each of these options offers various functionality, which we will learn about. Configurable Apps provide a suite of app templates. Instant apps are a type of configurable app that provide a modern configuration experience using the latest technology. You will see one of the instant app templates in this exercise.

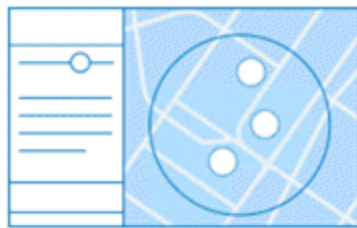
- f Click Configurable Apps.
- g The Create A Web App window is organized by what you are trying to achieve with your app. If you'd like, you can explore the available Configurable Apps templates (<https://bit.ly/2QGvjUD>).
- h In the Create A Web App window, under What Do You Want To Do, click Provide Local Information
- i From the filtered list on the right, select the Nearby (<https://bit.ly/3pd7ijG>) instant app template.

Do-It-Yourself Geo Apps MOOC



The Nearby instant app template is designed for users wanting to find sites of interest around a location.

- j On the right, click Create Web App.



Nearby

Discover information about what is closest to a specific searched location.



CLOSE

In the Create A Web App dialog box, you can see the Title and Tags from your web map.

- k Verify that your name is included in the title for the new app.

- l In the summary field, type **Nearby app highlighting amenities in Denver, CO**, and then click Done.
- m You have created a web app using the Nearby instant app template. You will configure your web app in the next step.

Step 8: Configure your web app

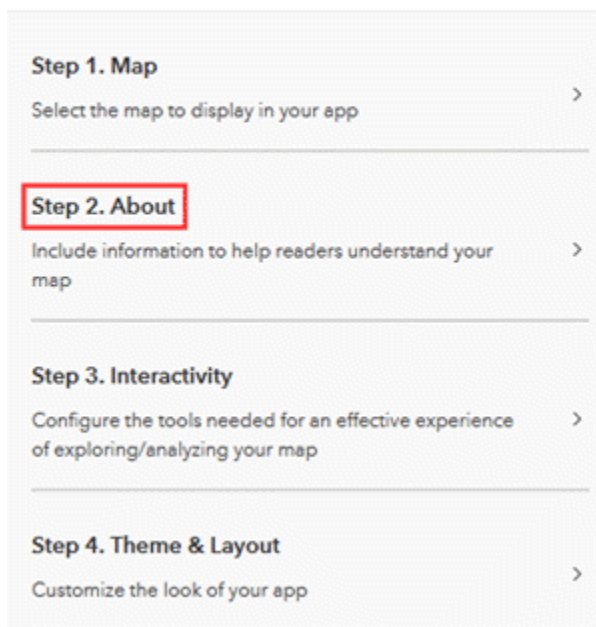
- a If necessary, close the Welcome To The App Setup Page window.

The Express Setup for the Nearby app template walks you through the configuration of your app in four steps: Map, About, Interactivity, and Theme & Layout. Because you created the web app from the item page of your Denver Amenities map, the web map is already selected for use. You want users to find nearby amenities. You will configure the web app to display information about its use and enable users to find nearby features from all layers of the map.

- b Under Express Setup, click the Step 2. About tab.

Express Setup

The most essential settings to consider when publishing this app



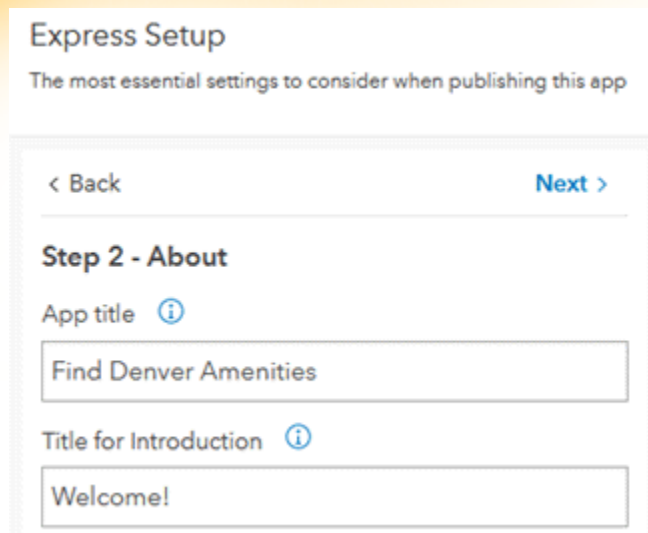
Step 1. Map
Select the map to display in your app >

Step 2. About
Include information to help readers understand your map >

Step 3. Interactivity
Configure the tools needed for an effective experience of exploring/analyzing your map >

Step 4. Theme & Layout
Customize the look of your app >

- c In the App Title field, delete the text and type **Find Denver Amenities**.



Express Setup

The most essential settings to consider when publishing this app

< Back [Next >](#)

Step 2 - About

App title ⓘ

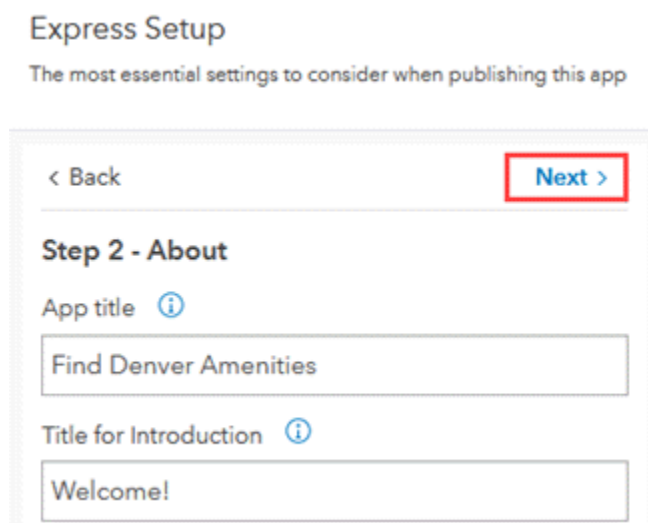
Find Denver Amenities

Title for Introduction ⓘ

Welcome!

The About step is where you inform the user about your geo app. You can add explanatory text, hyperlinks, and multimedia. Instant app templates provide general instructions for using the app, which you can modify.

- d Under Express Setup, in the top-right corner, click Next.



Express Setup

The most essential settings to consider when publishing this app

< Back [Next >](#)

Step 2 - About

App title ⓘ

Find Denver Amenities

Title for Introduction ⓘ

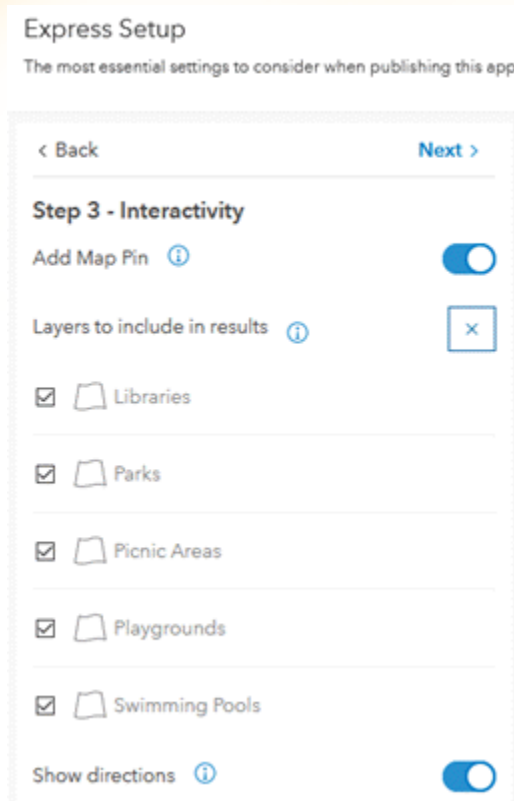
Welcome!

Note: Clicking Next takes you to Step 3, where you will configure the interactivity of the map.

- e Under Layers To Include In Results, check all of the boxes.

Checking the boxes for all of the layers means that all of the layers can be returned as a result. If a layer's box were not checked, that amenity would not be included in the user's search for nearby amenities—the layer would only be displayed in the map.

- f Turn the Show Directions option on.



- g Under Express Setup, in the bottom-right corner, click Publish, and then click Confirm.

Note: You will see a note that the Route service consumes credits from your ArcGIS Online organization. The more the Route service is used, the more the number of credits deducted. However, you will be the only one creating routes with your app, so credit use will be minimal. Enabling subscriber content in an app, whether it originated from a web map or an app template, is required if you want to share the app with the public.

- h If necessary, on the Authorize Premium Content window, click Authorize.

- i If necessary, in the Share window, click Close

The last step in configuring the Nearby geo app is Theme & Layout, where you decide how your app will look. We will not go over this step here, but we encourage you to explore the rest of the configuration options on your own.

Note: From the bottom-left menu, you can click the Full Setup button to make further customizations. Feel free to experiment with the different options.

Step 9: View the web app

Now that you have configured your web app, you will explore how the app works and see the impact of configuring the pop-up windows in your map.

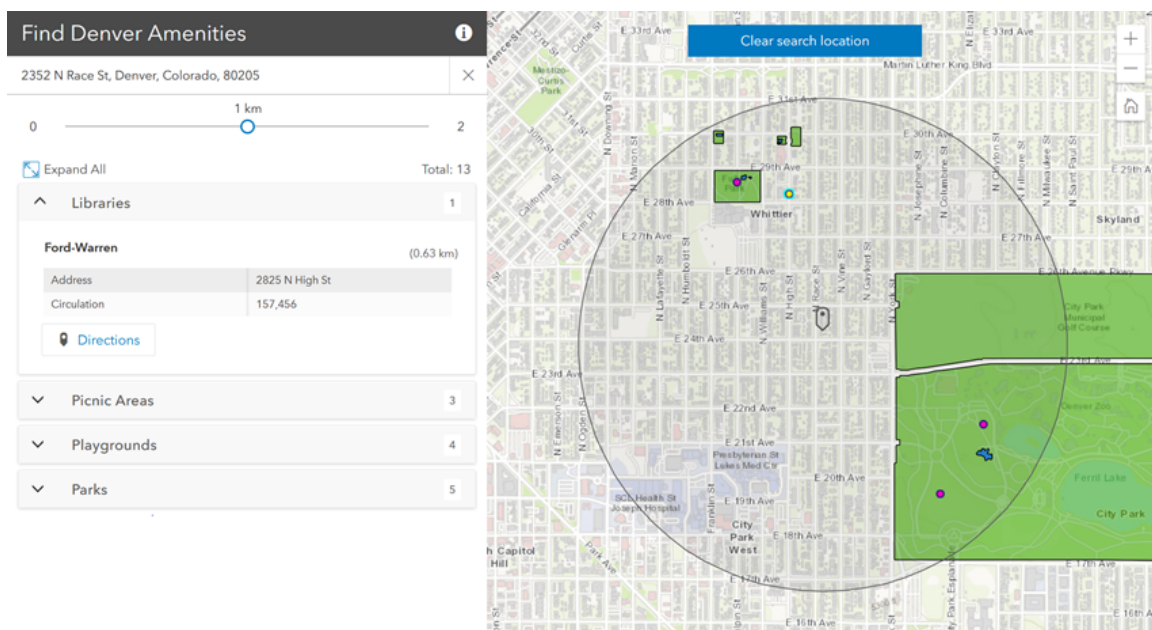
- a Next to the name of your web app, click the Menu button and choose Content.
- b Click the title of your Denver Amenities web app.

The item page for your web app displays. The item page has more metadata options than the short description you entered when creating the app. You can add a long description, terms of use, more tags, and credits.

- c Explore the different tabs and fields, which contain additional information and settings for your app.
- d In the top-right corner of the item page, click View Application to open the app.

Nearby geo apps can do a lot without much configuration. This quality relates back to the second point from the lecture video: functionality.

You can change the center of the amenities search zone by clicking the map or entering an address, you can adjust the distance of the search zone, and you can get information about returned features through the side panel. All of this functionality supports the app's purpose of providing information about amenities close to a given location.

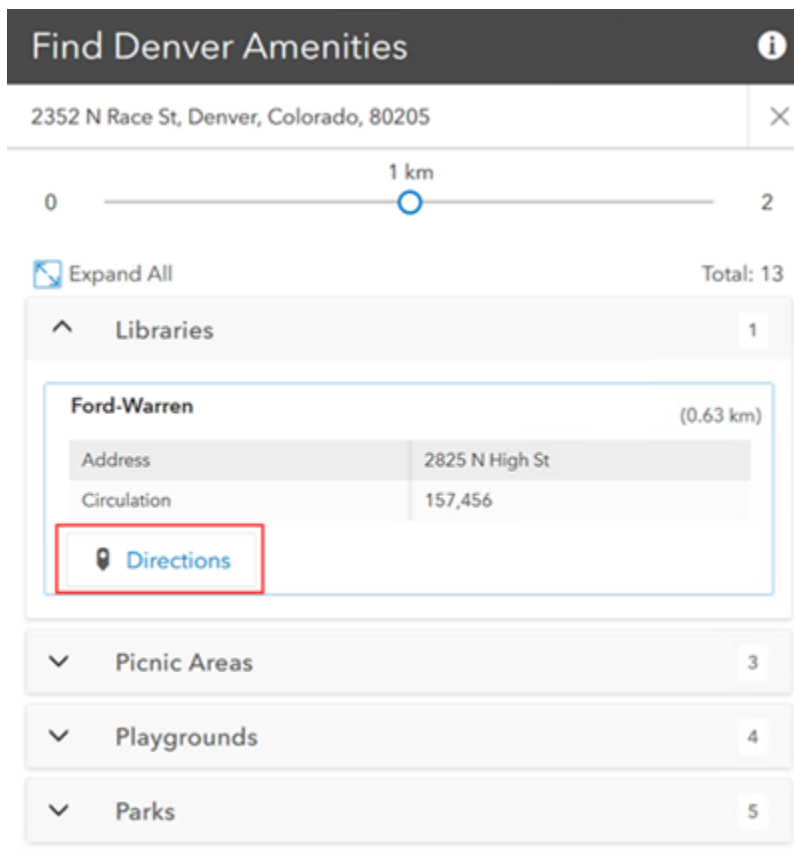


- e Click the map near Denver.

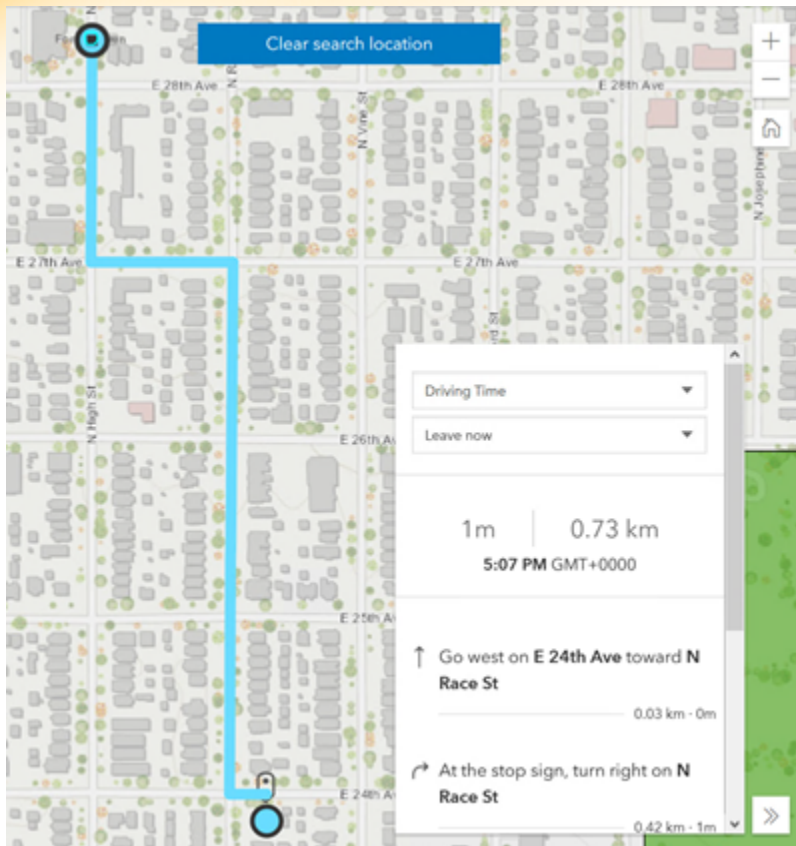
Note: The address search bar below the web app's title enables you to type in an address and find amenities nearby.

The information presented in the side panel is the same as the information that you can access through the layer attribute table and the information in the pop-up window that you explored earlier.

- f On the side panel, expand one of the layers, if necessary, and then click Directions.



Note: Directions appear in a window on the map, routing you to the amenity. In the following example, you see the pop-up window for a library.



- g On the left panel, expand a different layer to see other amenities.

Note: If there are no other layers, at the top of the map, click Clear Search Location. Click the map again, but in an area near more features. You can also change the search radius by dragging the bar at the top left.

The information that is displayed in this pop-up differs from what was displayed for the Libraries layer. The information differs because the Nearby template uses the pop-up configuration you saved in the web map to decide what information to present to the user.

^ Libraries 1

Ford-Warren (0.63 km)

Address	2825 N High St
Circulation	157,456

[Directions](#)

^ Picnic Areas 3

picnic_areas (0.73 km)

MAINT_DIST	East
LOCATION	City Park
LOC_CODE	201
SITE_NUMBER	
SHELTER	No
CAPACITY	50
NUM_TABLES	5
GRILLS	3
ADA_ACCESS	No
POWER	No
RESTROOM	Permanent

[Directions](#)

Now that you know how the web map's pop-up configuration controls the Nearby app's behavior, you could choose to return to your original web map and experiment with the other layers' pop-up configurations.

h When you are finished, close your browser.

Congratulations!

You have created your first web map and a geo app that provides information to app users about amenities near Denver, Colorado. You learned that creating visually appealing geo apps that provide relevant functionality is relatively easy using instant app templates in ArcGIS Online. And you should have a better understanding of what it means to go from web layers to web maps to web apps. We look forward to seeing the other apps you create in this course!

Learning Resources

Here are some more resources to help you continue learning:

[ArcGIS Online Resources](https://bit.ly/1qljbR0) (<https://bit.ly/1qljbR0>)

[10 Free GIS Data Sources: Best Global Raster and Vector Datasets](https://bit.ly/2L1tNE6) (<https://bit.ly/2L1tNE6>)

Learning Plans:

[ArcGIS Online Fundamentals](https://bit.ly/2TUrnYr) (<https://bit.ly/2TUrnYr>)

[Make and Share Web Maps with ArcGIS Online](https://bit.ly/36KXzJA) (<https://bit.ly/36KXzJA>)

Training Seminars:

[Build Your Own Web Apps](https://bit.ly/2qDFZq7) (<https://bit.ly/2qDFZq7>)

[Get Started with Configurable Apps](https://bit.ly/2jwdqC2) (<https://bit.ly/2jwdqC2>)

Tutorials:

[Learn ArcGIS](https://bit.ly/2kuoA0t) (<https://bit.ly/2kuoA0t>)

[How to Smart Map tutorial \(data visualization\)](https://bit.ly/2L7kDGg) (<https://bit.ly/2L7kDGg>)

Video:

[ArcGIS Online: App Basics](https://bit.ly/2P81gIM) (<https://bit.ly/2P81gIM>)