Welcome to the
Color-Coded Map Workshop!

Recording will be shared

Download Code & Slide

bit.ly/KDP_CCMAP

Click the top right **Download ZIP** button

Sign Up For:

KDP Account
bit.ly/KDP_signup

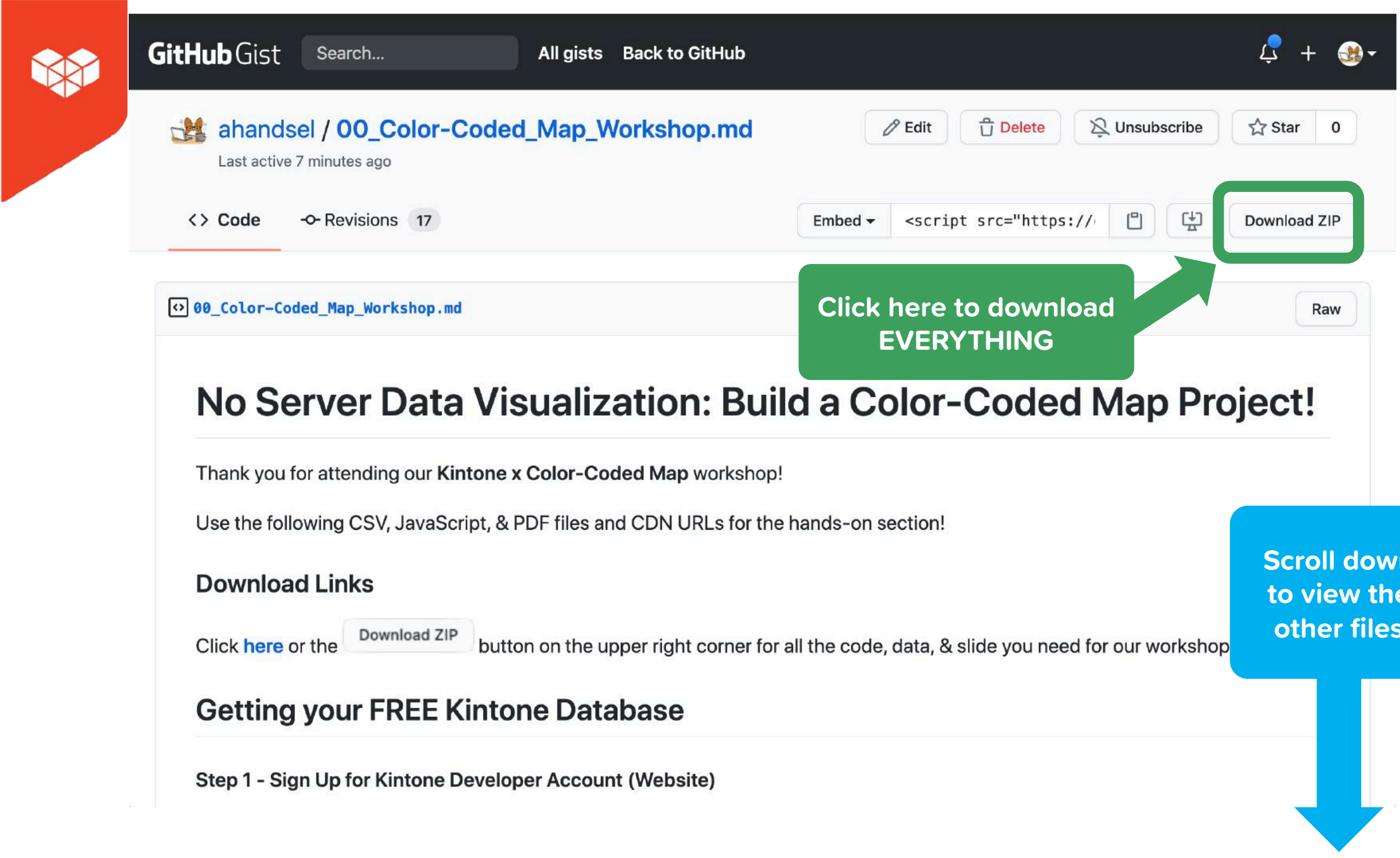
Developer License
bit.ly/K_DevLic

Asking Questions & Raising Hands

Post questions in the chat anytime!

Include your code & error messages.

$25 Gift Card Raffle at the End


GitHub Gist
Search...
All gists
Back to GitHub
ahandsel / 00_Color-Coded_Map_Workshop.md
Last active 7 minutes ago
Edit
Delete
Unsubscribe
Star
0
Code
Revisions
17
Embed
<script src="https://
Download ZIP
Click here to download EVERYTHING
00_Color-Coded_Map_Workshop.md
Raw
No Server Data Visualization: Build a Color-Coded Map Project!
Thank you for attending our Kintone x Color-Coded Map workshop!
Use the following CSV, JavaScript, & PDF files and CDN URLs for the hands-on section!
Download Links
Click here or the Download ZIP button on the upper right corner for all the code, data, & slide you need for our workshop
Getting your FREE Kintone Database
Step 1 - Sign Up for Kintone Developer Account (Website)
Scroll down to view the other files

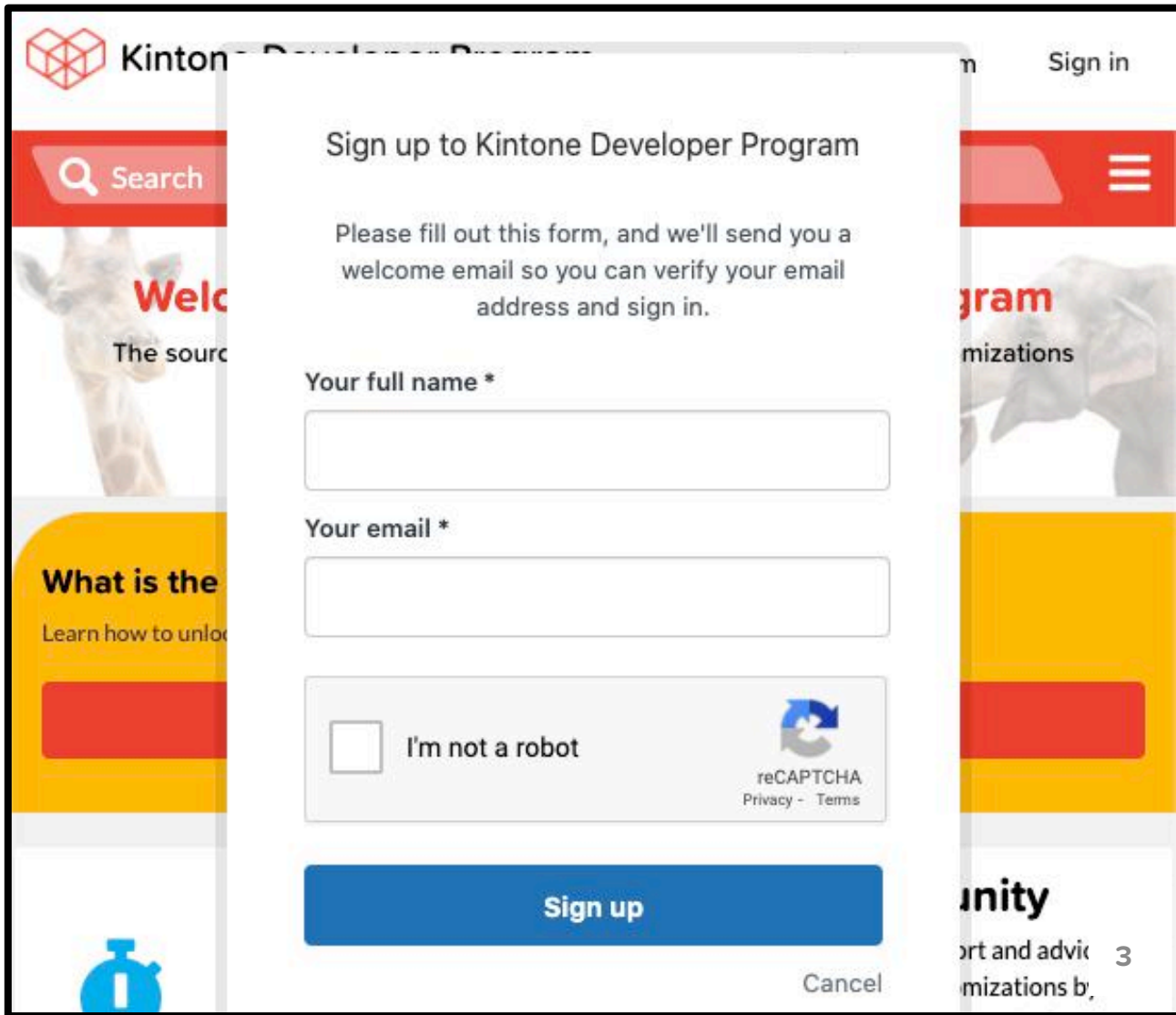
#1 - Sign Up for Developer Account

bit.ly/KDP_signup

⚠️ Do NOT use Safari ⚠️

⚡Accept Cookies First⚡

✅Chrome & Firefox works ✅



#2 - Create a Kintone Subdomain

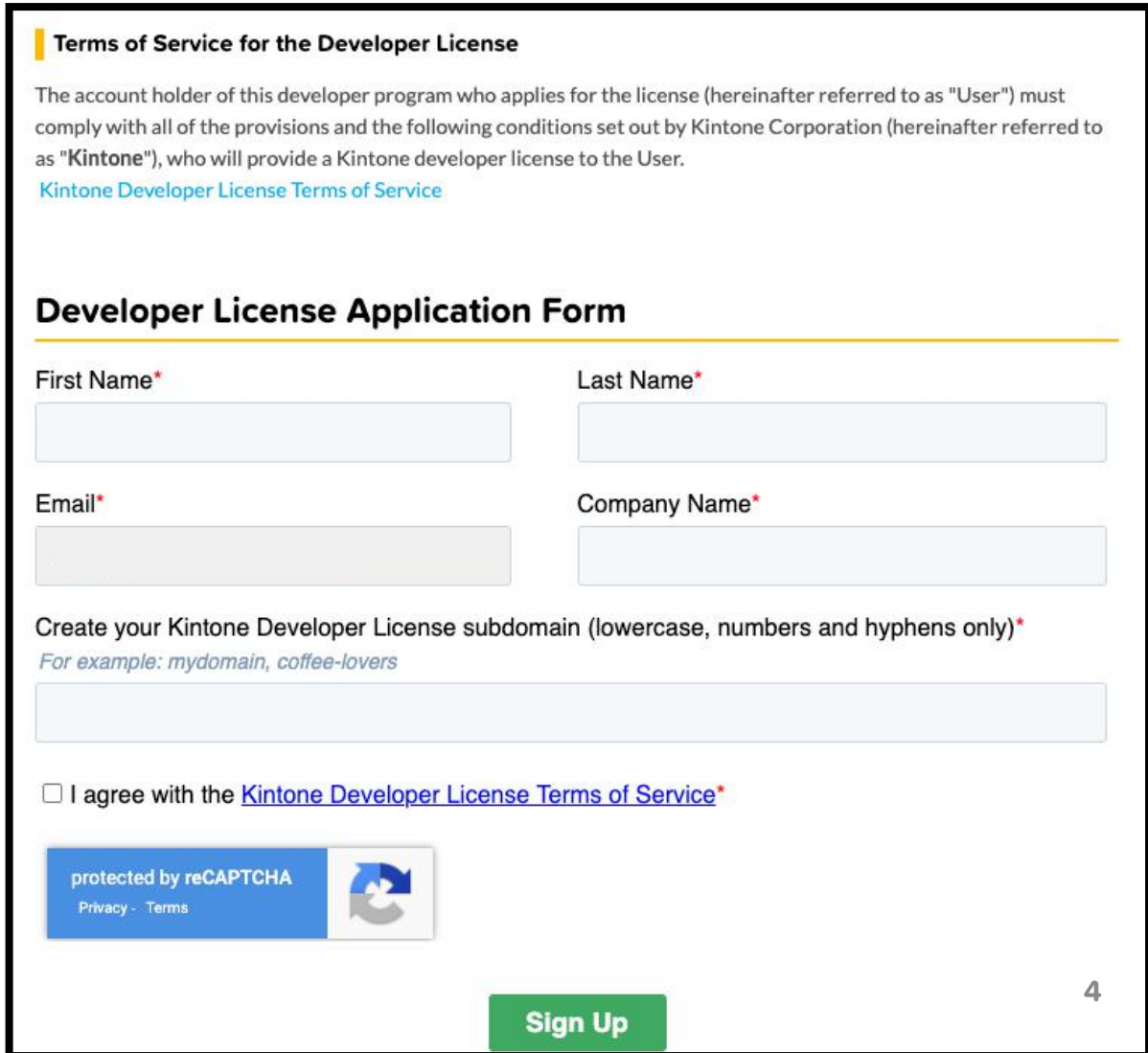
bit.ly/K_DevLic

⚠️ **No Special Characters** ⚠️

⚡ Name your Subdomain with only ⚡

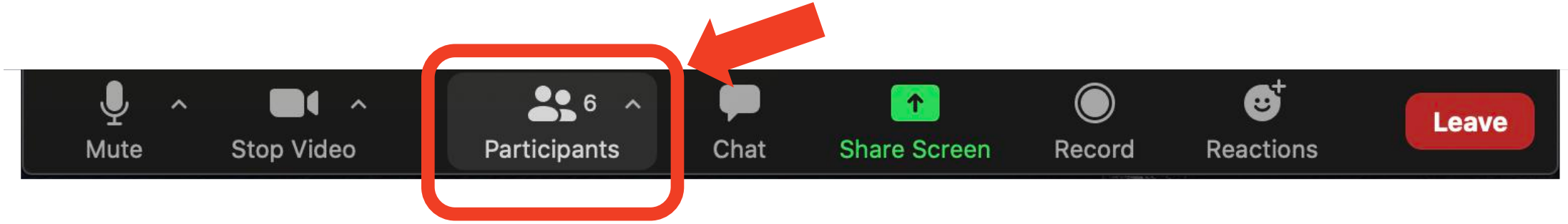
lowercase [a-z], numbers [0-9], & hyphens [-]

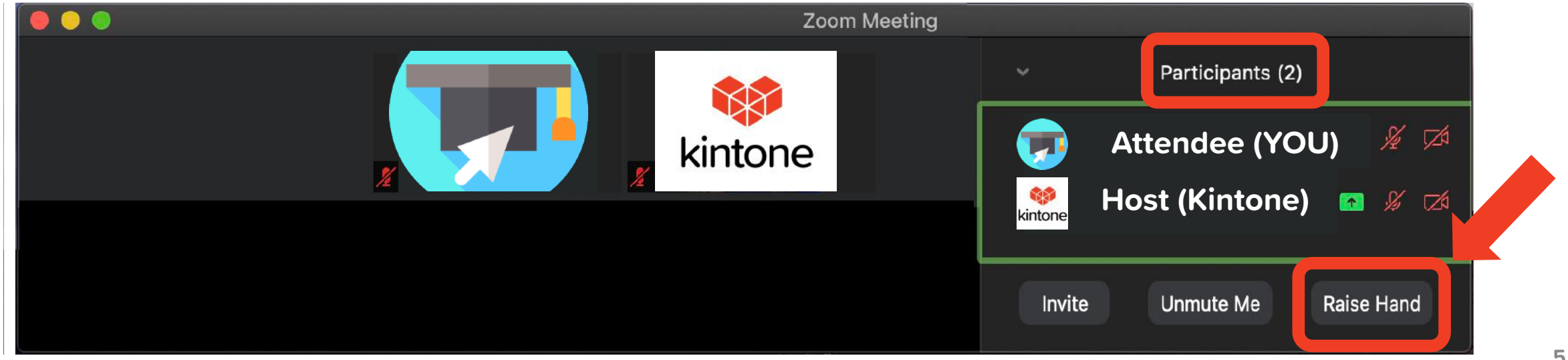
✅ e.g. weekend-hacker, jsis4you ✅



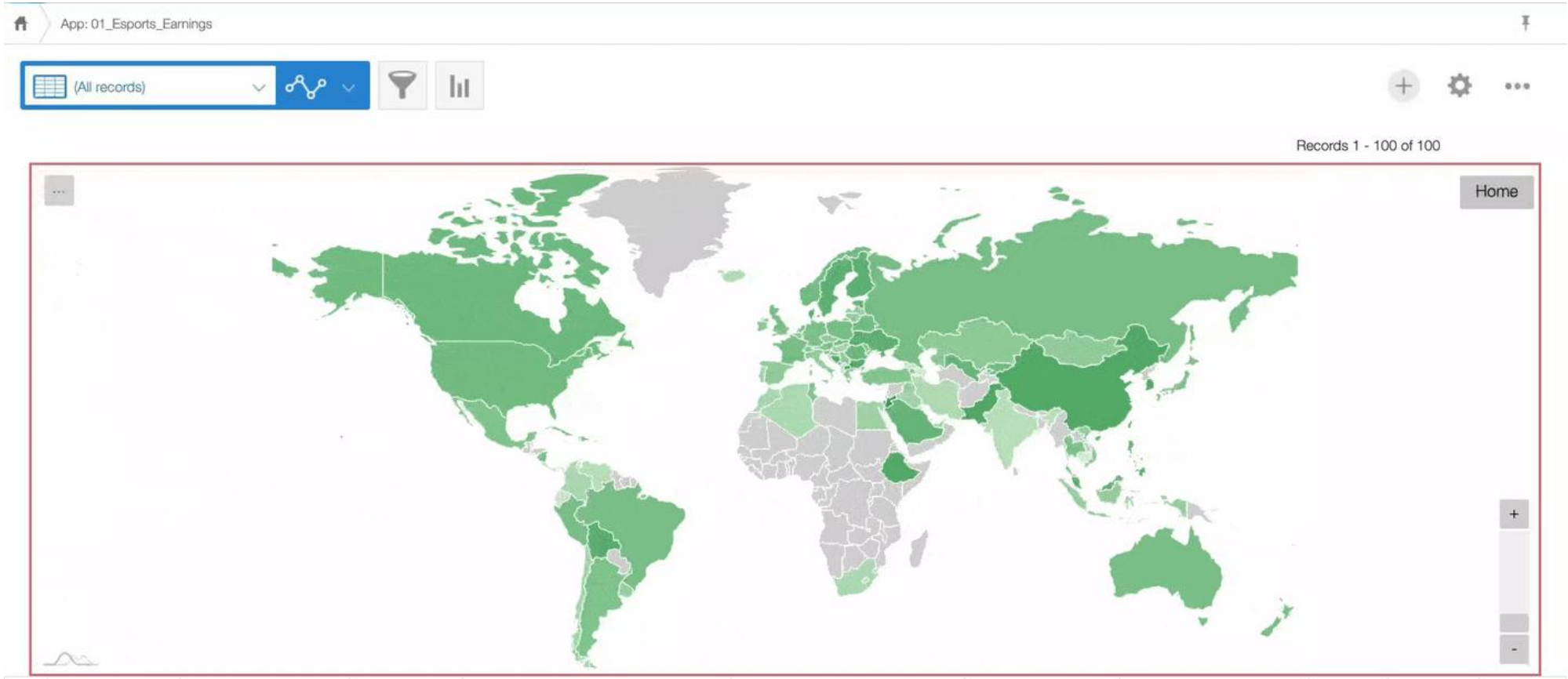
Let's Practice Raising Your Hand in Zoom

This helps us out who to look out for throughout this workshop.





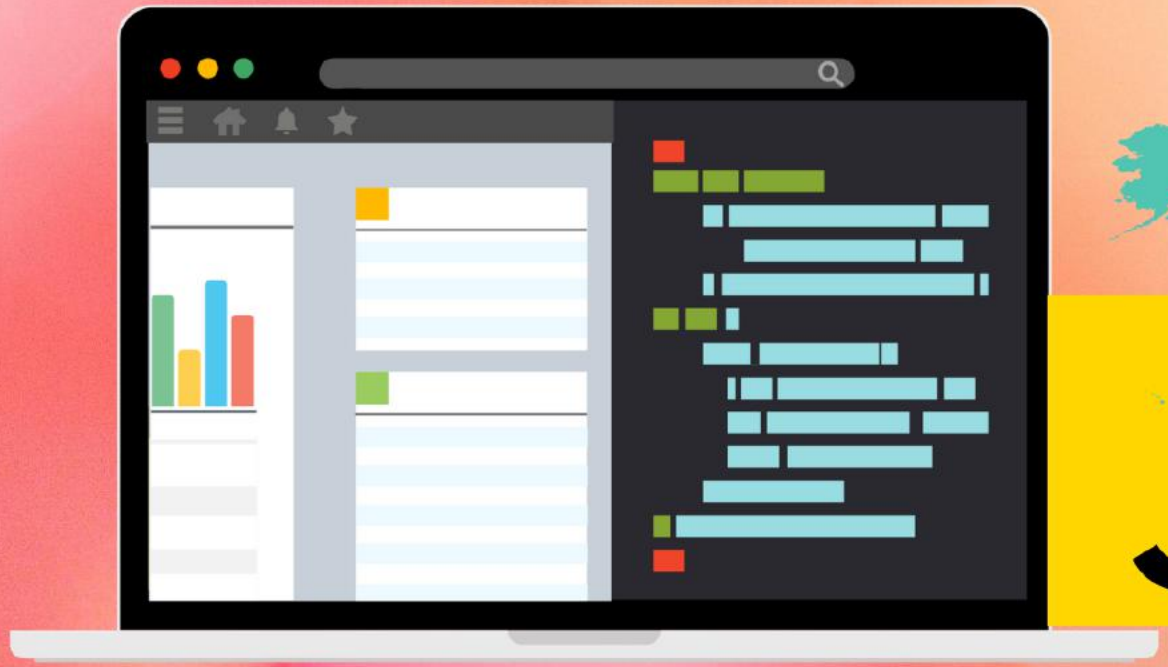
What We Will Make Today

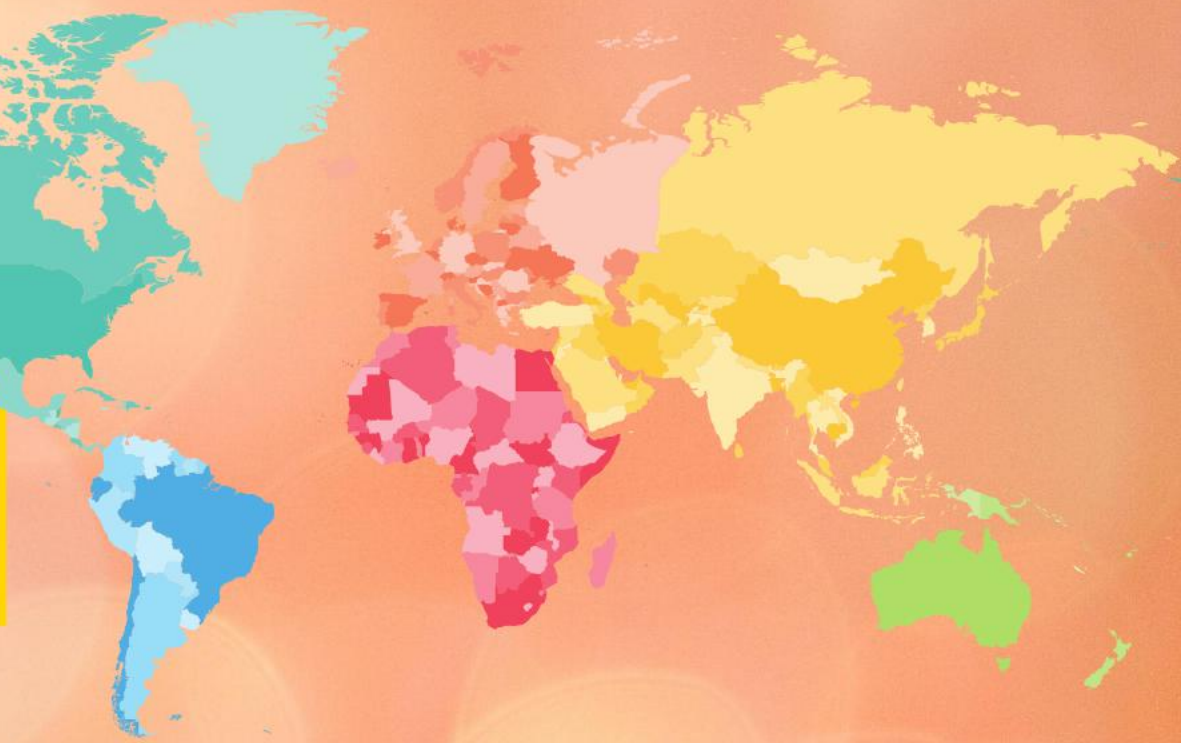


	Record number	Country	Continent	Country Code	Total Earned Prize Money ($)	Number of Players	Prize Money per Player	Latitude	Longitude	
	100	Albania	Europe	al	38621.6	22	1756	41.1533	20.1683	
	99	Algeria	Africa	dz	73040.04	40	1826	28.0339	1.6596	

No Server Data Visualization

Build a Color-Coded Map!





This Workshop is For

Front-end developers who want to **spend less time** setting up their back-end infrastructure

I want to **concentrate** on the **UI/UX** of my project!

Hey! I’m Nim.

My path to becoming a Technical Evangelist:

Hack Reactor SF

⬇

Kintone Sales Engineer

⬇

Lead Sales Engineer

⬇

Sales Engineering Manager

⬇

Technical Evangelist

Today's Agenda

1. Get the Big Picture
2. Create a Kintone App
3. Display amCharts on Kintone
4. Call REST APIs from Kintone

Today's Agenda

1. Get the Big Picture
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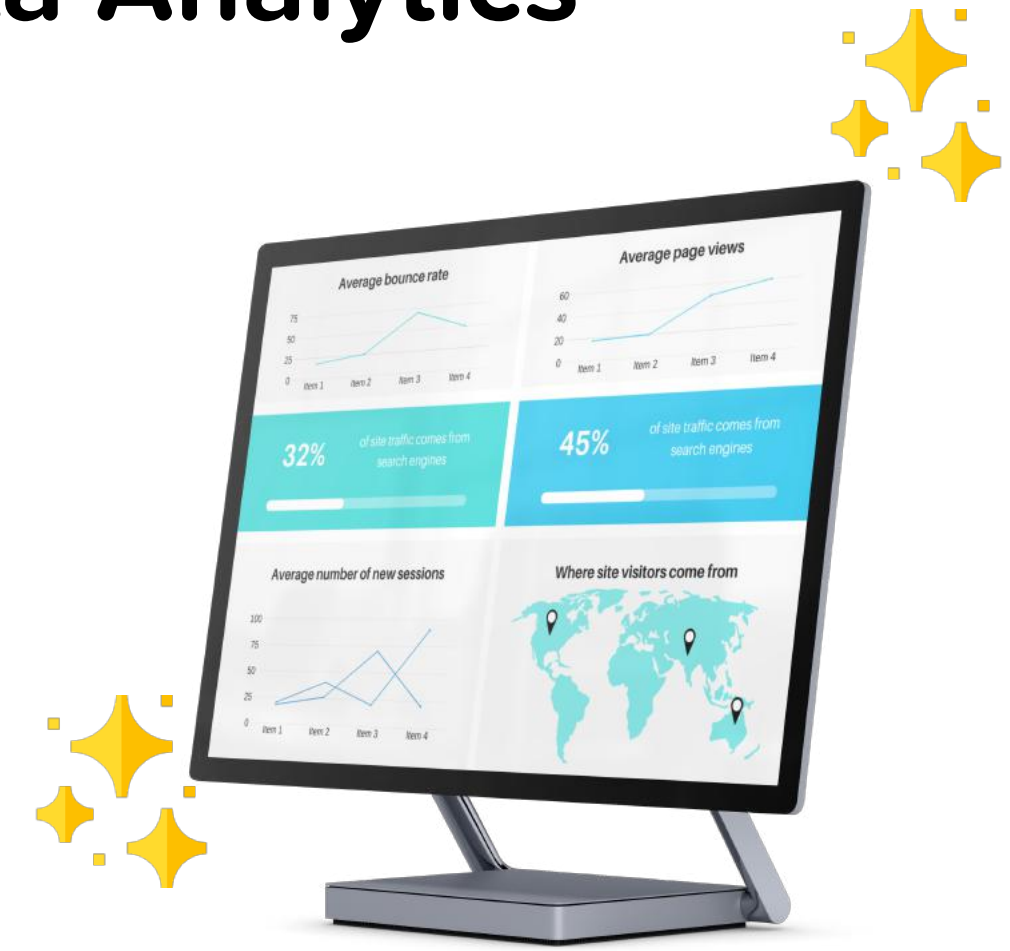
Scope of Traditional Data Analytics

Nearly all conversations about Data Analytics revolve around three goals:

- Make data look pretty
- Understand the data easily
- Generate actionable insight



But are we **sharing** the insights effectively?

Missing - Unified Communication

Where did that message go?

Data Silos

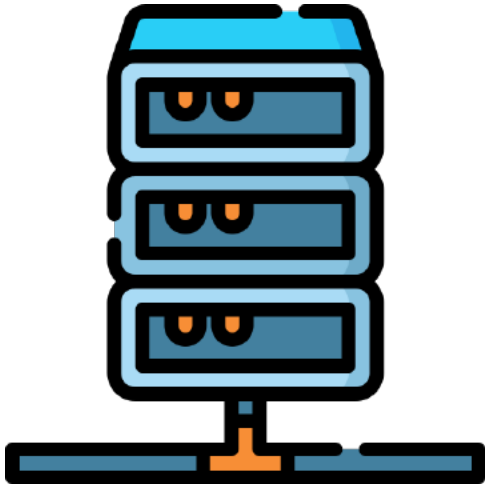
Information is not being shared effectively

Scattered Communication

Unclear where the conversation is happening

Where Kintone is Special!

kintone



Data & the conversations about the data are all in one place

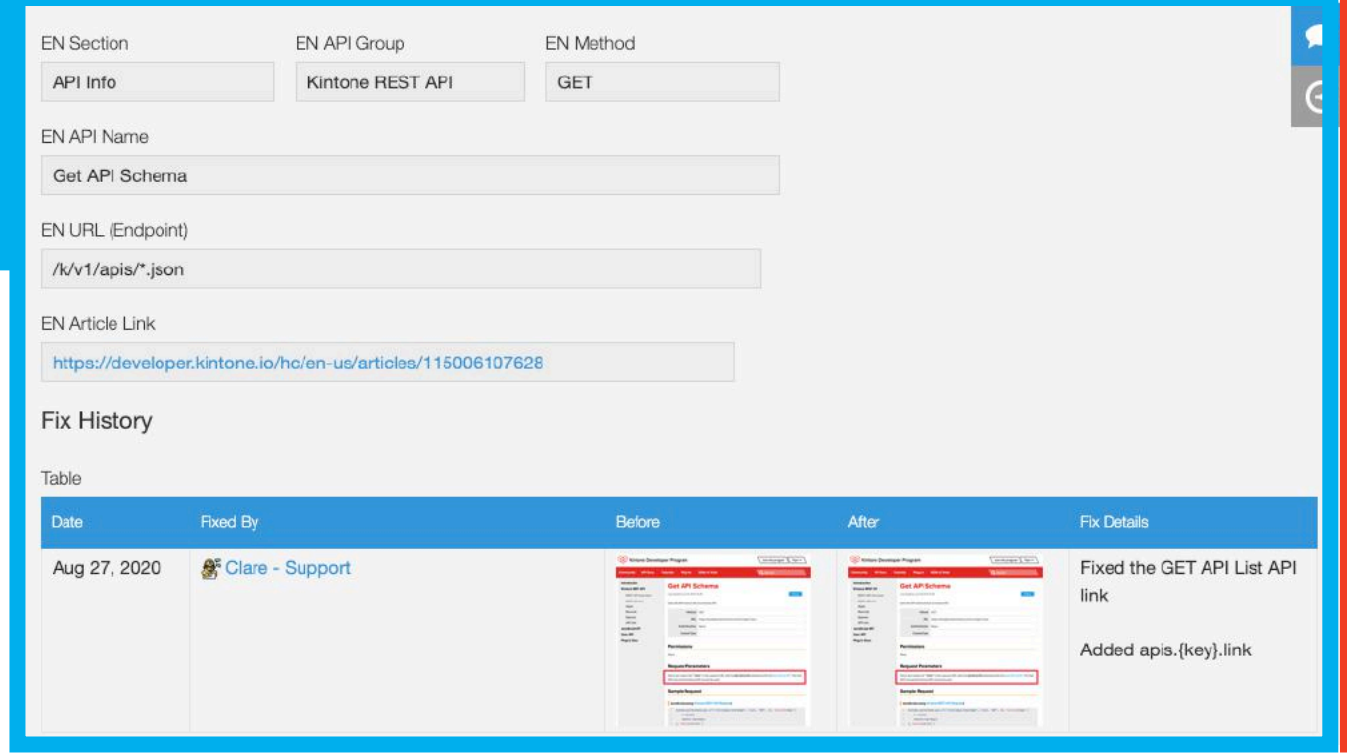
What is Kintone?

Kintone is a **no-code / low-code** cloud platform for teams to easily share and **collaborate** on their **data** efficiently.

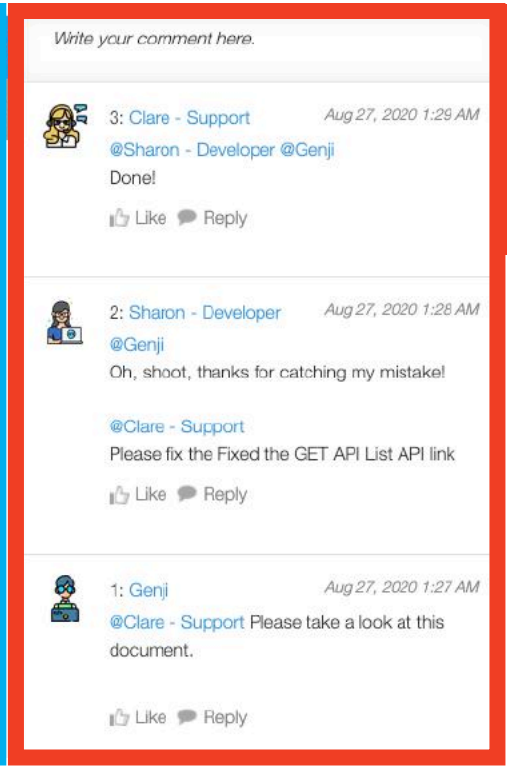
What is Possible?

Remove the Friction
Keep the conversation where the data lives

Where Data Lives

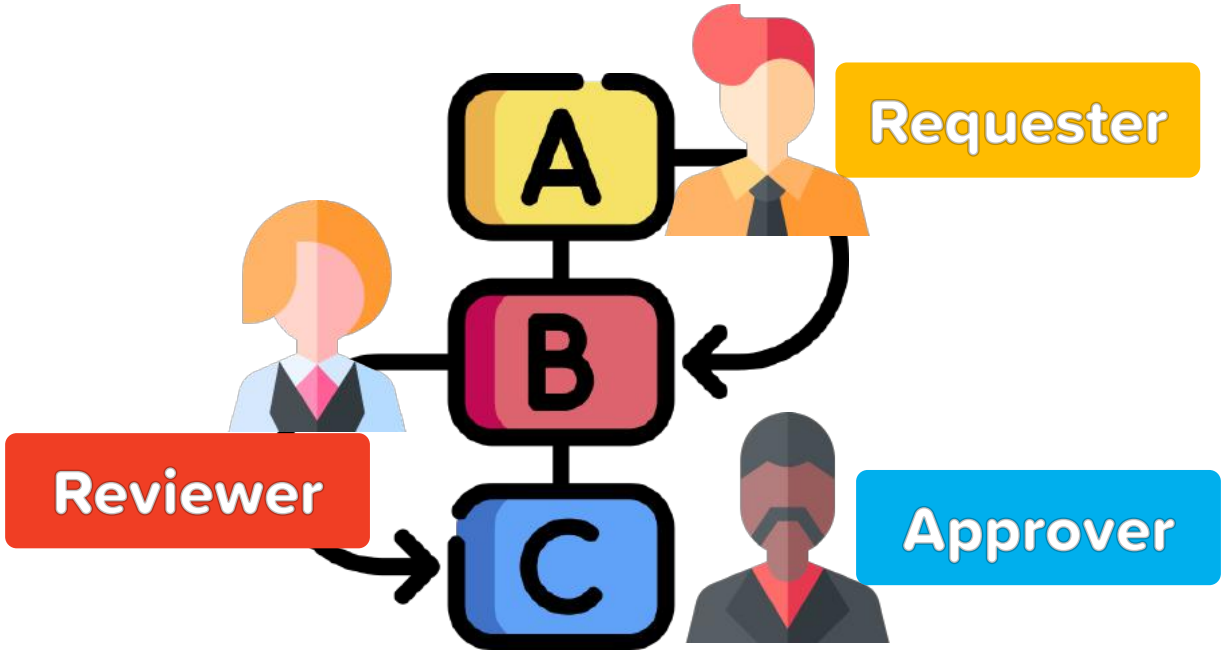


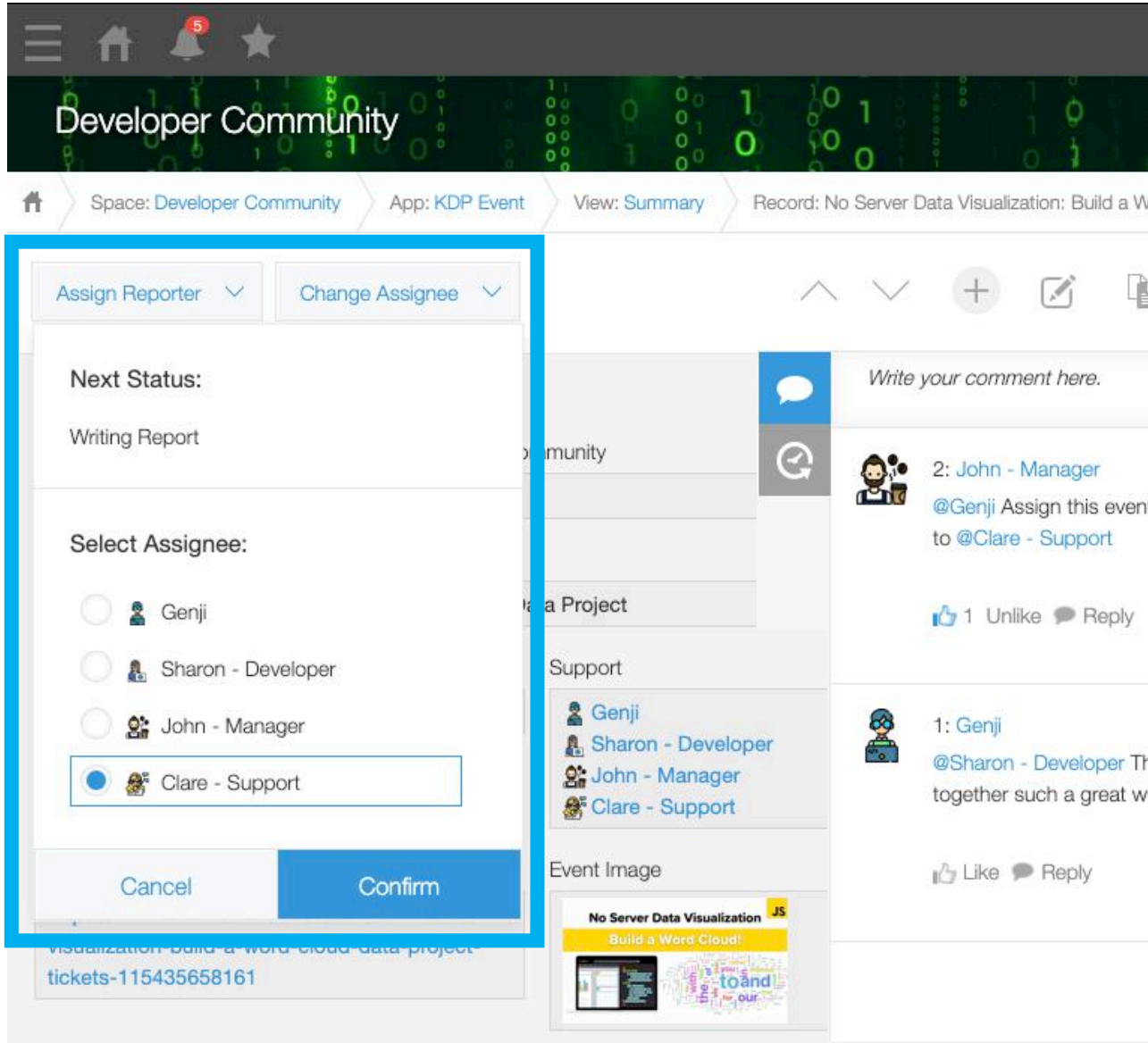
Where Communication Lives



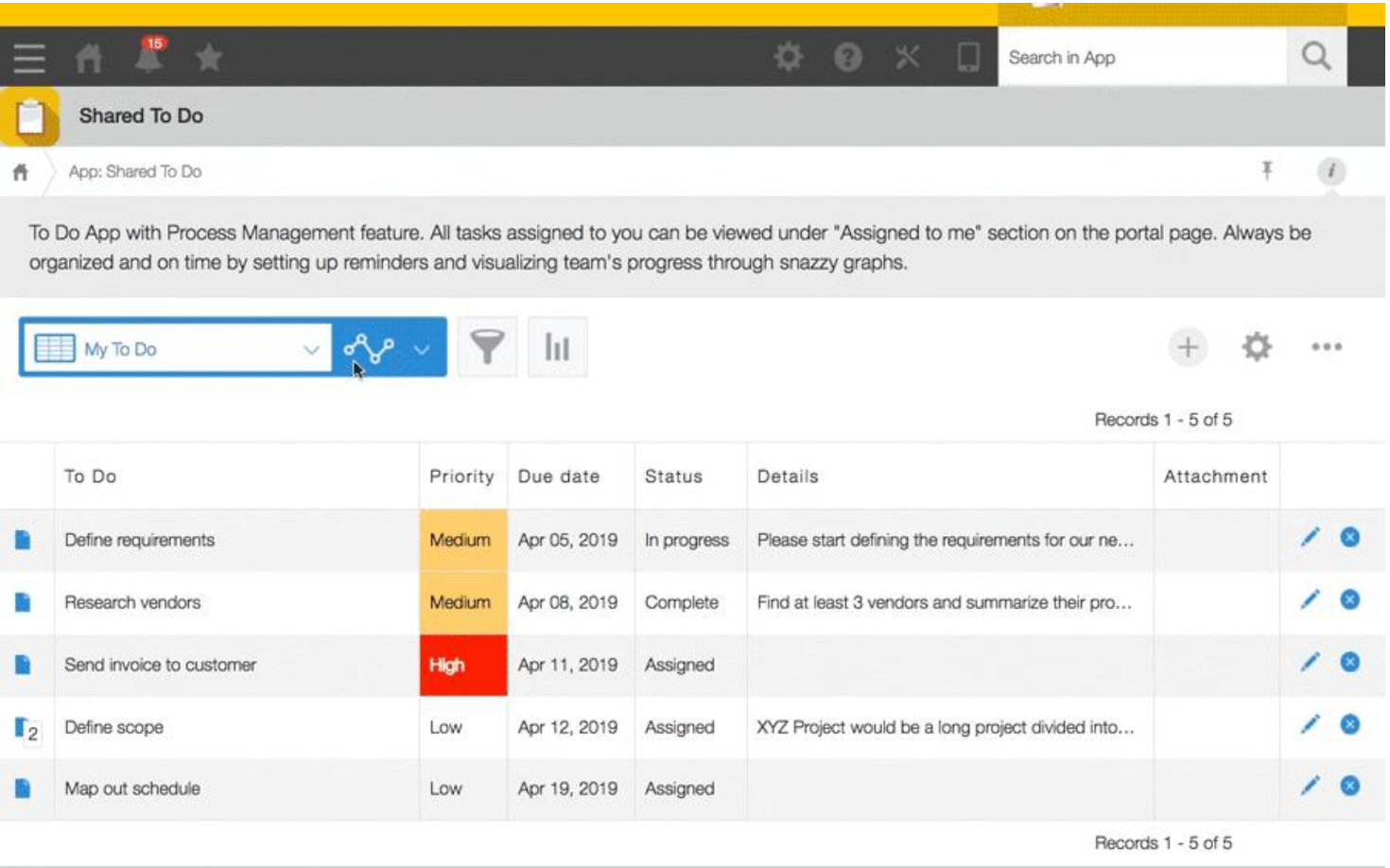
Workflow

With Process Management, establish a workflow so that the **right people** sees the **right info** at the **right time**.





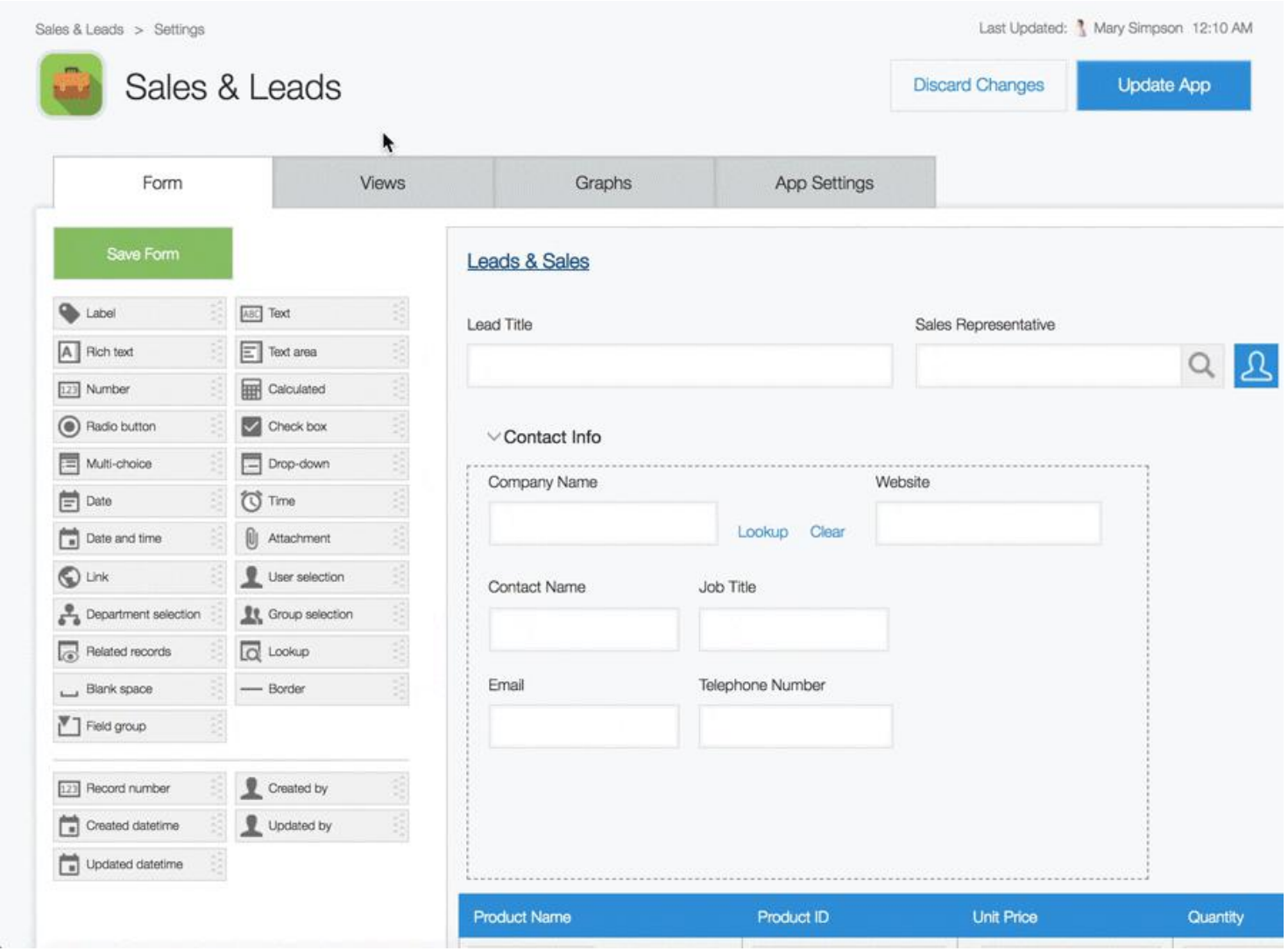
Kintone Apps



The main building block in Kintone is an **App**.

Imagine an **App** as a powerful, online table where data is stored in records.

Kintone Apps



Apps are easy to **create** using a **drag-and-drop** interface with no coding needed.

Apps are extensively **customizable** with client-side **JavaScript**.

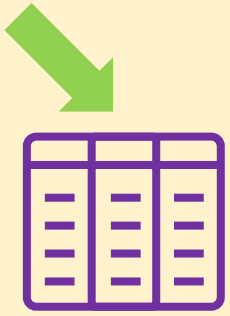
Everyone Contributes!

As a **no-code & low-code platform**, Kintone supports non-coders with visual programming UI while enabling sophisticated customization

Anyone can create Apps that they need without coding

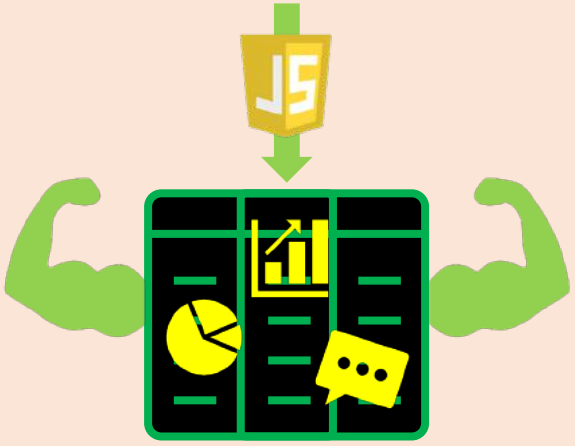
Product Catalog

Knowledge Base



Job Vacancies

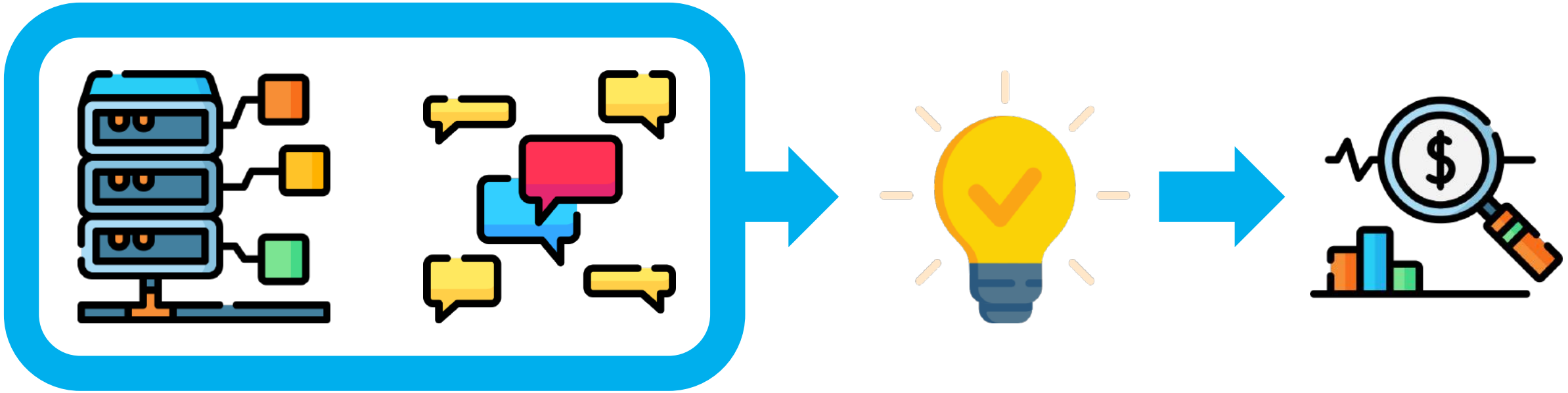
Developers can enhance the Apps with JavaScript



Fulfill the Promise of Data Analytics

Gain meaningful insights about the data that become operationalized quickly.

Data + Communication → **Insight** → **Action**



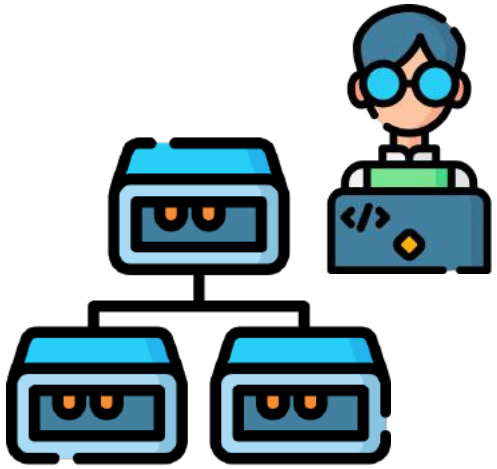
How Developers Contribute

kintone
developer program

How Developers Contribute

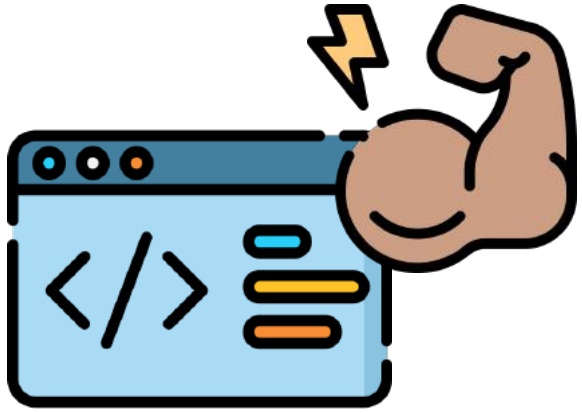
Command Center

- Create a custom look & feel
- Integrate with 3rd party web applications to exchange data



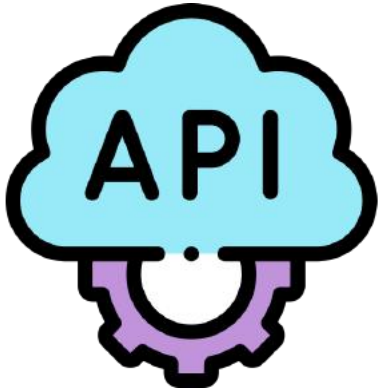
Enhancements

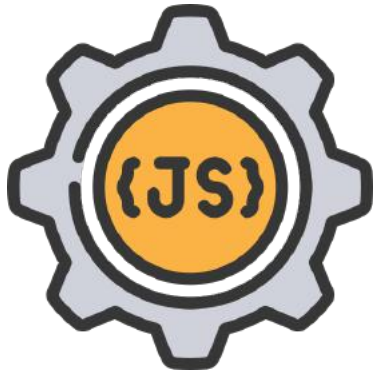
- Develop JavaScript customizations
- Build & share extensions



Tools Inside Kintone

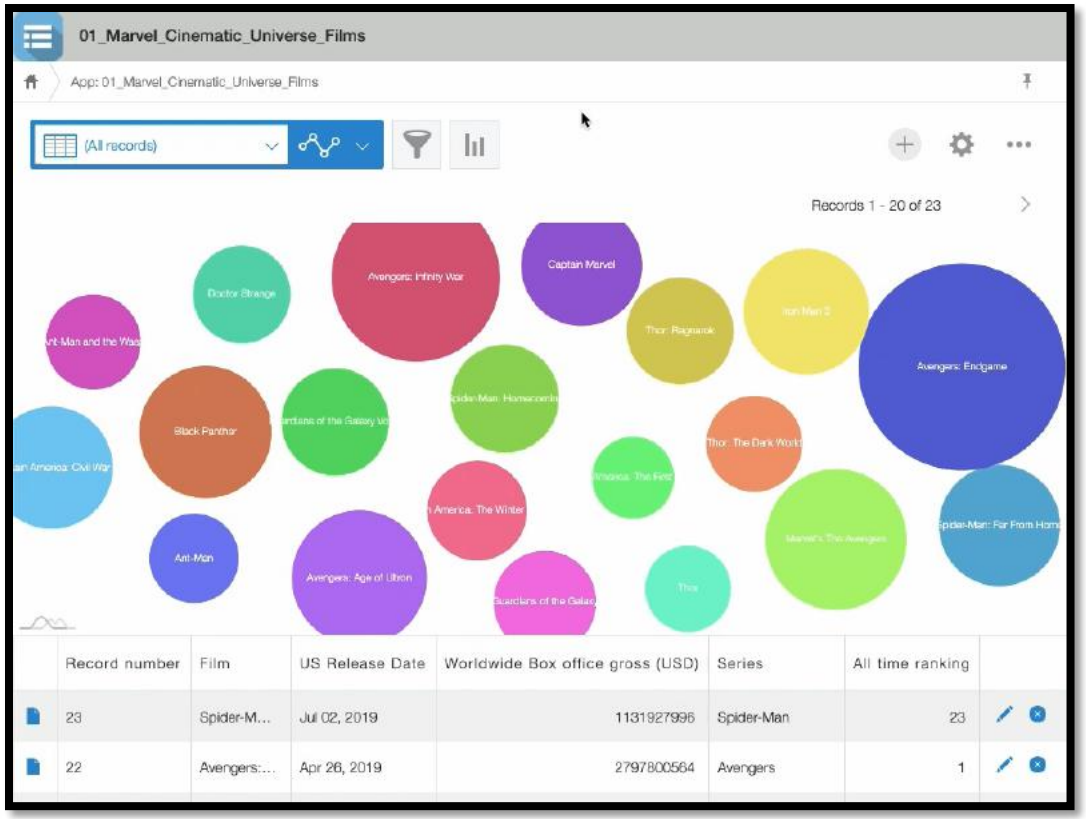
- JavaScript APIs
- REST APIs
- API Tokens
- Webhook
- Plugins
- JavaScript Customizations
- CSS & HTML Customizations
- Precise Permission Controls

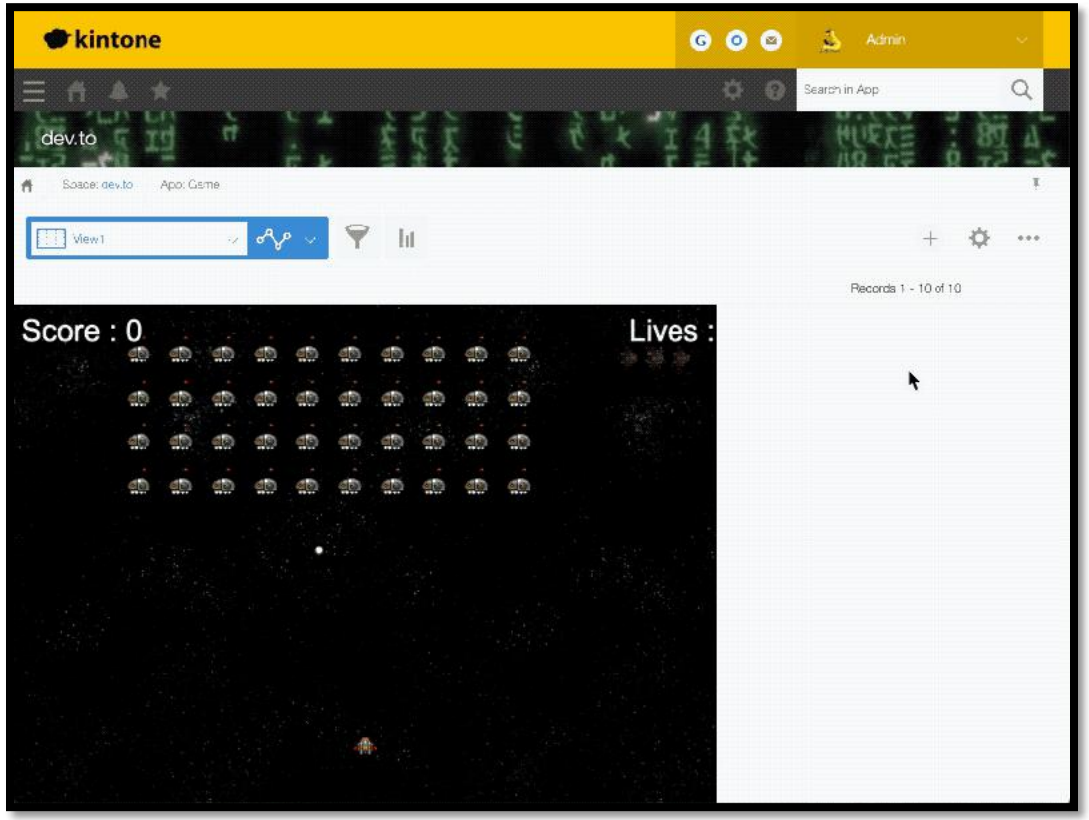




Create a Custom Look and Feel

Display data the way you want with HTML, JS, and CSS





Kintone For Self Learning

Keep learning new JavaScript tricks!

Contribute your learnings to tech blogs

Share your projects with your community!

Kintone For Creating Revenue

Create & sell Kintone extensions

Consult with firms on achieving business goals

Develop Kintone customizations for customers

How Is This Related to Building Projects With No Servers?

Kintone will:

become your server running your database

let you create your databases with GUI

allow you to concentrate on the front-end work

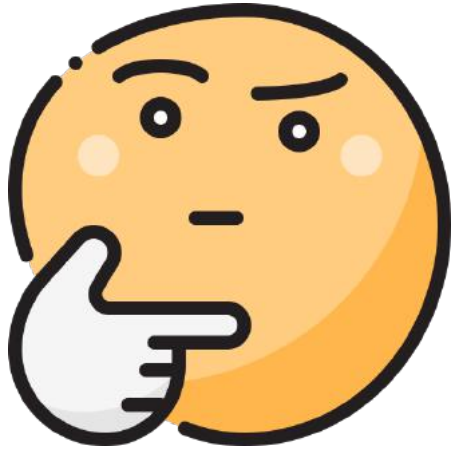
Today's Agenda

$25 Amazon Gift Card Raffle at the end!

1. Get the Big Picture
2. **Create a Kintone App**
3. Display amCharts on Kintone
4. Call REST APIs from Kintone

Let's Create a Kintone App! (A Database)

What sort of database shall we make?



Board Game DB

Lunch DB

Employee List

CRM

Expense Report

Company FAQ

Hands-On Walk-Through

1. First, let's go over the steps to build the app

2. Then, build the app as an exercise

Getting Your Kintone Environment

1

Sign up for a Kintone Developer Account

bit.ly/KDP_signup

⚠️ Do NOT use Safari

⚡ Accept Cookies First

✅ Use Chrome & Firefox

2

Create a Kintone Subdomain

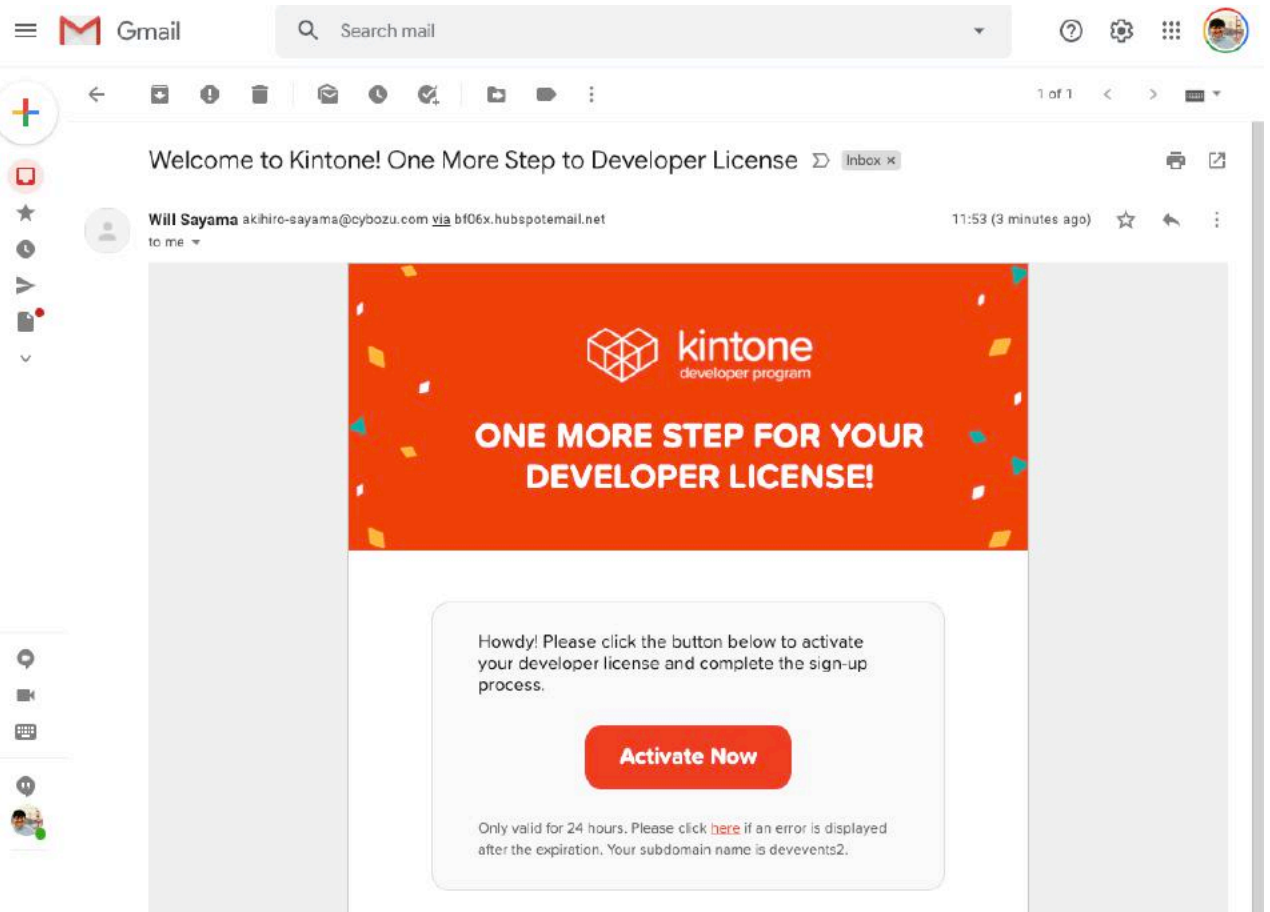
bit.ly/K_DevLic

⚠️ No Special Characters

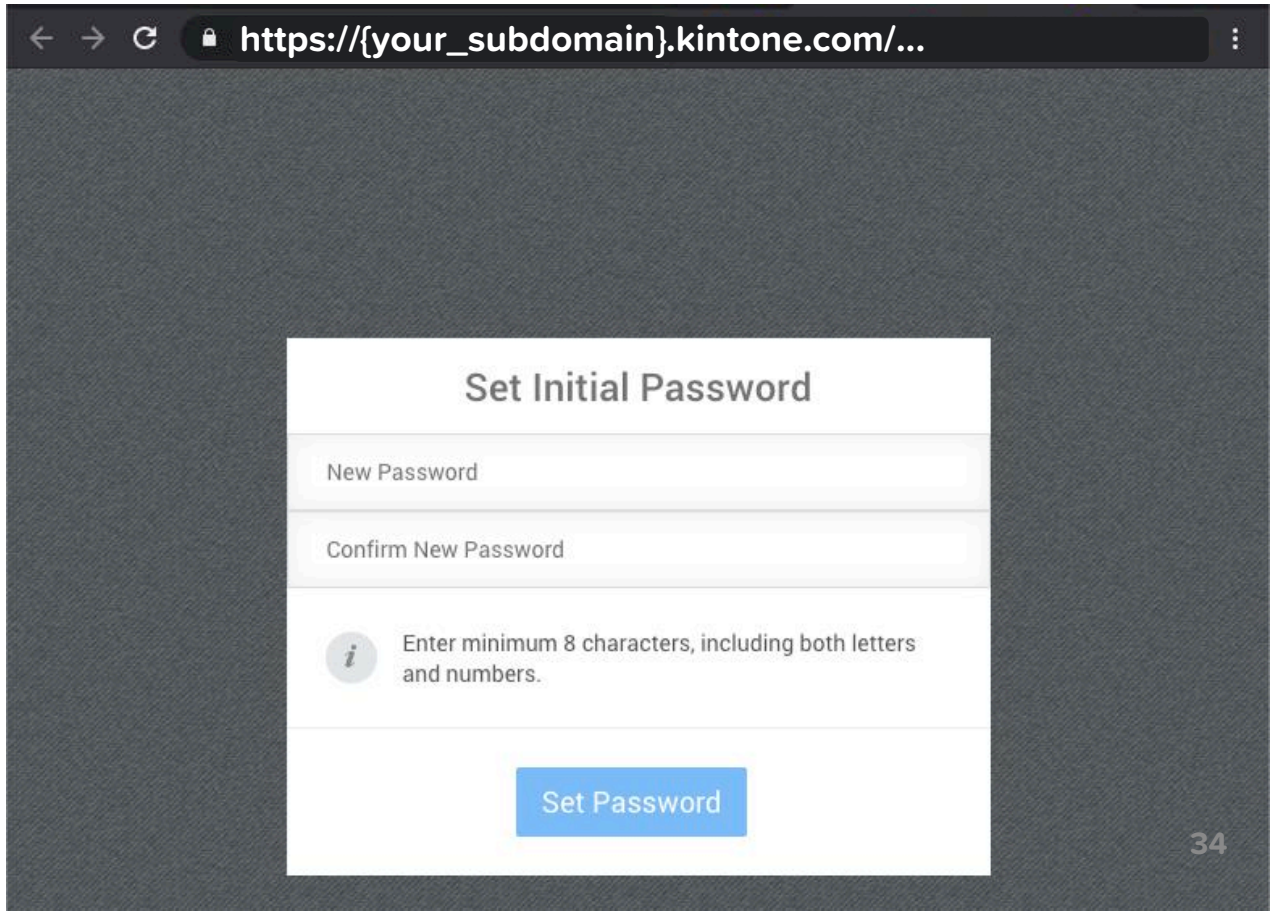
⚡ Only use **lowercase [a-z], numbers [0-9], & hyphens [-]** in your subdomain

Check Your Email

Welcome to Kintone! One More Step To...



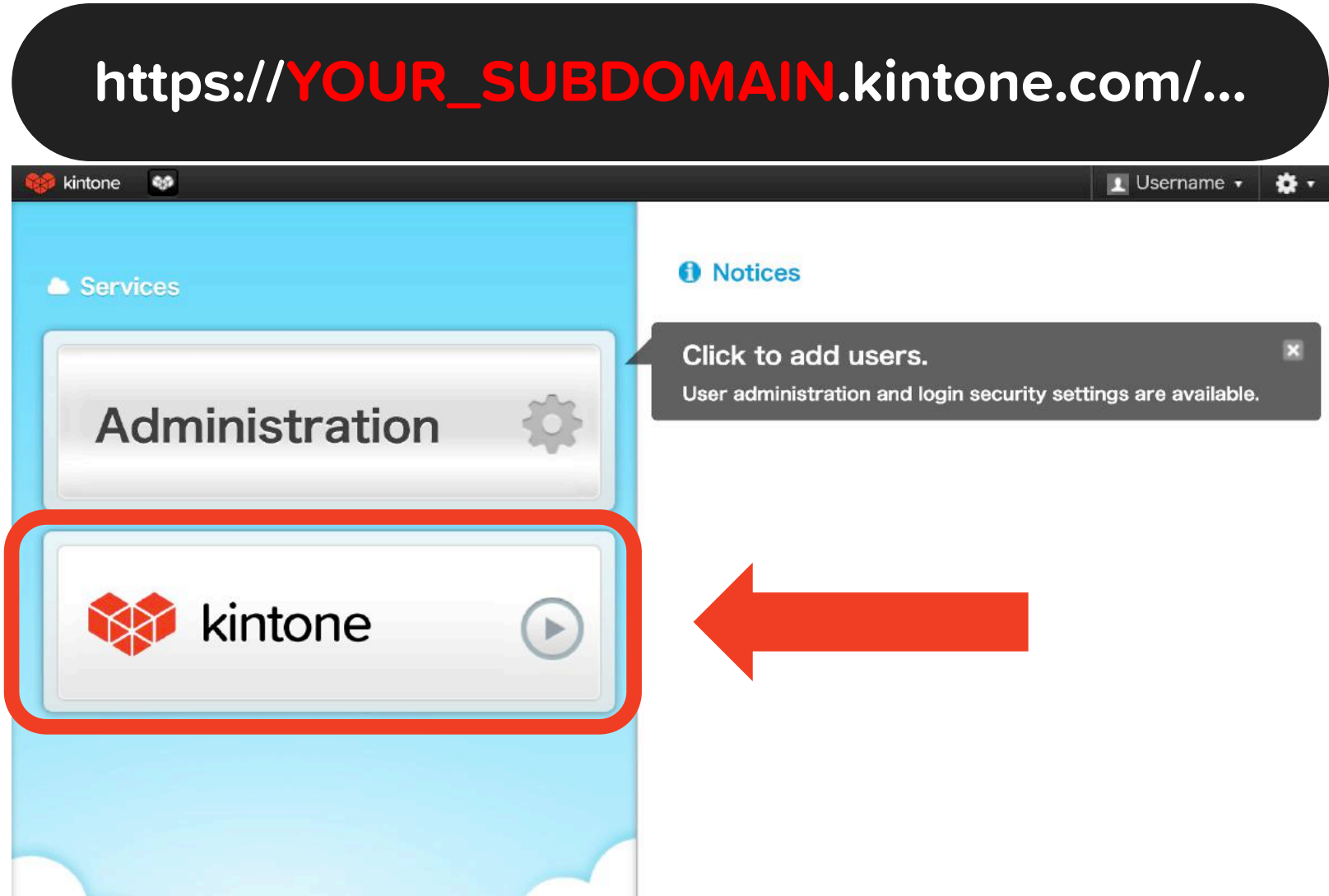
YOUR_SUBDOMAIN.kintone.com



Let's Log into Kintone

Click on Kintone button on the Left side

The email has the initial registration link & subdomain

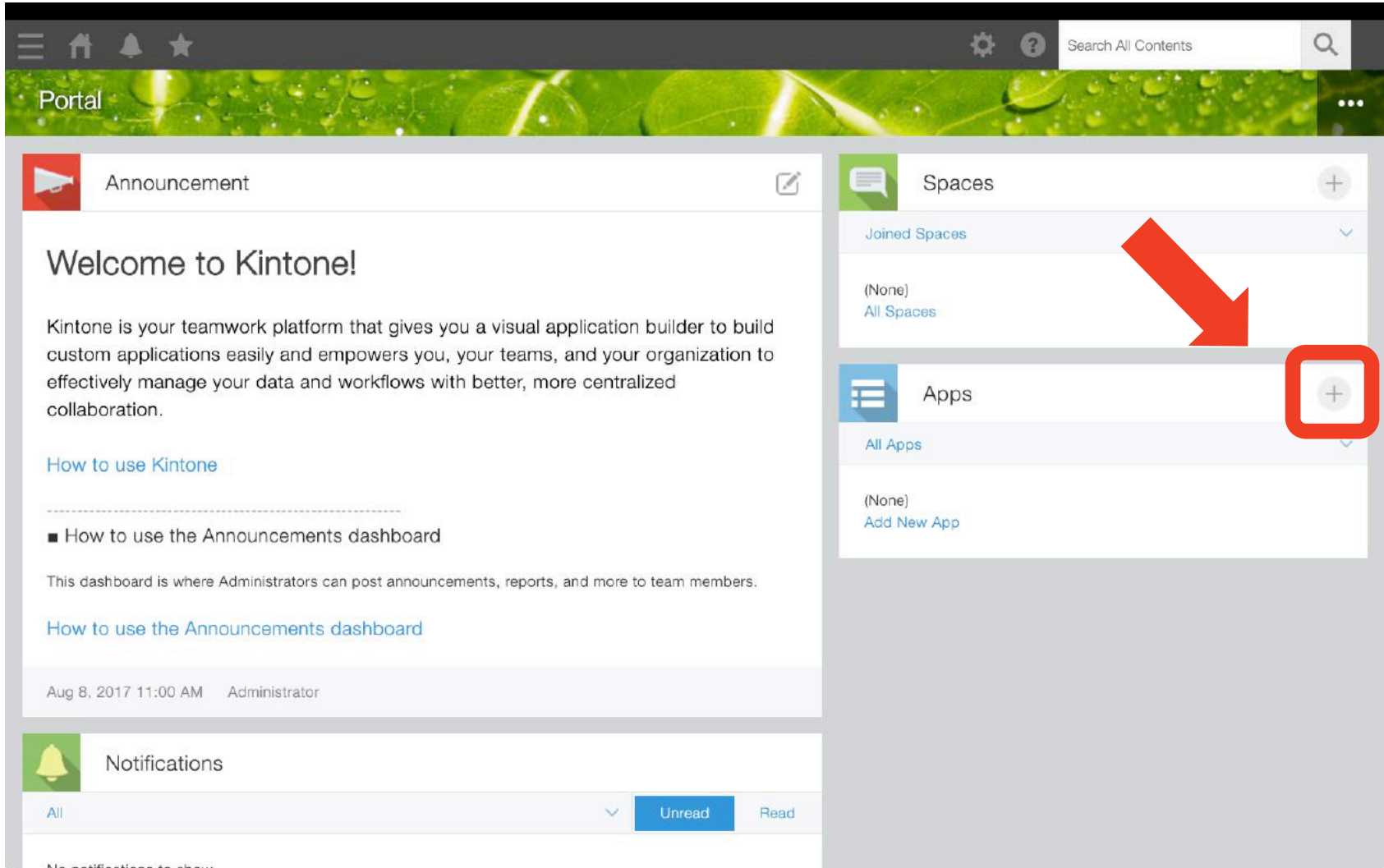


Create a Kintone App (Web Database)

On the Left side of the **Portal**

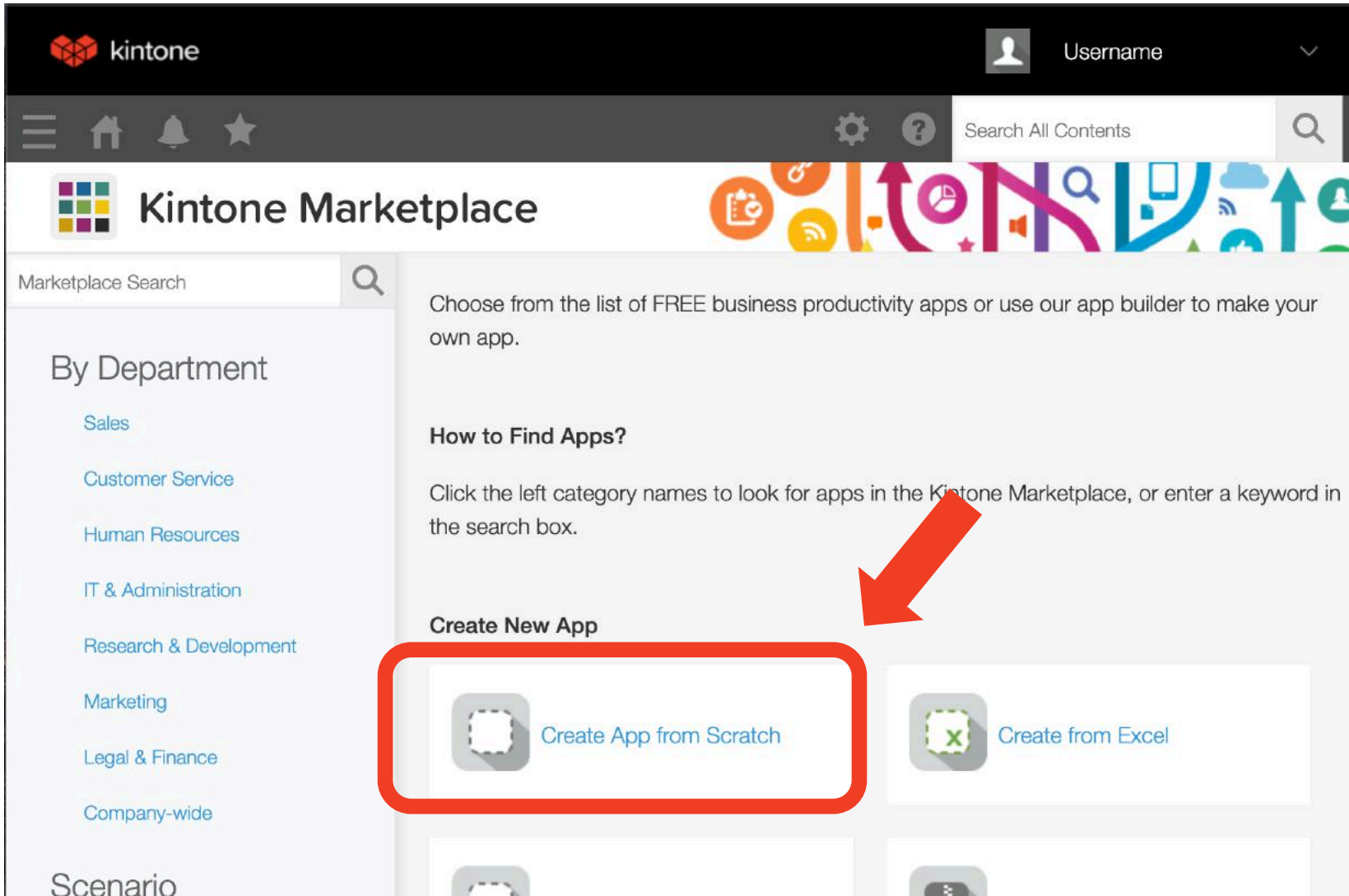
> Find the **Apps** section

> Click on the [+] button on the left side



Create a Kintone App (Web Database)

Under the Create New App section, select the **Create App from Scratch** button

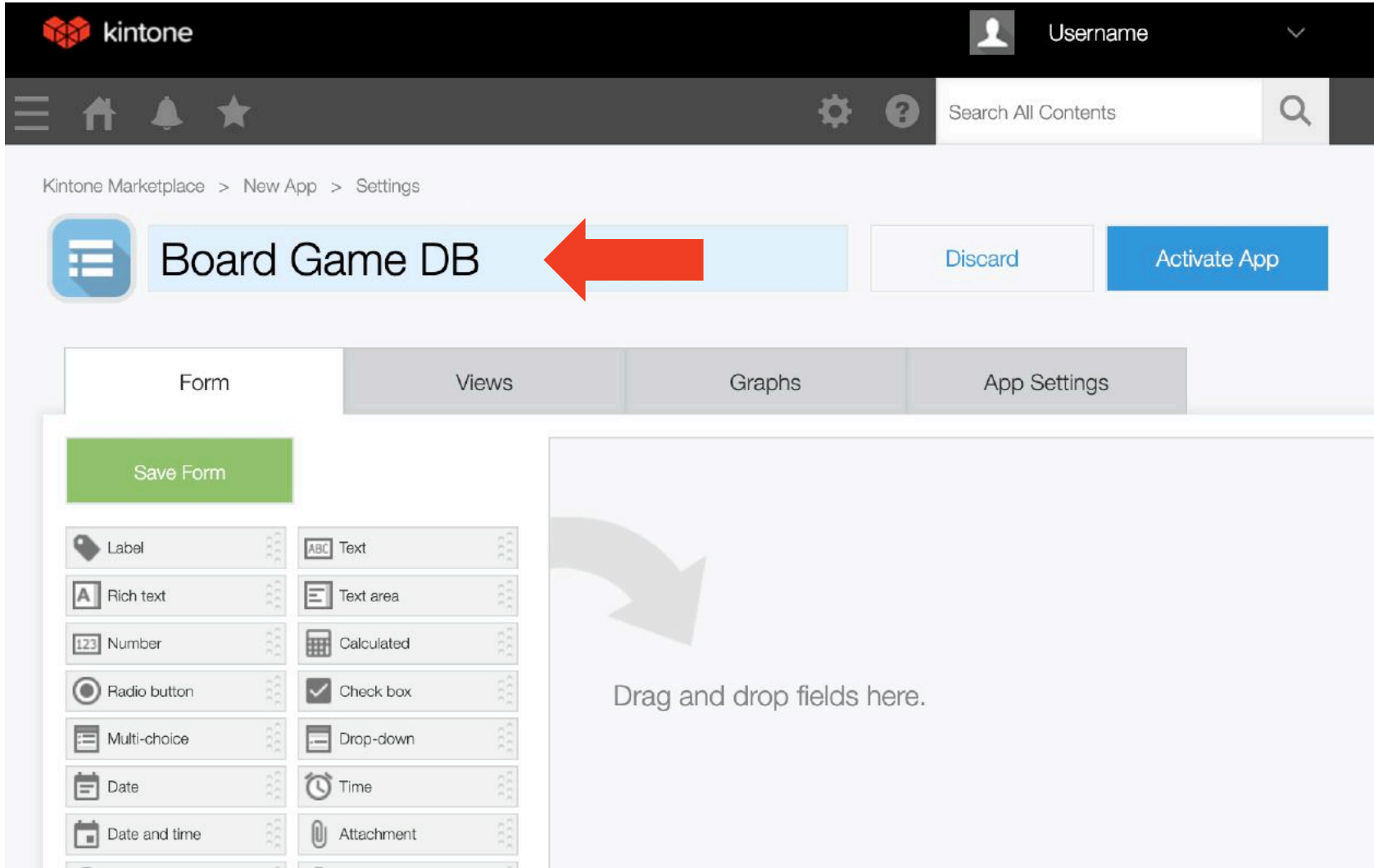


Title Your Kintone App

This is the App Builder!

Let's start by naming the new App!

Title it by clicking on "New App" and type **Board Game DB**



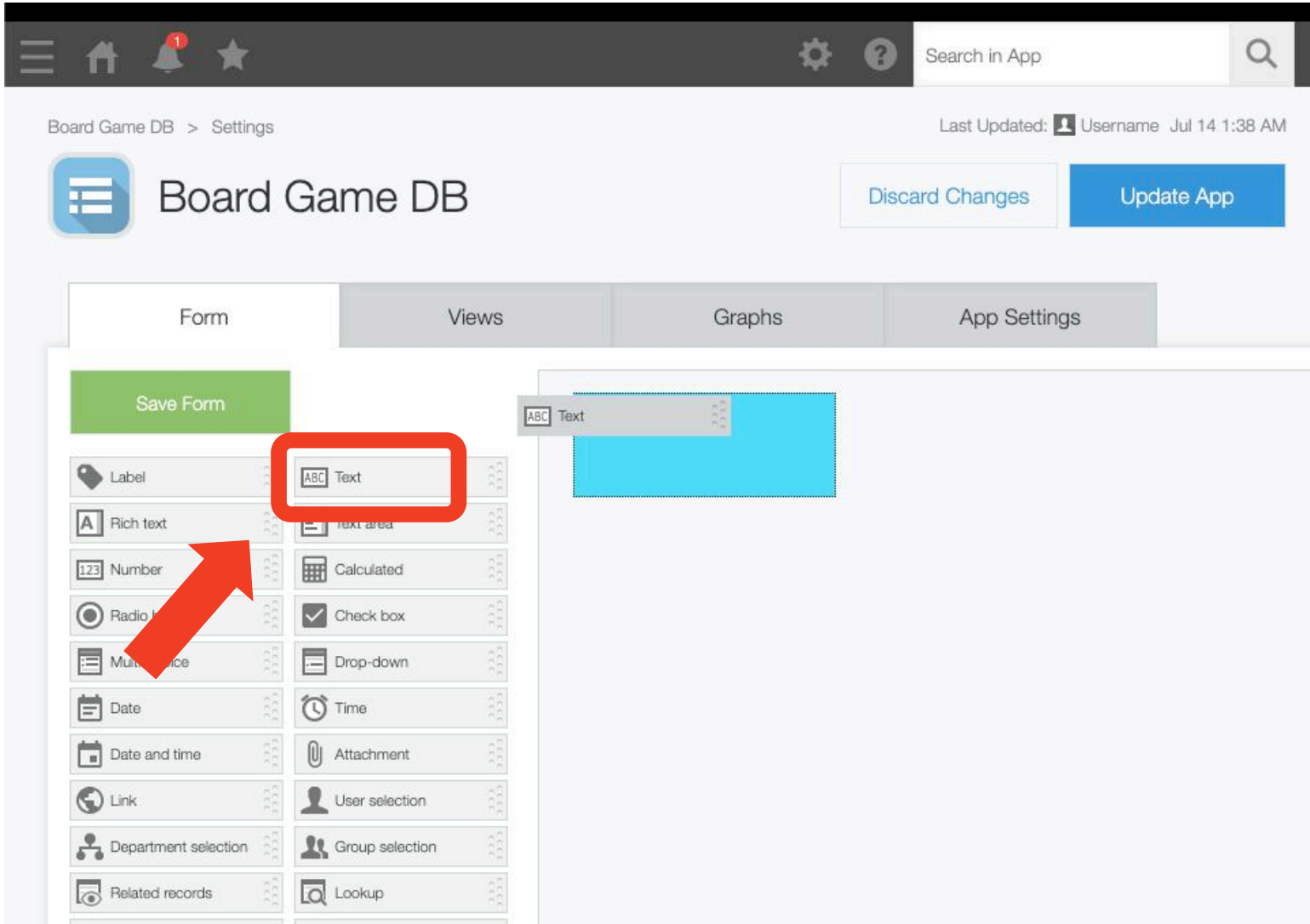
Drag and Drop the Text Field

Now let's add a **Text** field to the **Board Game DB** App!

On the Left side

> Find the **[ABC] Text** field

> Drag it to the middle



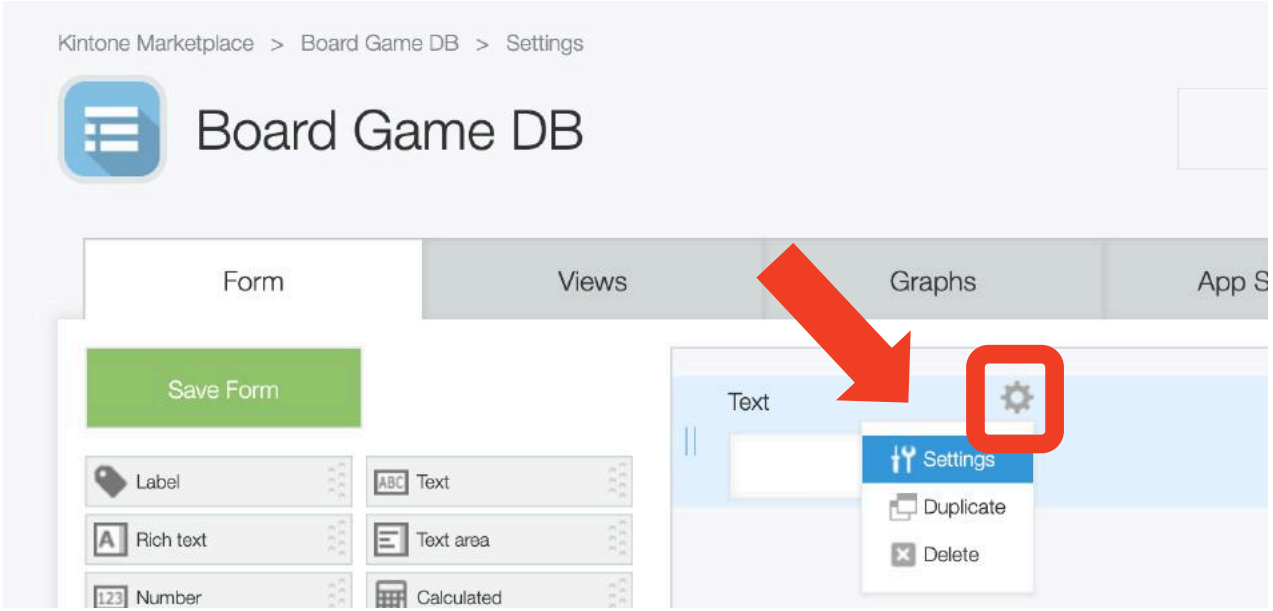
Configure the Text Field

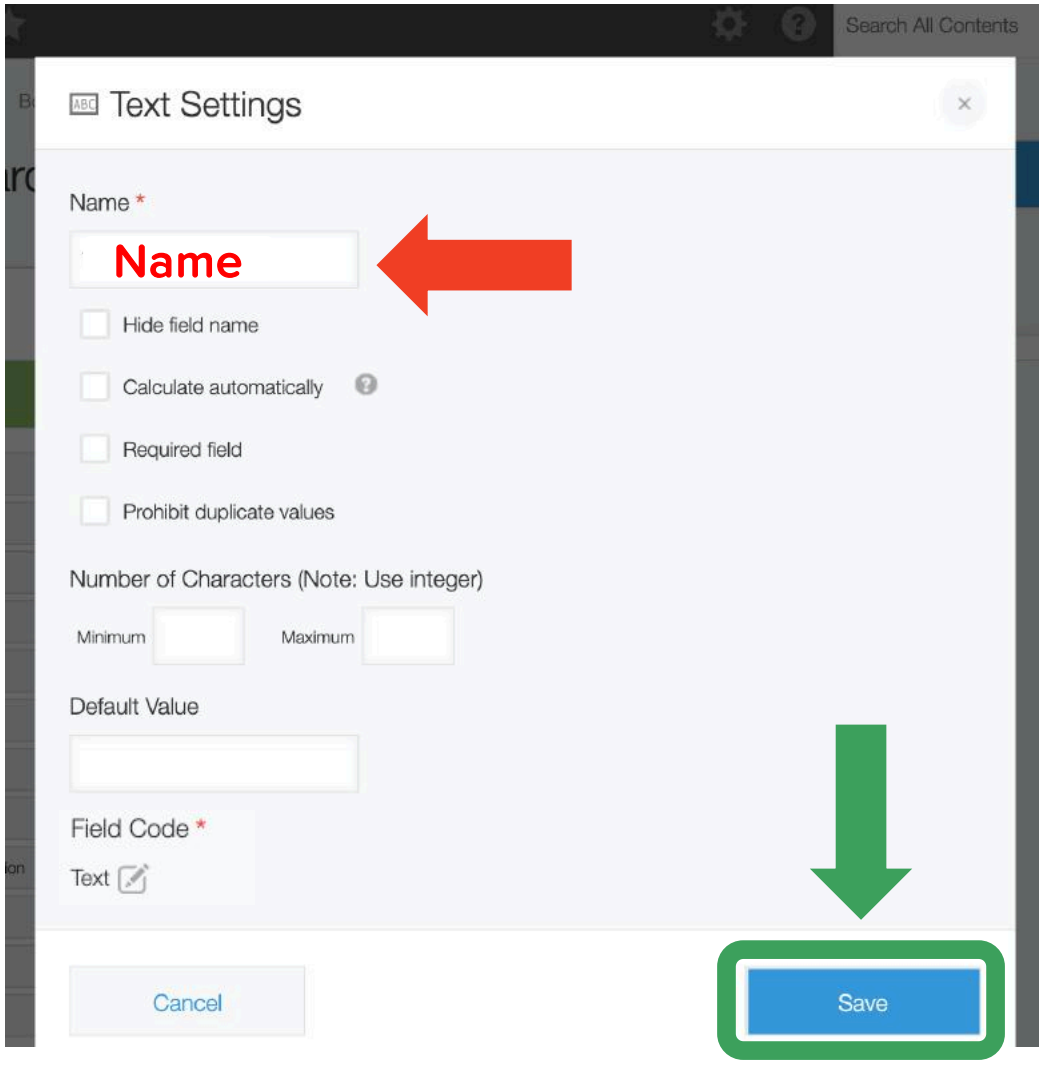
Hover over the [ABC] Text field

> Click on the Gear icon

> Replace Text with **Name**

> Click on the **Save** button





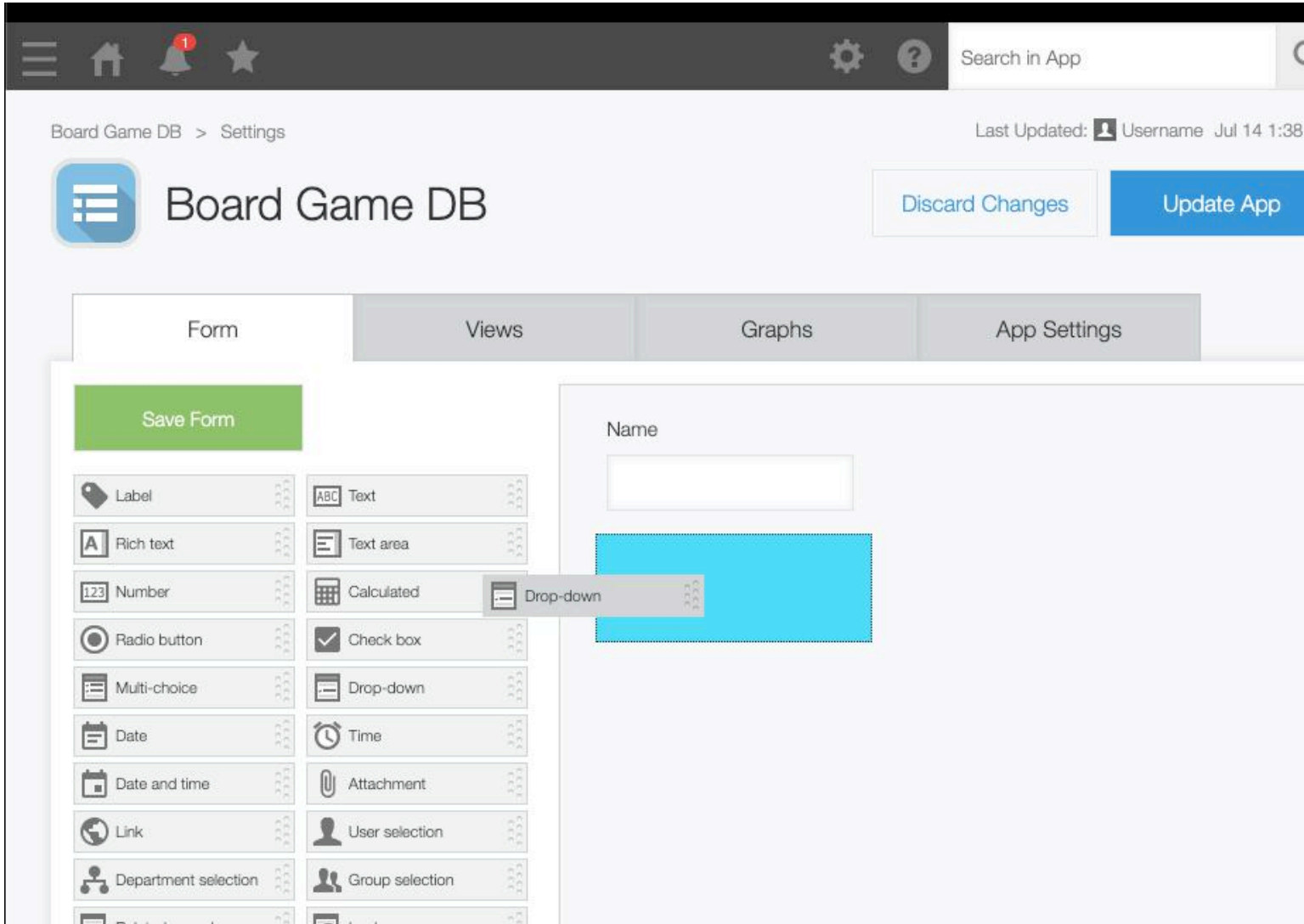
Drag and Drop the Drop-down Field

let's add a **Drop-down** field to the **Board Game DB** App!

On the Left side

> Find the **Drop-down** field

> Drag it to the middle



Configure the Drop-down field

Hover over the **Drop-down** field

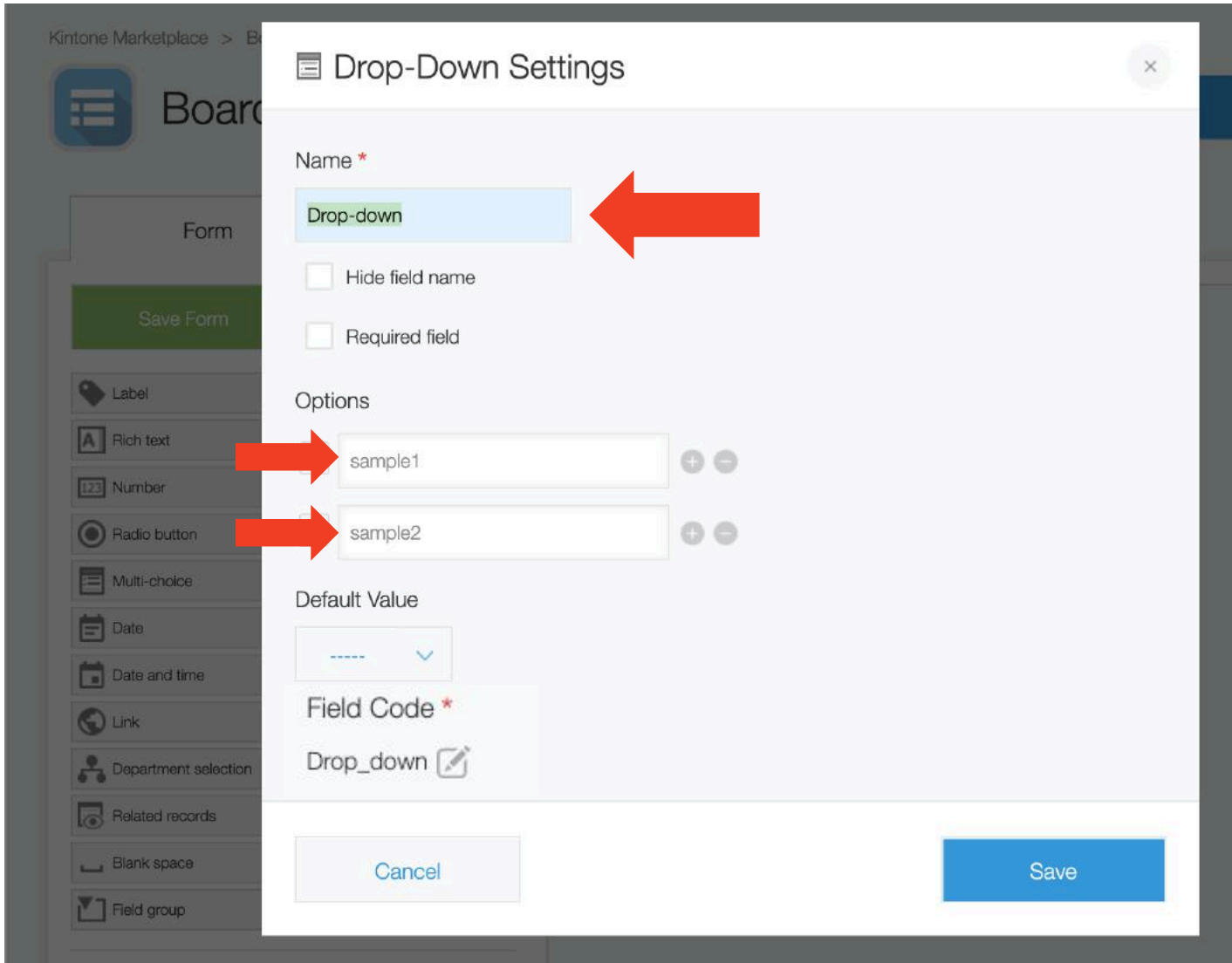
> Click on the Gear icon ⚙

Replace the following text:

> "Drop-down" with **Type**

> "sample1" with **Abstract**

> "sample2" with **Area Control**



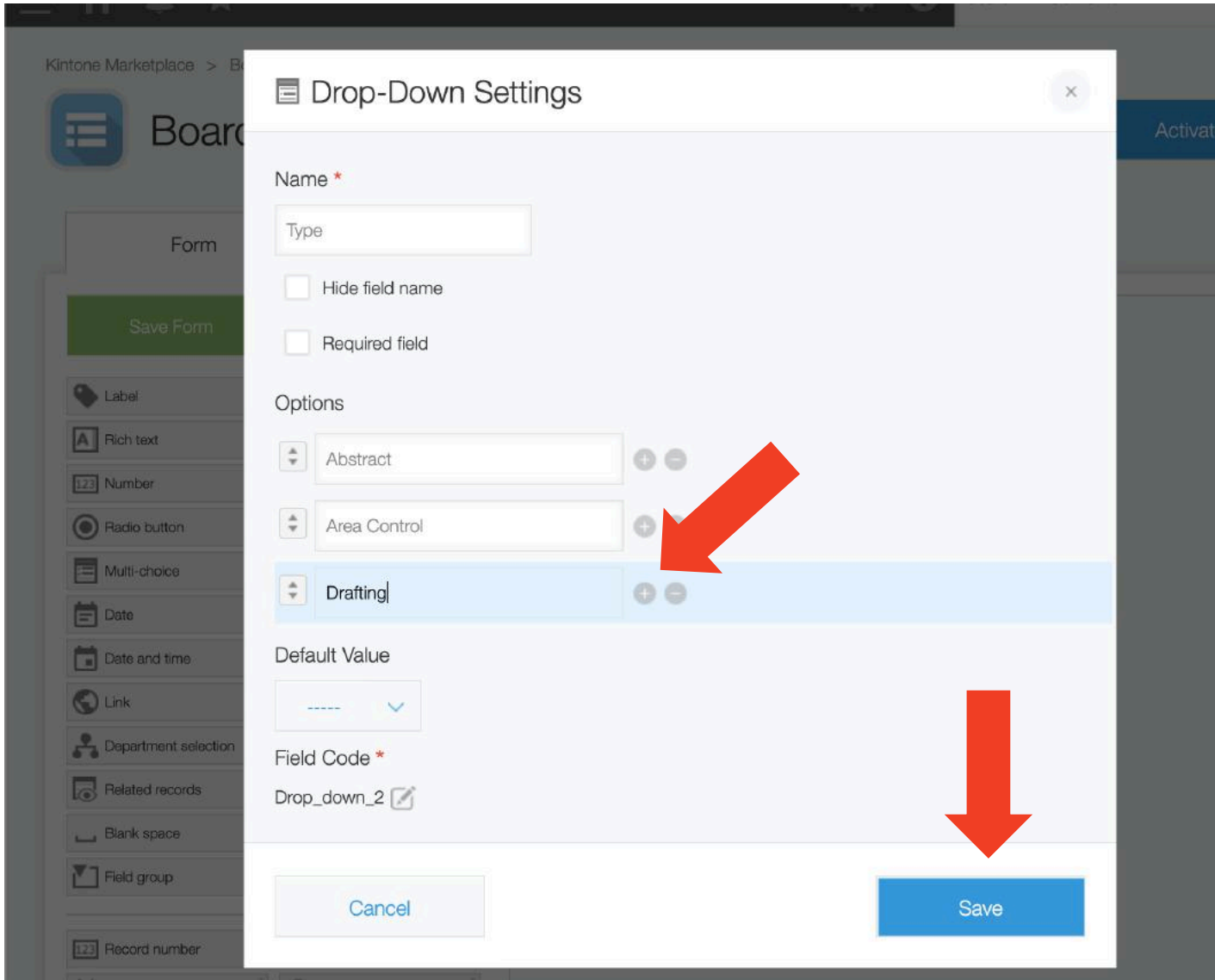
Configure the Drop-down field

Add another Options to the **Drop-down** field

> Click on the (+) button next to the second Options

Type **Drafting**

Then click Save

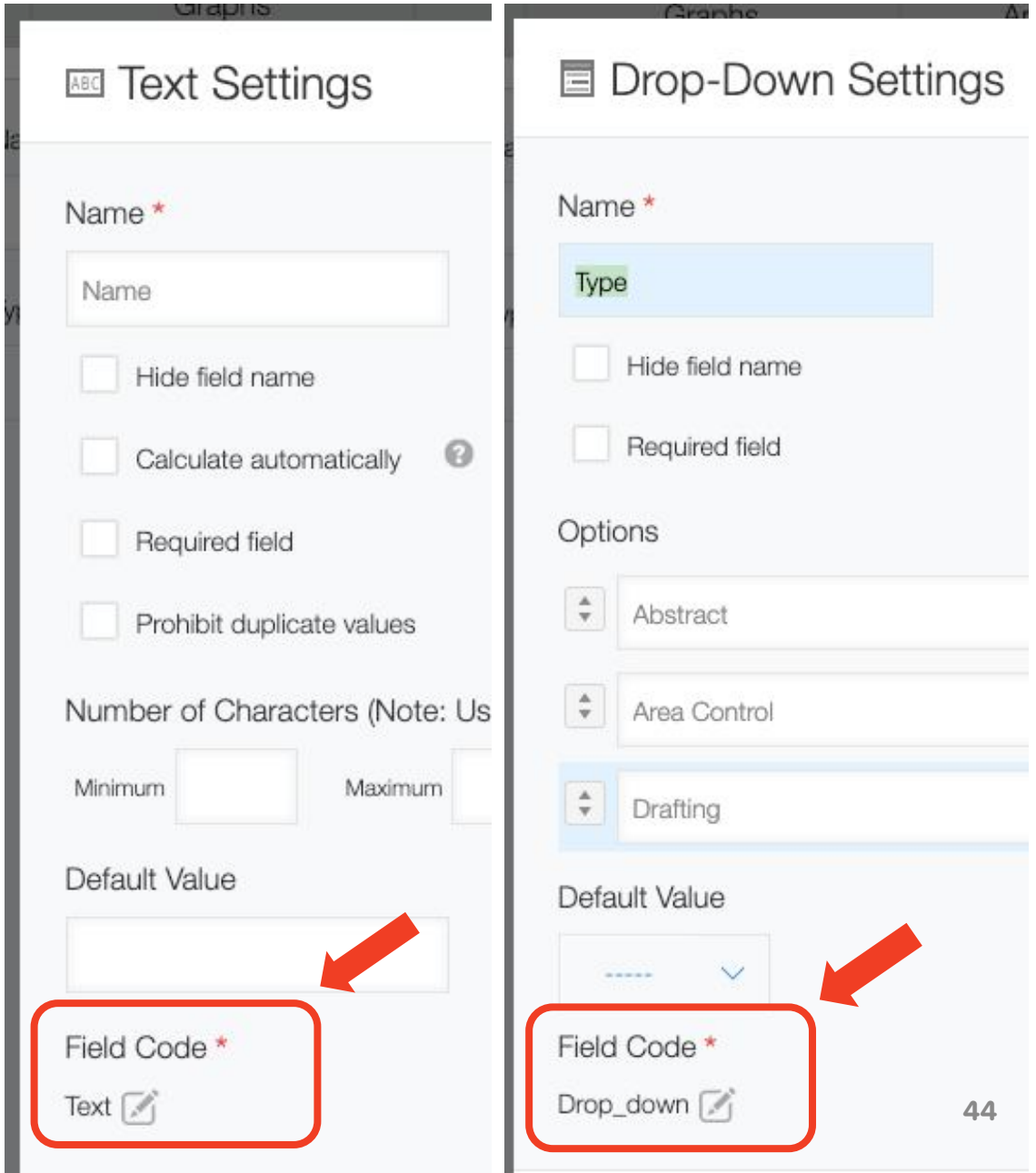


What are Field Codes?

The field code is the identifier for each field, represented as a string

- Name's field code = Text
- Type's field code = Drop_down

These are the default field code values for their respective fields

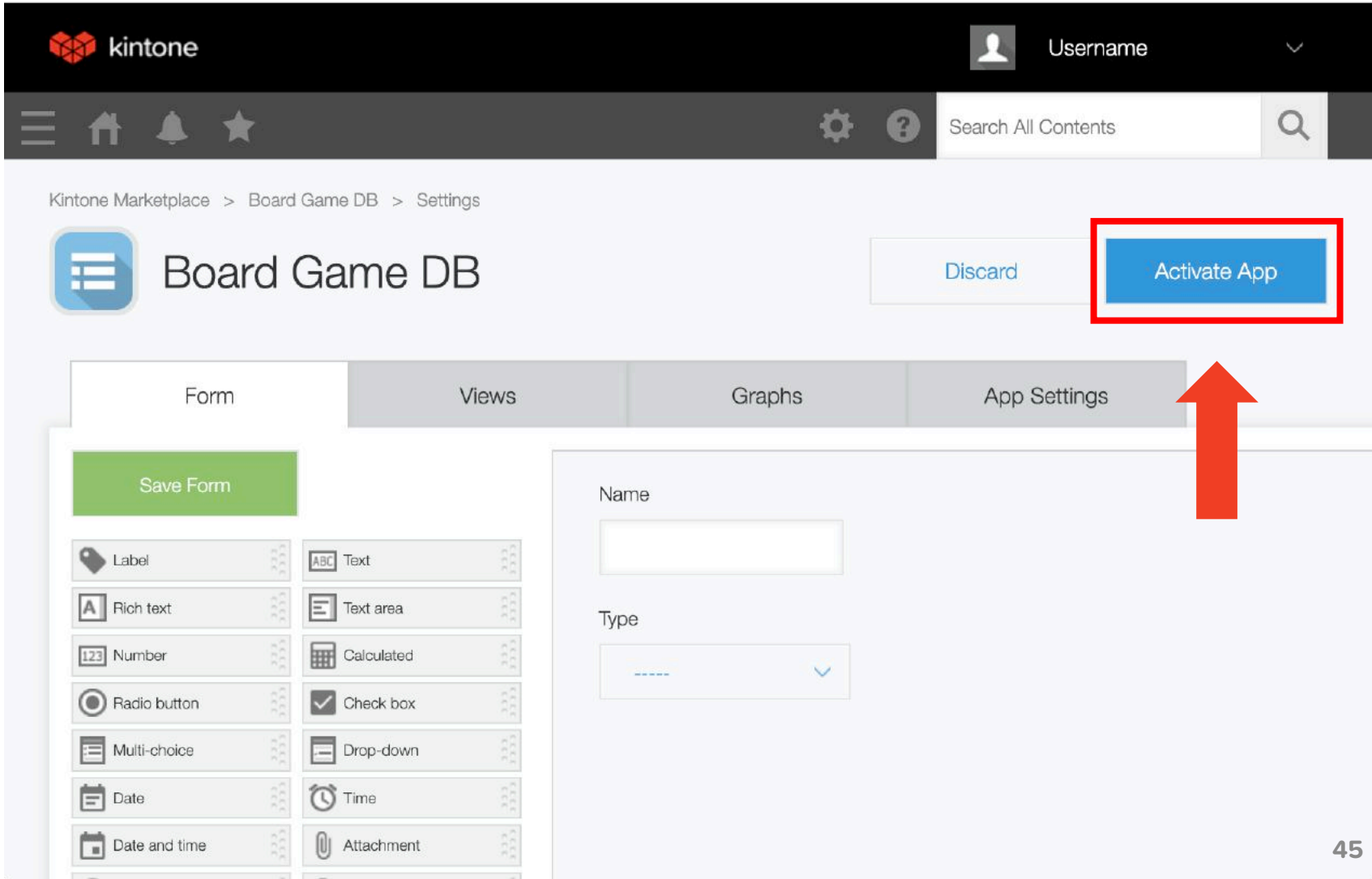


Save / Deploy the App!

Once you are finished setting up the fields,

click **Activate App** to deploy it.

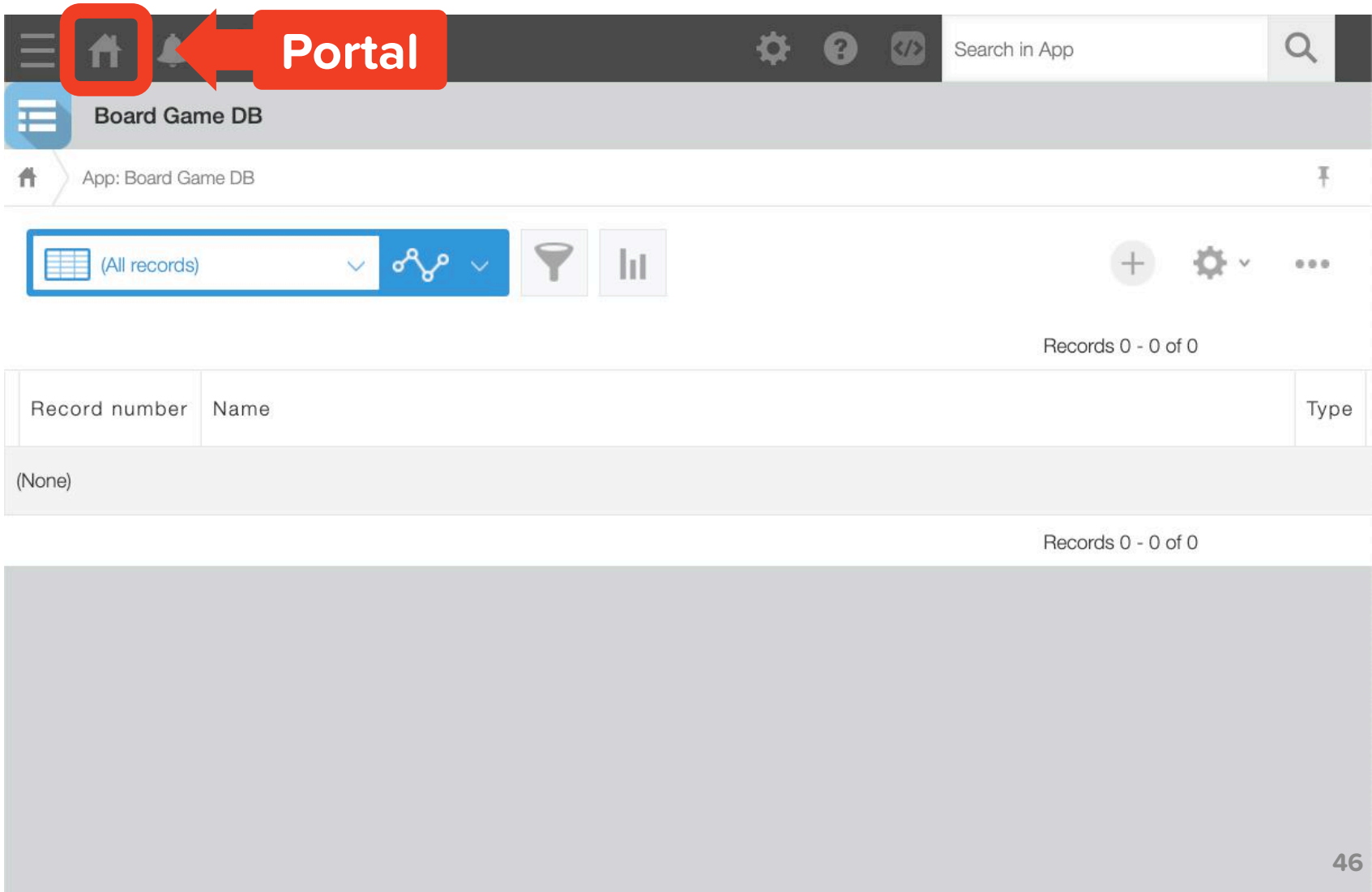
*Apps can always be updated later on



Save / Deploy the App!

Congrats!

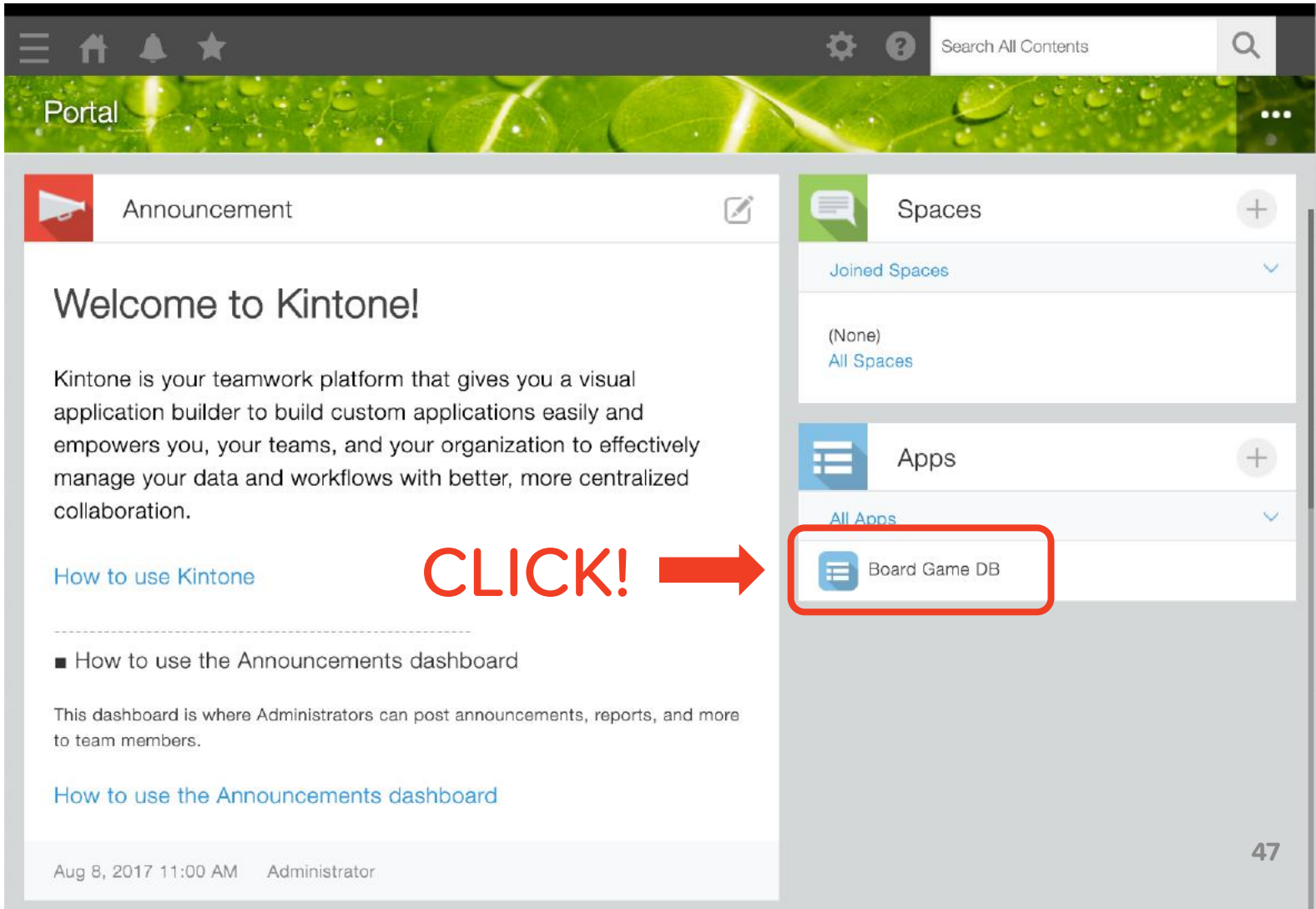
You made your first Kintone App!



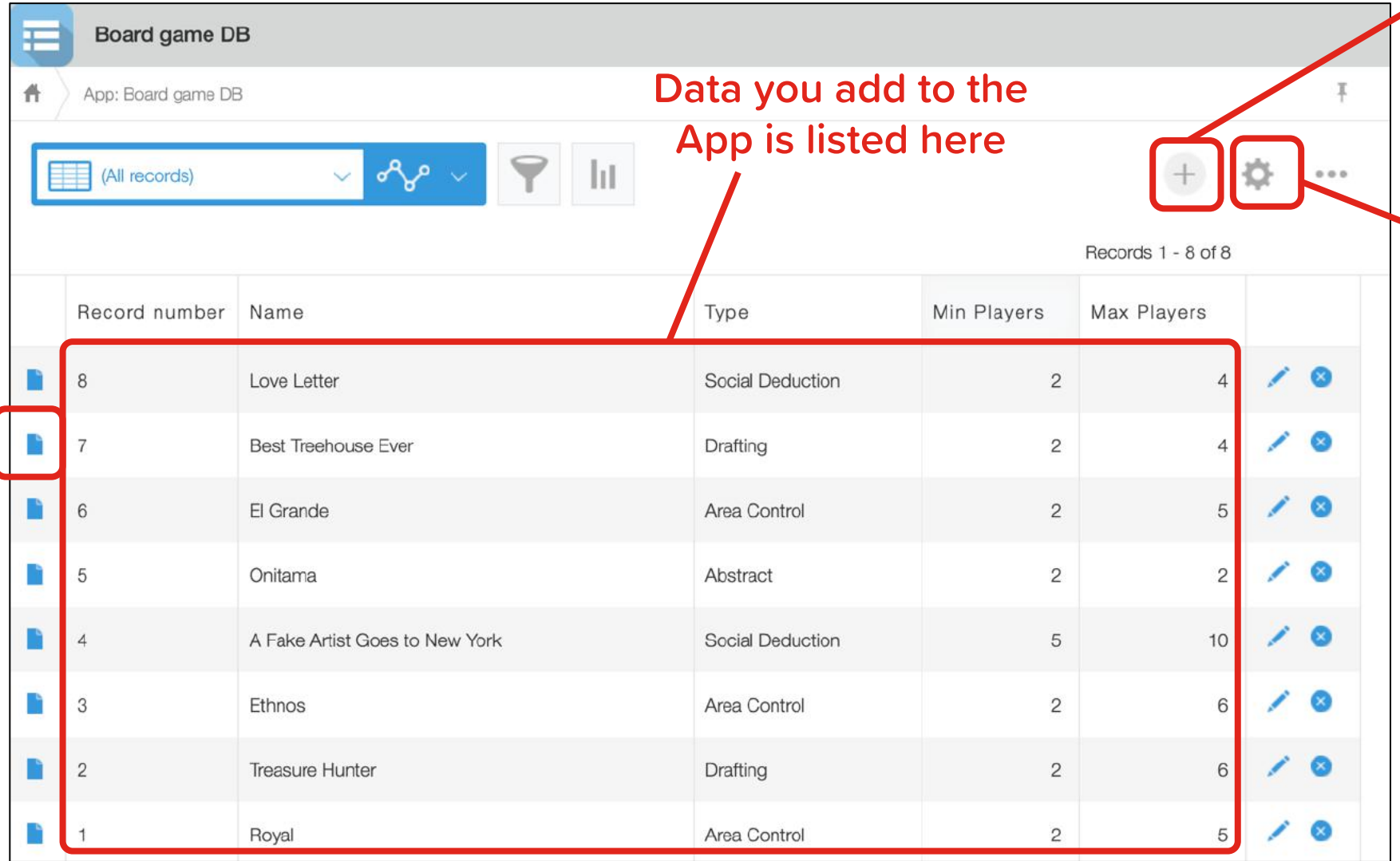
Record View of the Board Game DB

This **Board Game DB** App is now accessible to any users in your Kintone environment

It is under the **Apps** section



Quick Overview of the App



Access the Details page of the row (record)

Data you add to the App is listed here

Add new data

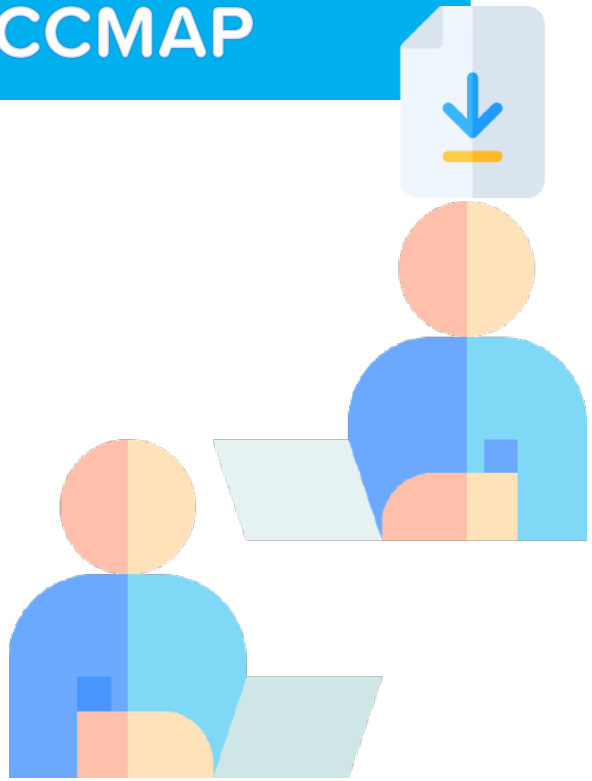
Access the App's settings

Time To Get Started!

Want the Slides?

Hit Download ZIP button at bit.ly/KDP_CCMAP

1. Go to the Kintone Portal page
2. Apps section > (+) Button
3. Create App from Scratch
4. Drag-&-Drop the **Text field**, name it **Name**
5. Drag-&-Drop the **Drop-down field**, name it **Type**
6. Add 3x options {Abstract, Area Control, & Drafting}
7. Hit the Blue **Activate App**
8. Raise Hand on Zoom when you are done



Want to Win a $25 Amazon Gift Card?

Stay tuned till the end & fill out our quick survey

Short Break

10 min break

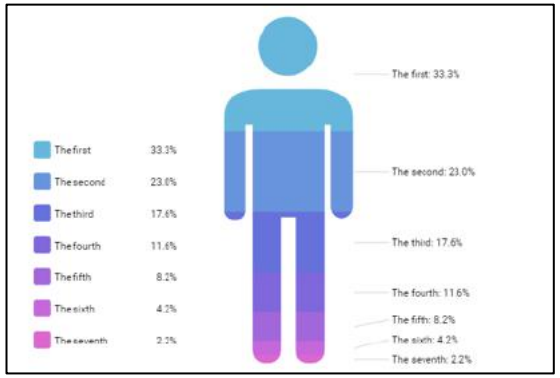
Today's Agenda

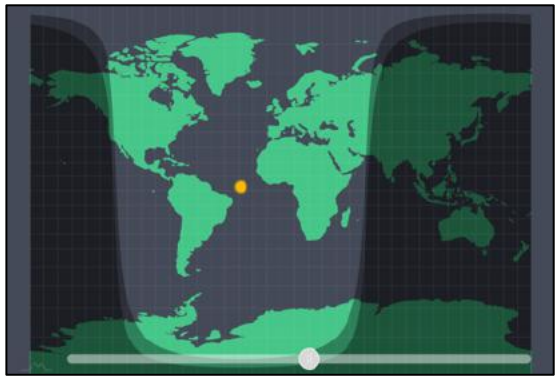
1. Get the Big Picture
2. Create a Kintone App
3. Display amCharts on Kintone
4. Call REST APIs from Kintone

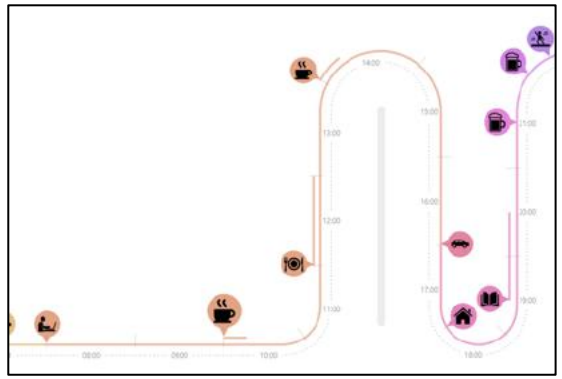
What is amCharts?

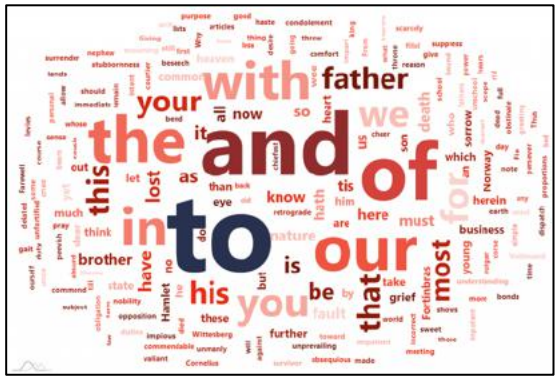
www.amcharts.com

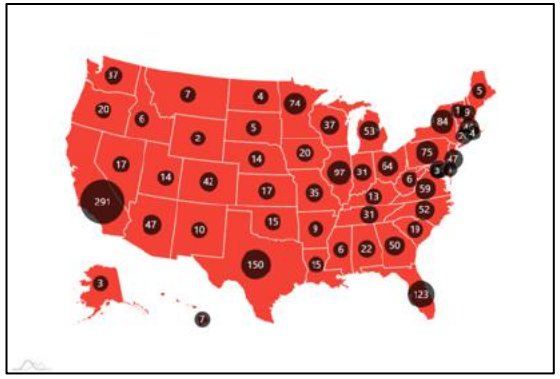
What Does amCharts Offer?

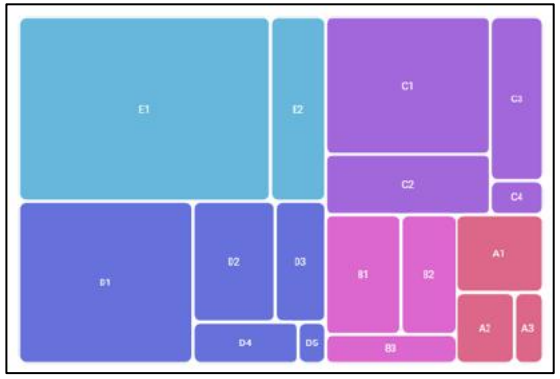


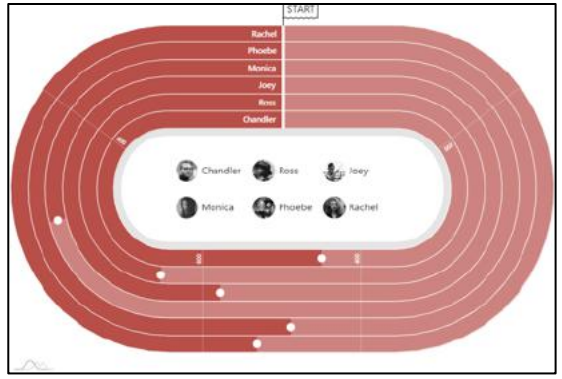


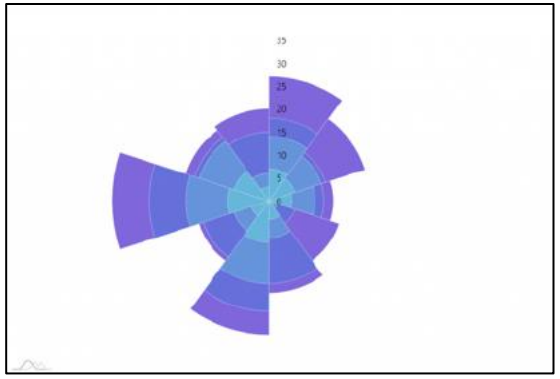












www.amcharts.com

amCharts

How to Use amCharts (Front-End JavaScript)

Define website details

```
<html>
    <body>
        <h1>My Graph</h1>
        <div id="chartdiv"></div>
    </body>
</html>
```

Read libraries

```
<script src="https://www.amcharts.com/lib/4/core.js"></script>
<script src="https://www.amcharts.com/lib/4/charts.js"></script>
```

Define chart details

```
// Create chart instance
var chart = am4core.create("chartdiv", am4charts.PieChart);
// Add and configure Series
var pieSeries = chart.series.push(new am4charts.PieSeries());
pieSeries.dataFields.value = "litres";
pieSeries.dataFields.category = "country";
```

Define data

```
// Add data
chart.data = [ {
  "country": "Lithuania",
  "litres": 501.9
}, {
  "country": "Czechia",
  "litres": 301.9
}, {
  "country": "Ireland",
  "litres": 201.1
```

How to Use amCharts on Kintone?

Define website details

```
<html>
```

We will use the Kintone platform's HTML

Read libraries

```
<script s
<script s
```

We will set these links in the App's settings

Define chart details

```
// Create chart instance
var chart = am4core.create("chartdiv", am4charts.PieChart);
// Add and configure Series
var pieSeries = chart.series.push(new am4charts.PieSeries());
pieSeries.dataFields.value = "litres";
pieSeries.dataFields.category = "country";
```

Define data

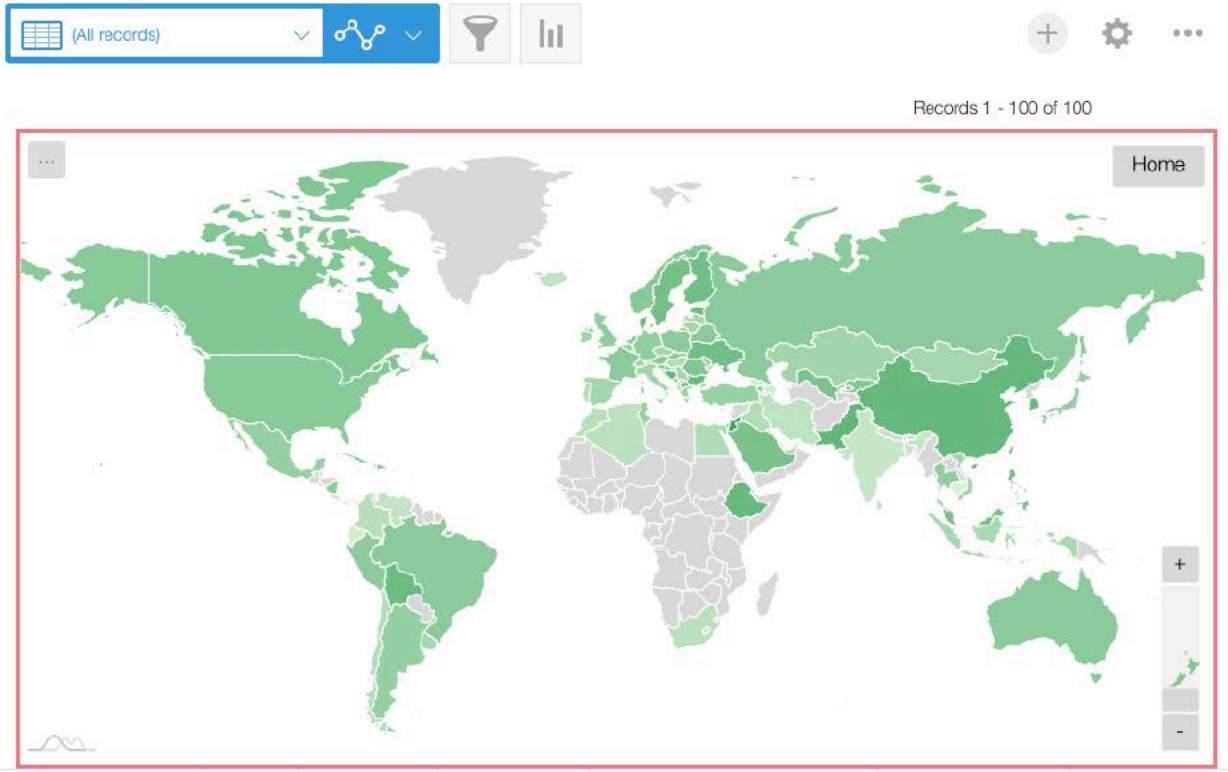
```
// Add data
chart.data = [ {
  "country": "Czechia",
  "litres": 301.9
}, {
  "country": "Ireland",
  "litres": 201.1
```

We will use the data that lies inside the Kintone Apps

Overview of amCharts on Kintone

In our next hands-on, we will create a new **App** from a **CSV** file.

We will then **add JavaScript** to the App that utilizes the **amCharts library**, so we can do some stylish data visualization.



Record number	Country	Continent	Country Code	Total Earned Prize Money ($)	Number of Players	Prize Money per P
100	Albania	Europe	al	38621.6	22	
99	Algeria	Africa	dz	73040.04	40	
98	Argen...	South America	ar	3202331.29	579	
97	Armenia	Asia	am	224960.72	26	

Hands-On Walk-Through

1. First, let's go over the steps to build the app

2. Then, build the app as an exercise

amCharts Customization for Kintone

1. Create a new Kintone App from a CSV file
2. Add amCharts libraries to the App
3. Add a custom JavaScript file to the App
4. Redeploy the Kintone App

amCharts Customization for Kintone

1. **Create a new Kintone App from a CSV file**
2. Add amCharts libraries to the App
3. Add a custom JavaScript file to the App
4. Redeploy the Kintone App

amCharts

Esports Earnings

The CSV file's data is from the **Highest Earnings By Country** list on esportsearnings.com.

Top 100 countries' total earned prize money (in USD) & player count were extracted and we generated the **Prize Money per Player** figure.

01_Esports_Earnings.csv — Raw

Search this file...

	Country	Continent	Country Code	Total Earned Prize Money ($)	Number of Players	Prize Money per Player	Latitude	Longitude
2	Viet Nam	Asia	vn	3729291.93	961	3881	14.0583	108.2772
3	Venezuela	South America	ve	145017.24	100	1450	6.4238	-66.5897
4	Uzbekistan	Asia	uz	470176.68	38	12373	41.3775	64.5853
5	Uruguay	South America	uy	164199.77	47	3494	-32.5228	-55.7658
6	United States	North America	us	144126987.5	16967	8495	37.0902	-95.7129
7	United Kingdom	Europe	gb	19598345.92	3102	6318	55.3781	-3.436
8	United Arab Emirates	Asia	ae	325593.39	128	2544	23.4241	53.8478
9	Ukraine	Europe	ua	15439422.04	901	17136	48.3794	31.1656
10	Turkey	Asia	tr	3357954.53	630	5330	38.9637	35.2433
11	Tunisia	Africa	tn	218308.21	41	5325	33.8869	9.5375
12	Thailand	Asia	th	6270051.6	958	6545	15.87	100.9925
13	Taiwan	Asia	tw	10421853.11	862	12090	23.6978	120.9605
14	Switzerland	Europe	ch	1607943.9	353	4555	46.8182	8.2275
15	Sweden	Europe	se	3801781.16	2489	15272	60.1282	18.6435
16	Spain	Europe	es	5519985.01	1493	3697	40.4637	-3.7492
17	South Africa	Africa	za	866860.84	455	1905	-30.5595	22.9375
18	Slovenia	Europe	si	816771.73	90	9075	46.1512	14.9955
19	Slovakia	Europe	sk	1978486.34	212	9332	48.669	19.699
20	Singapore	Asia	sg	3742315.07	597	6269	1.3521	103.8198
21	Serbia	Europe	rs	879756.04	225	3910	44.0165	21.0059
22	Saudi Arabia	Asia	sa	2010015.01	157	12803	23.8859	45.0792
23	Russian Federation	Europe	ru	26540077.16	3486	7613	61.524	105.3188
24	Romania	Europe	ro	3558278.36	362	9830	45.9432	24.9668
25	Qatar	Asia	qa	21317.54	9	2369	25.3548	51.1839

Create a new Kintone App from a CSV file

1. Get the CSV file from the Gist: bit.ly/KDP_CCMAP
2. Create a Kintone App: Portal > [+] button
3. Select Create from CSV
4. Continue & Upload CSV...

The data on the Marvel Cinematic Universe Films's box office performance came from the List
Wikipedia article.

01_Esports_Earnings.csv

Search this file...

	Country	Continent	Country Code	Total Earned Prize Money ($)	Number of Players
2	Viet Nam	Asia	vn	3729291.93	961
3	Venezuela	South America	ve	145017.24	100
4	Uzbekistan	Asia	uz	470176.68	38
5	Uruguay	South America	uy	164199.77	47
6	United States	North America	us	144126987.5	16967
7	United Kingdom	Europe	gb	19598345.92	3102
8	United Arab Emirates	Asia	ae	325593.39	128
9	Ukraine	Europe	ua	15439422.04	901
10	Turkey	Asia	tr	3357954.53	630
11	Tunisia	Africa	tn	218308.21	41
12	Thailand	Asia	th	6270051.6	958

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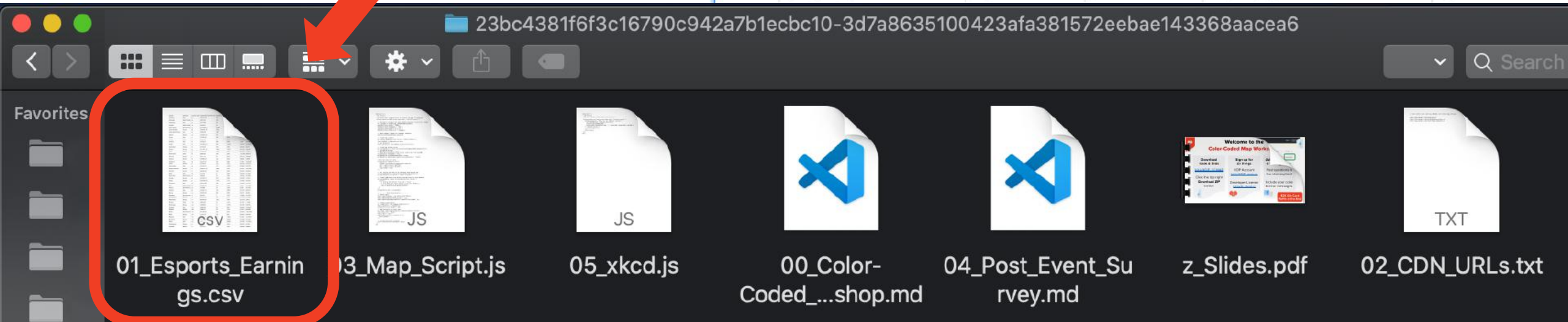

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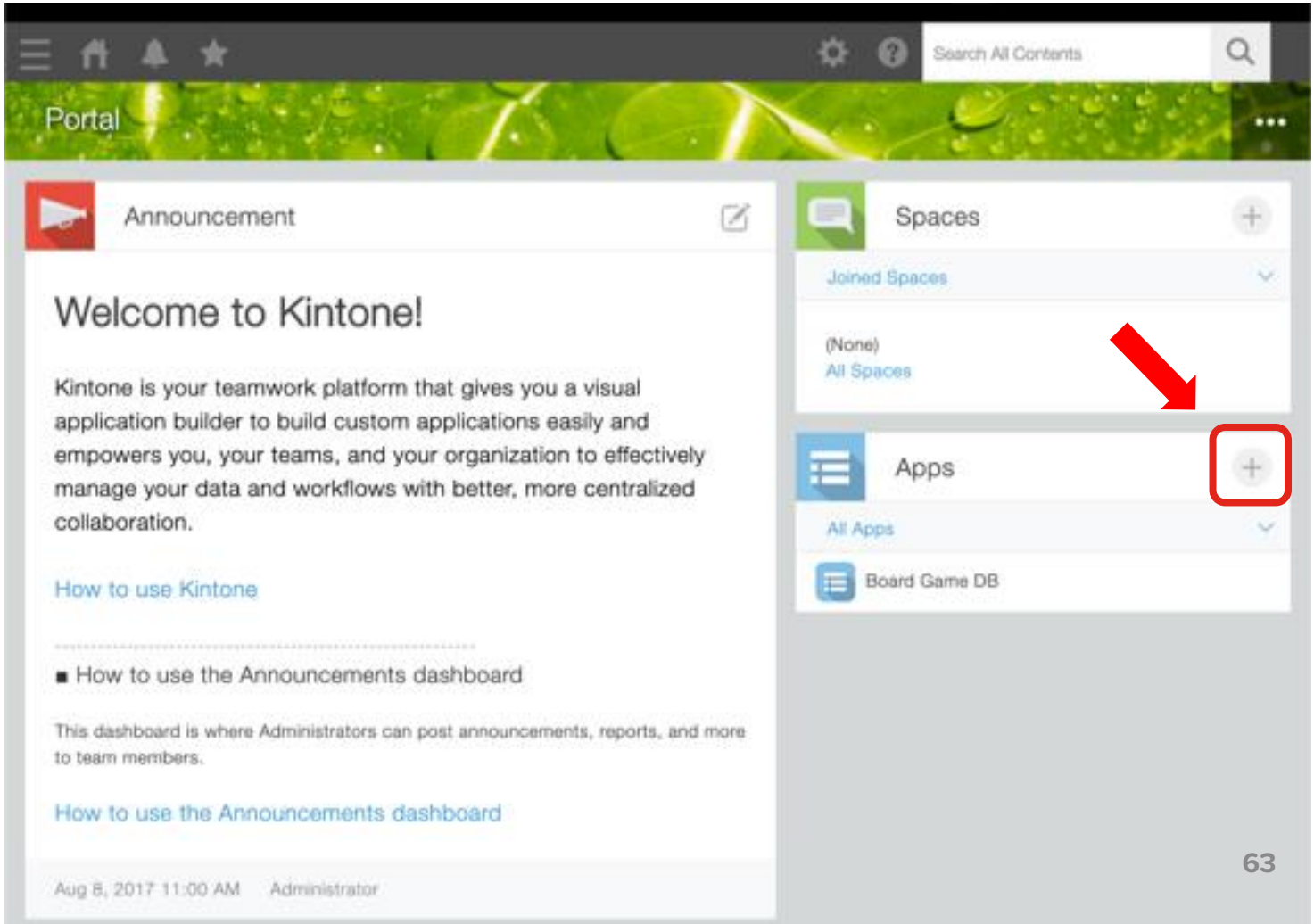

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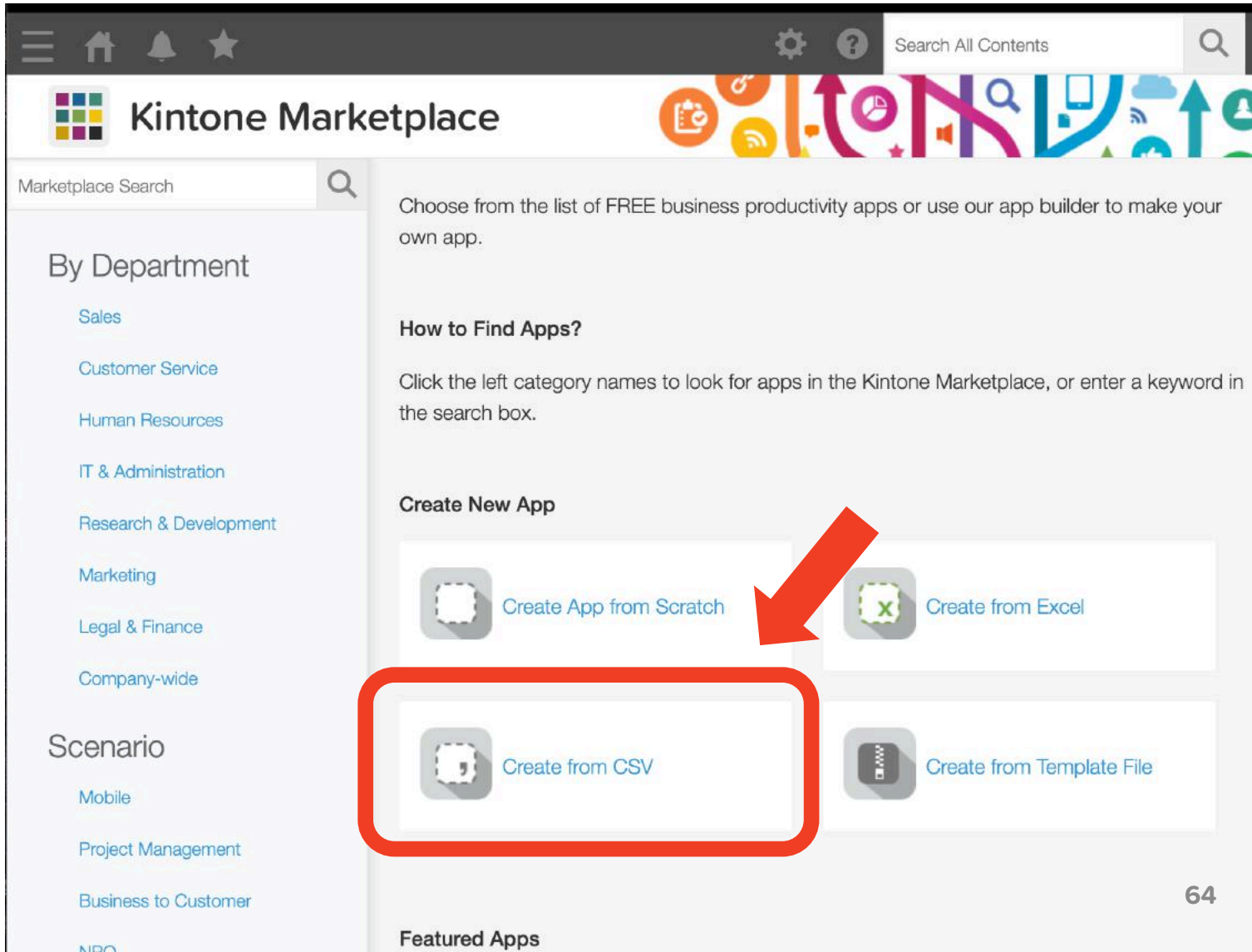

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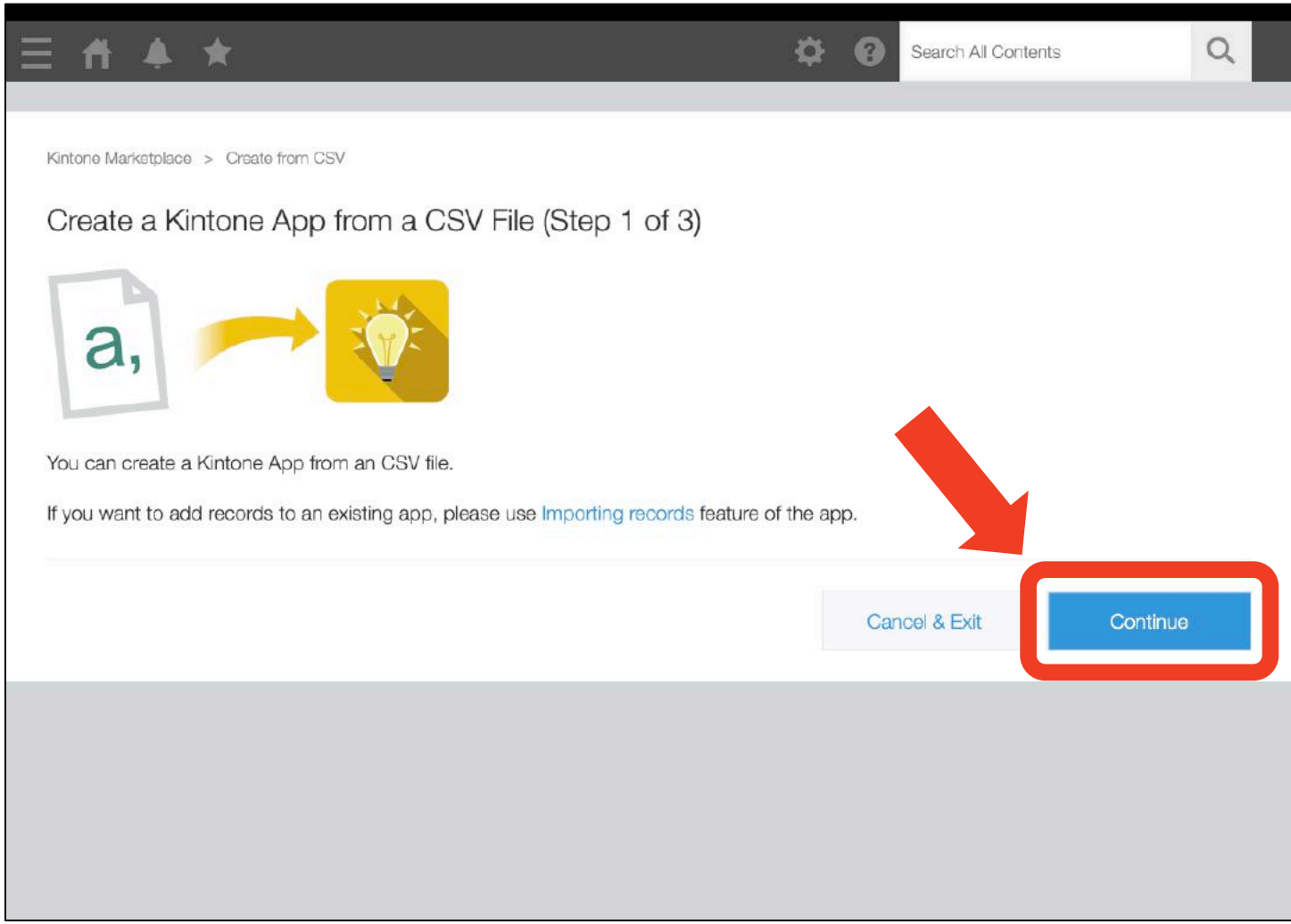

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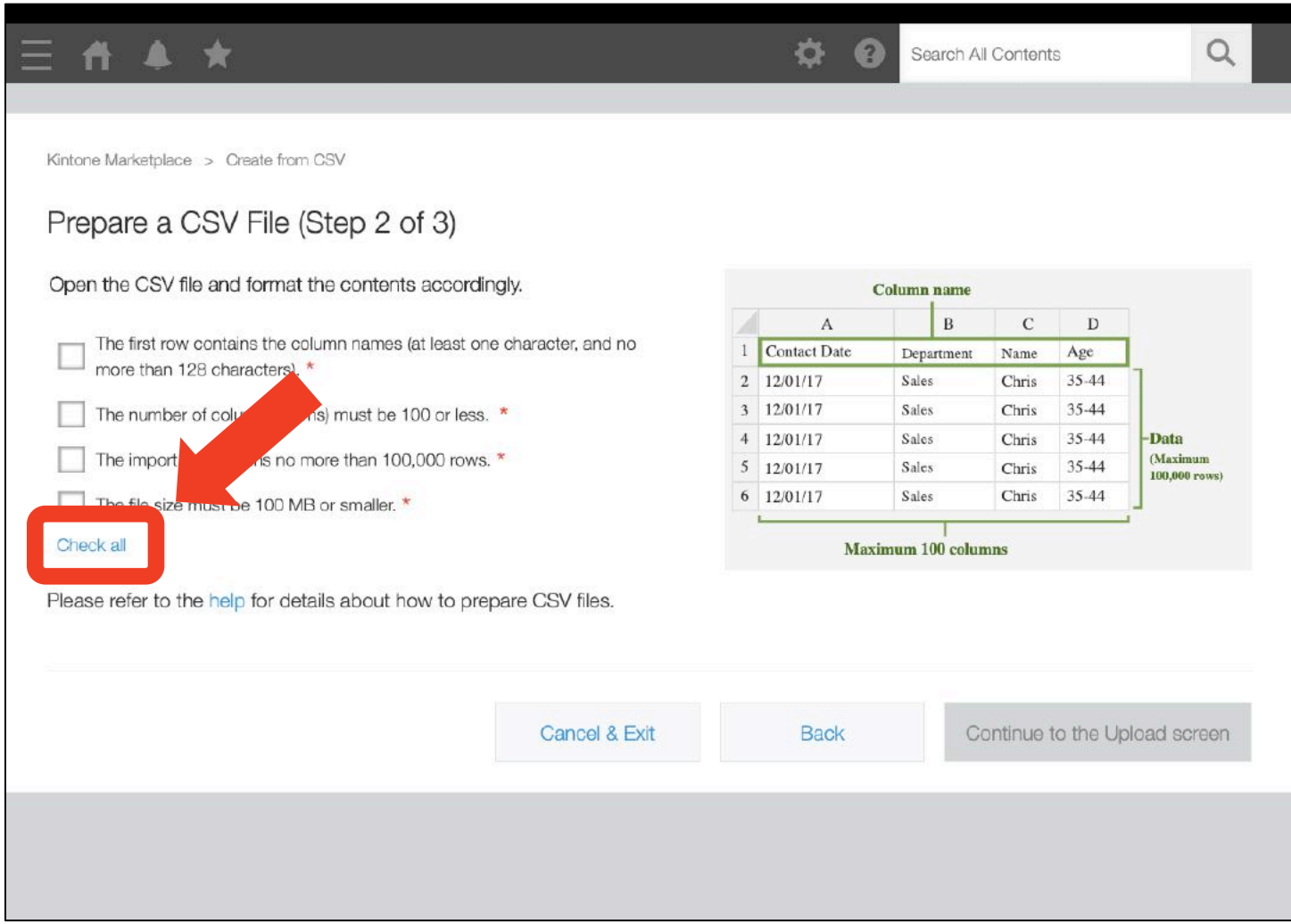

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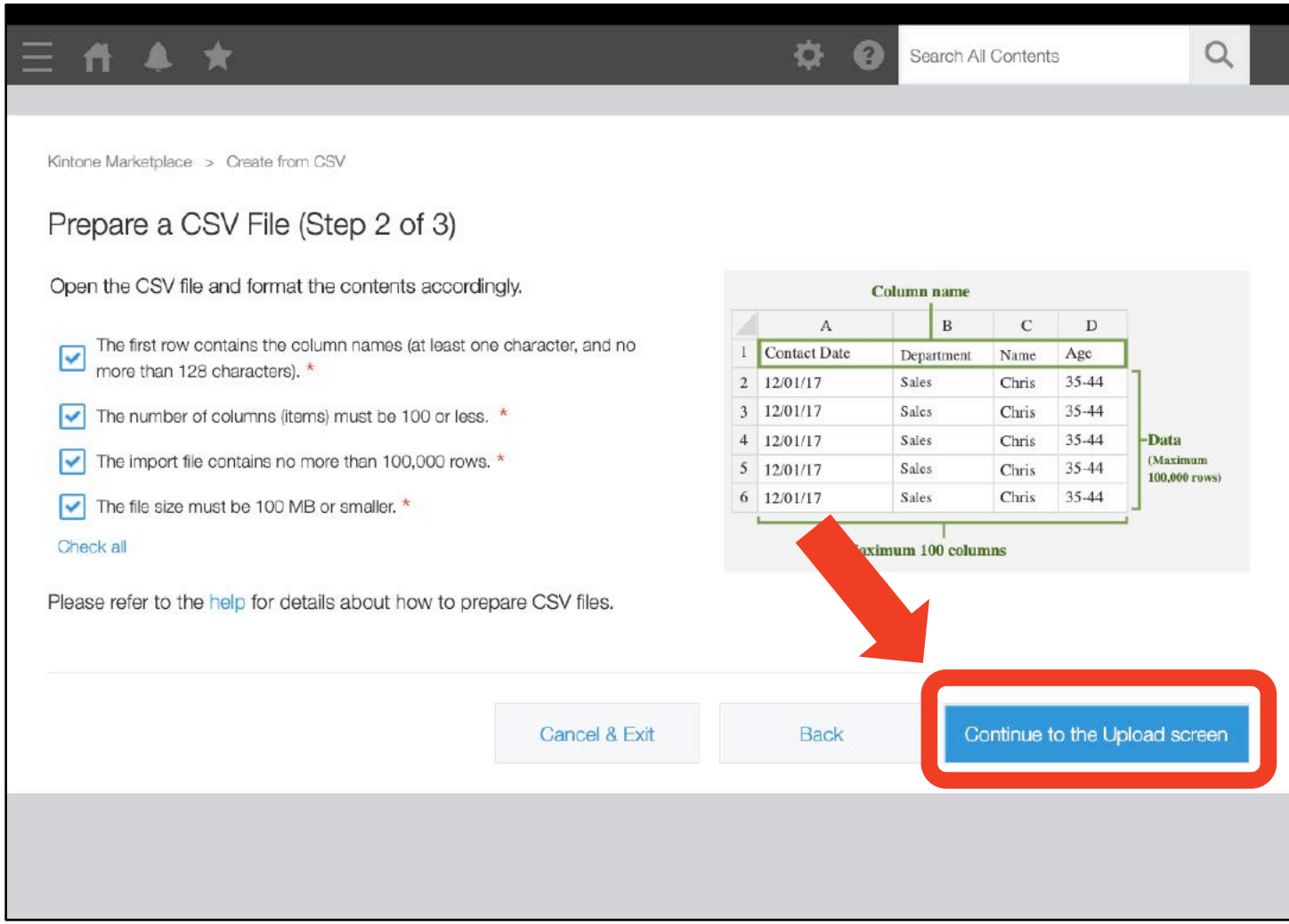

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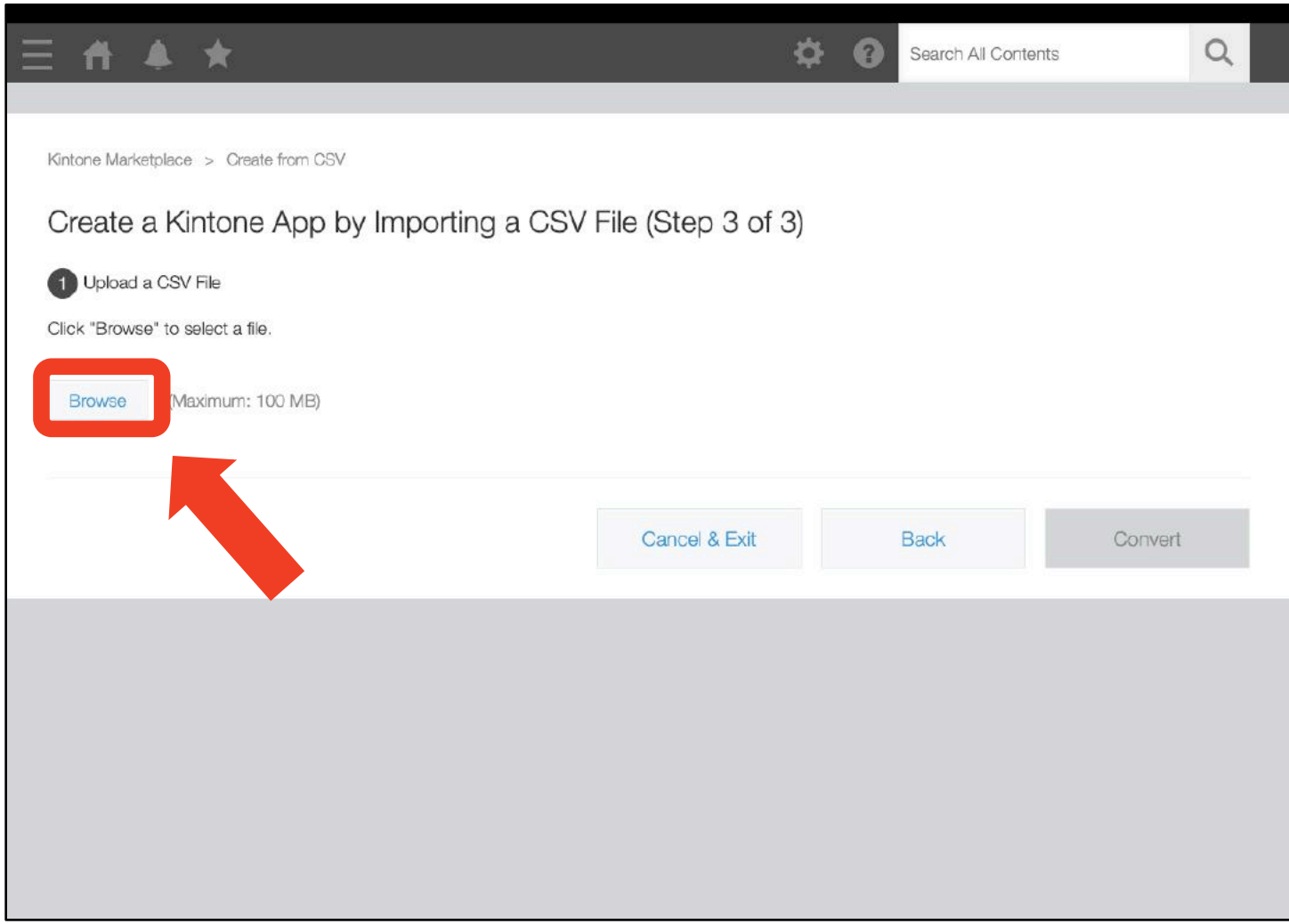

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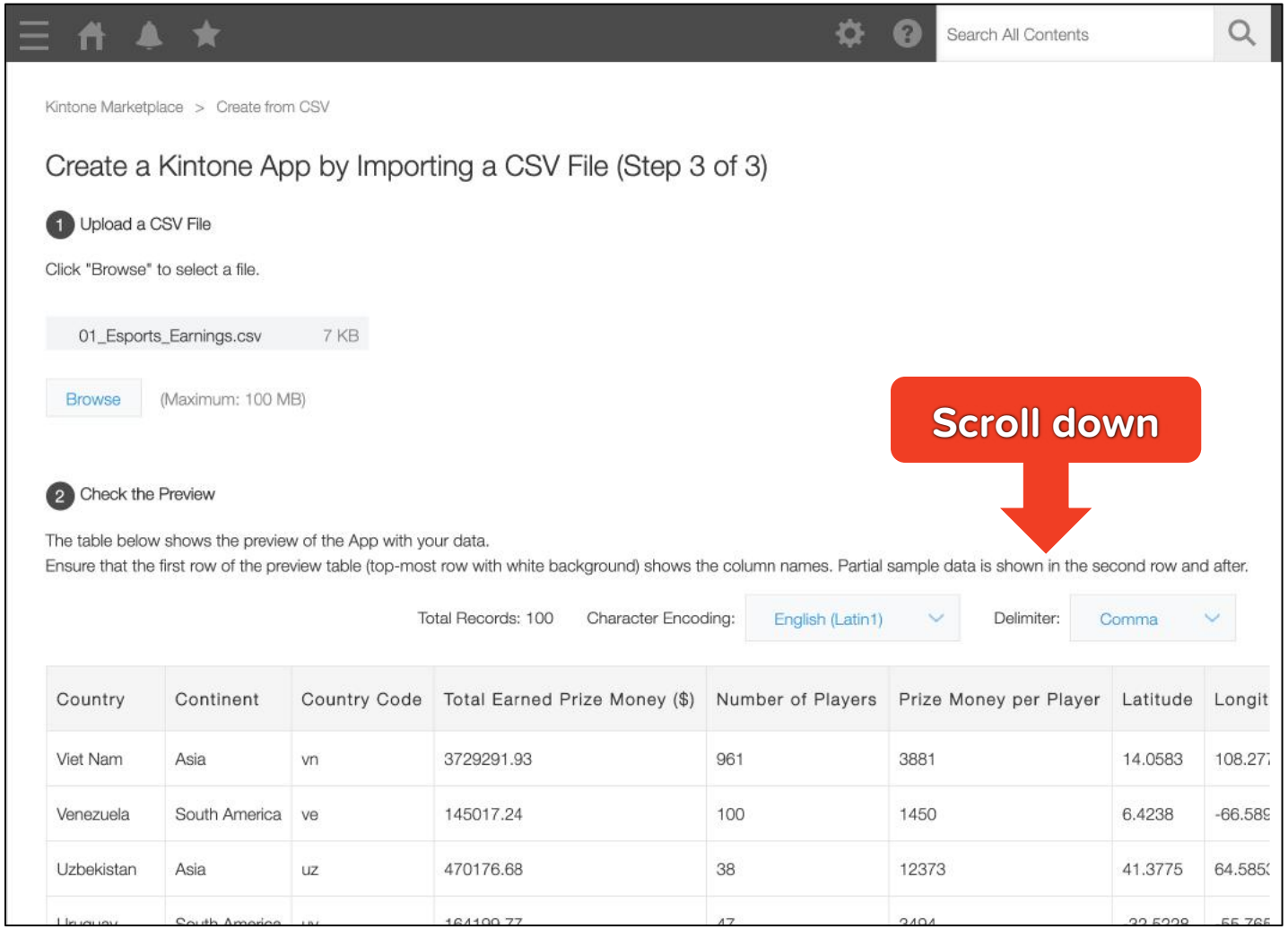

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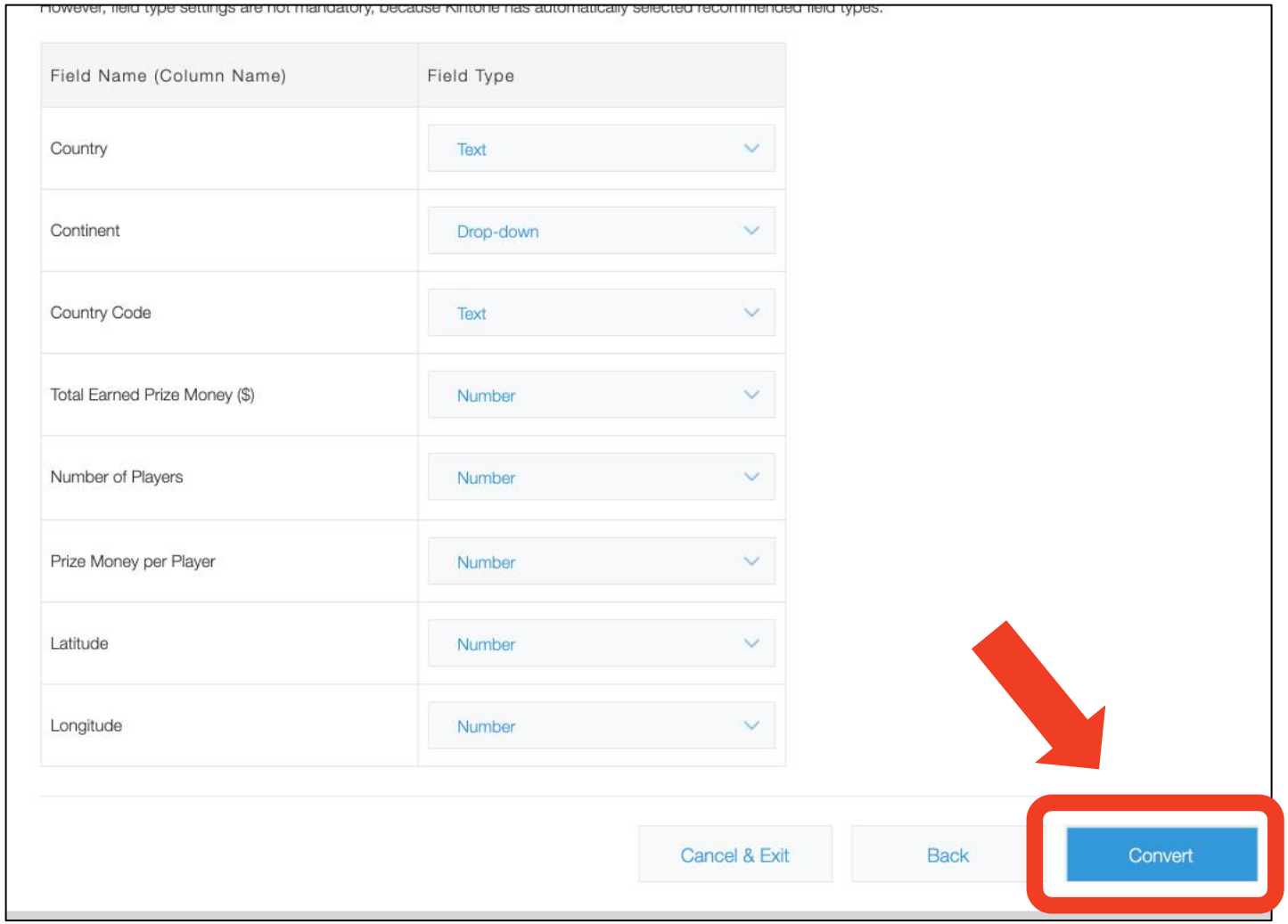
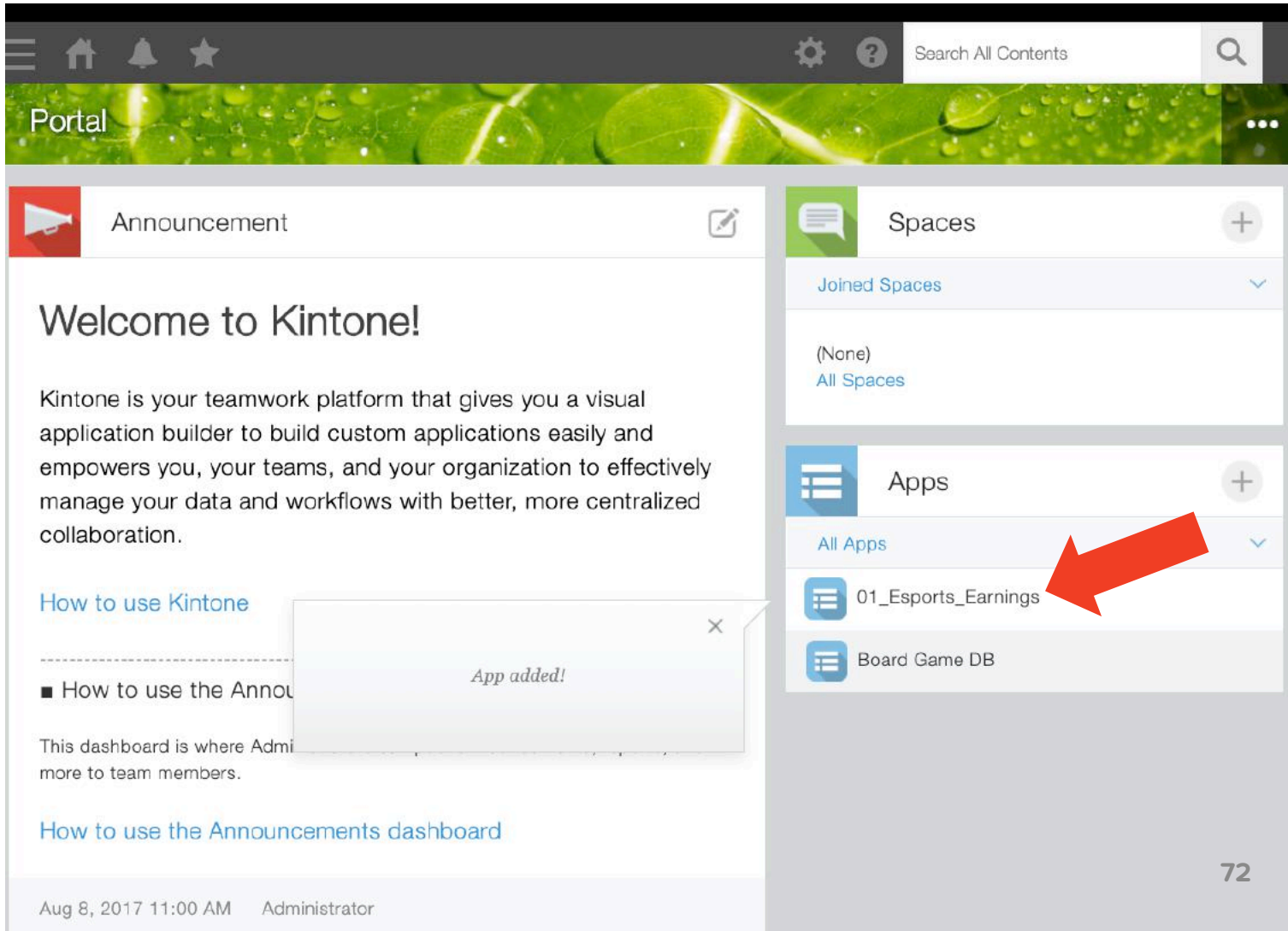


amCharts Customization for Kintone

1. Create a new Kintone App from a CSV file
2. **Add amCharts libraries to the App**
3. Add a custom JavaScript file to the App
4. Redeploy the Kintone App

Add JavaScript Libraries to the App

1. **Find and click on the Esports Earnings App**
2. Click on the Gear icon for the App's settings
3. Navigate to the App Settings tab
4. Find the JavaScript and CSS Customization option in the middle.



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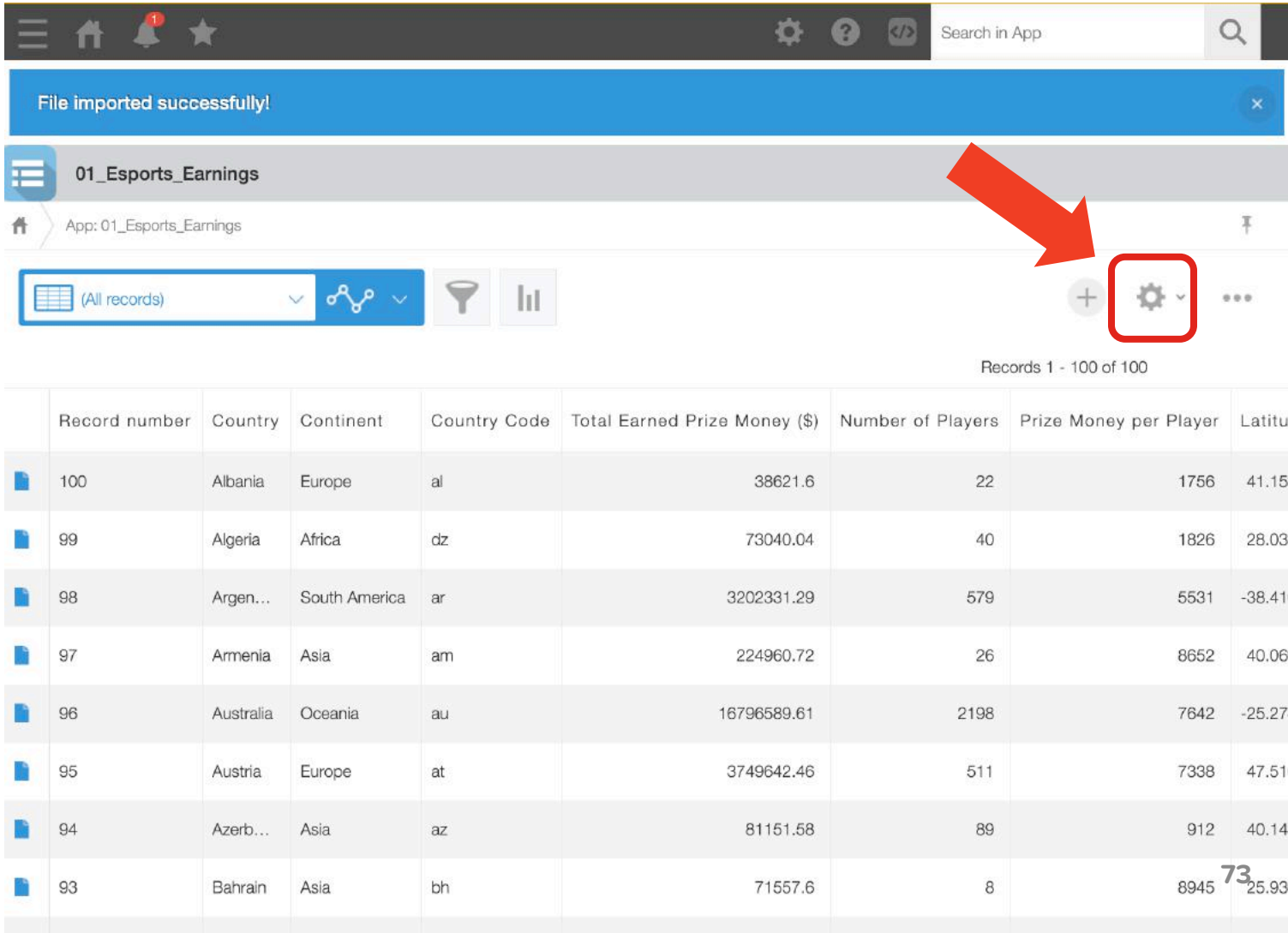

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99	Algeria	Africa	dz	73040.04	40	1826	28.03
98	Argen...	South America	ar	3202331.29	579	5531	-38.41
97	Armenia	Asia	am	224960.72	26	8652	40.06
96	Australia	Oceania	au	16796589.61	2198	7642	-25.27
95	Austria	Europe	at	3749642.46	511	7338	47.51
94	Azerb...	Asia	az	81151.58	89	912	40.14
93	Bahrain	Asia	bh	71557.6	8	8945	25.93

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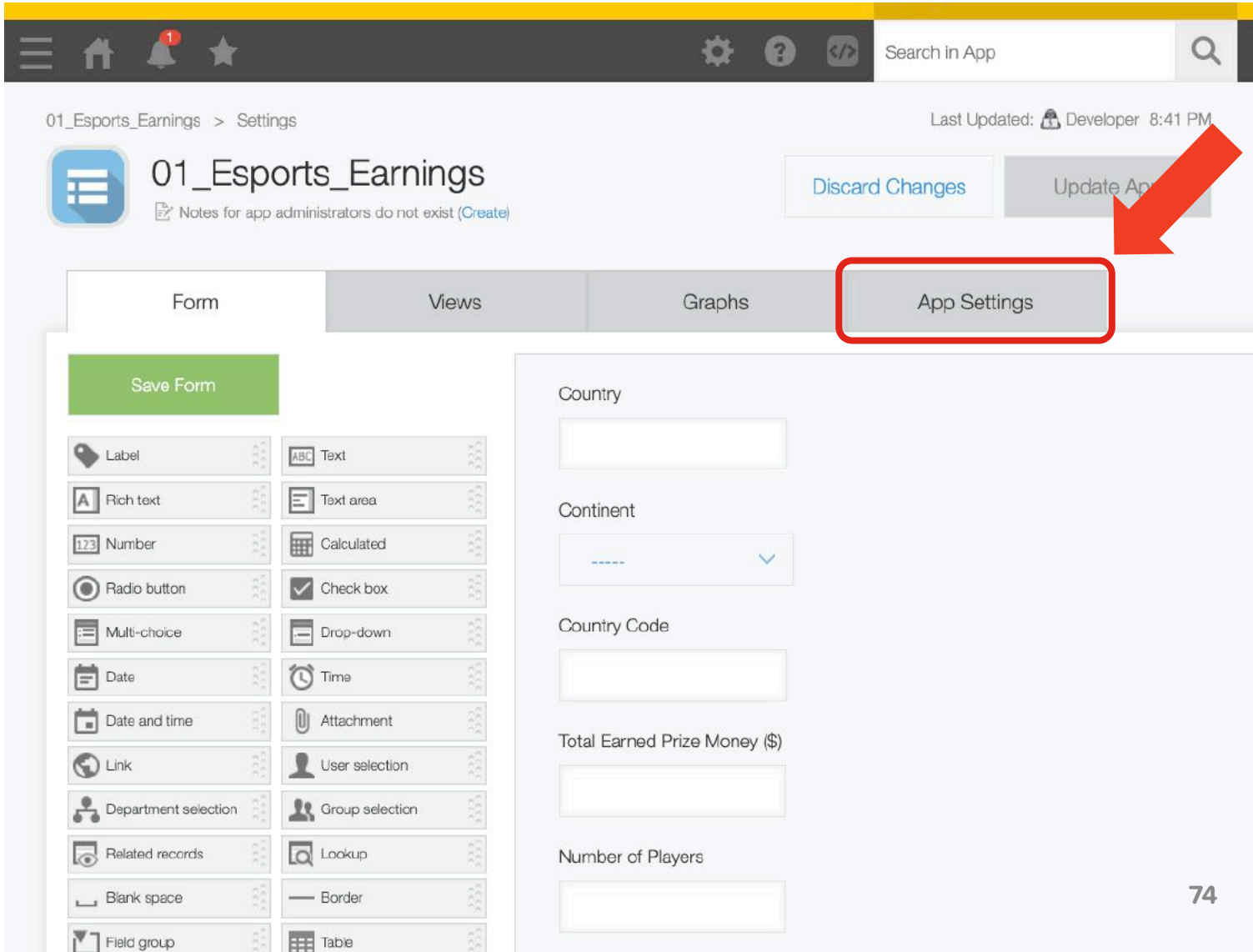

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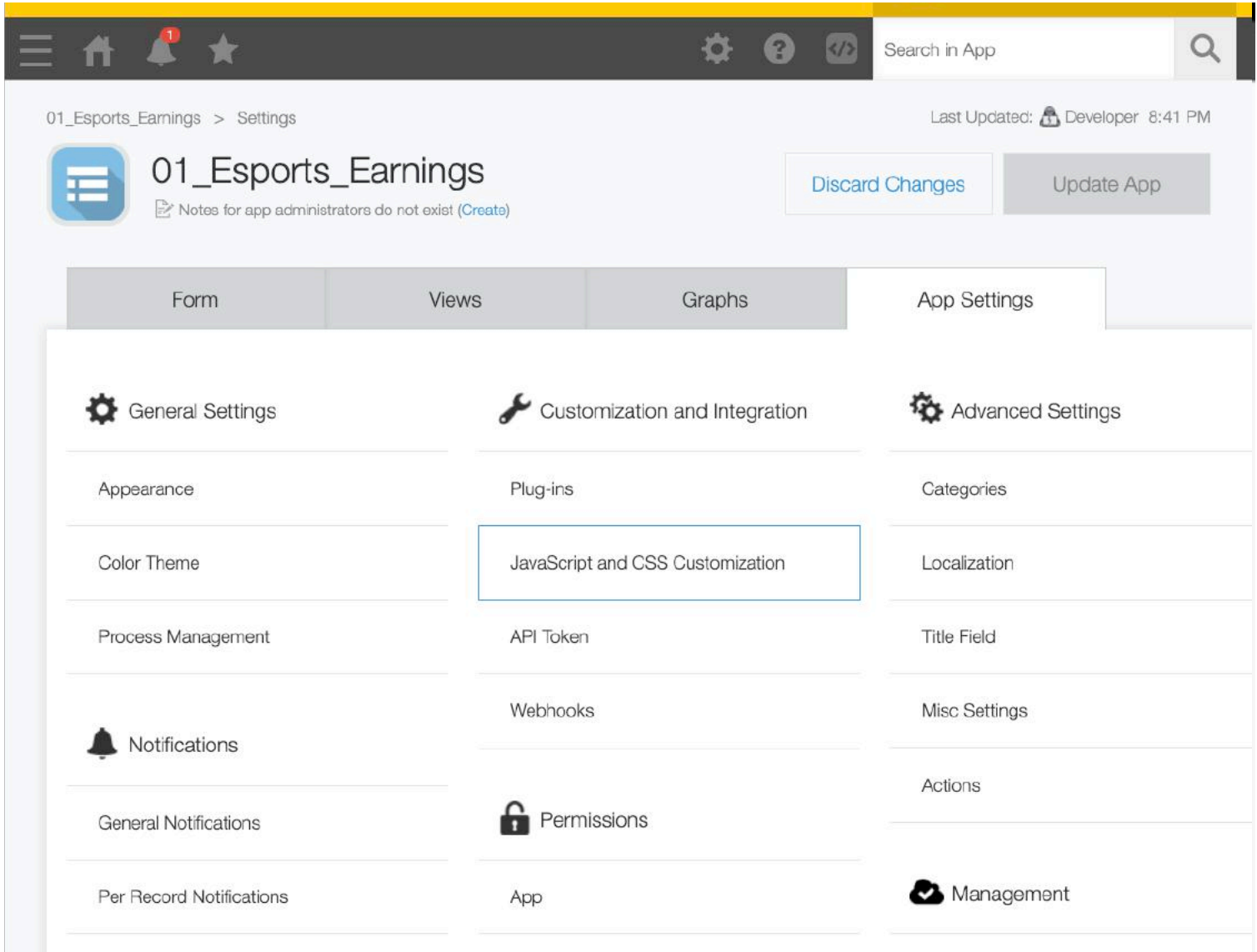
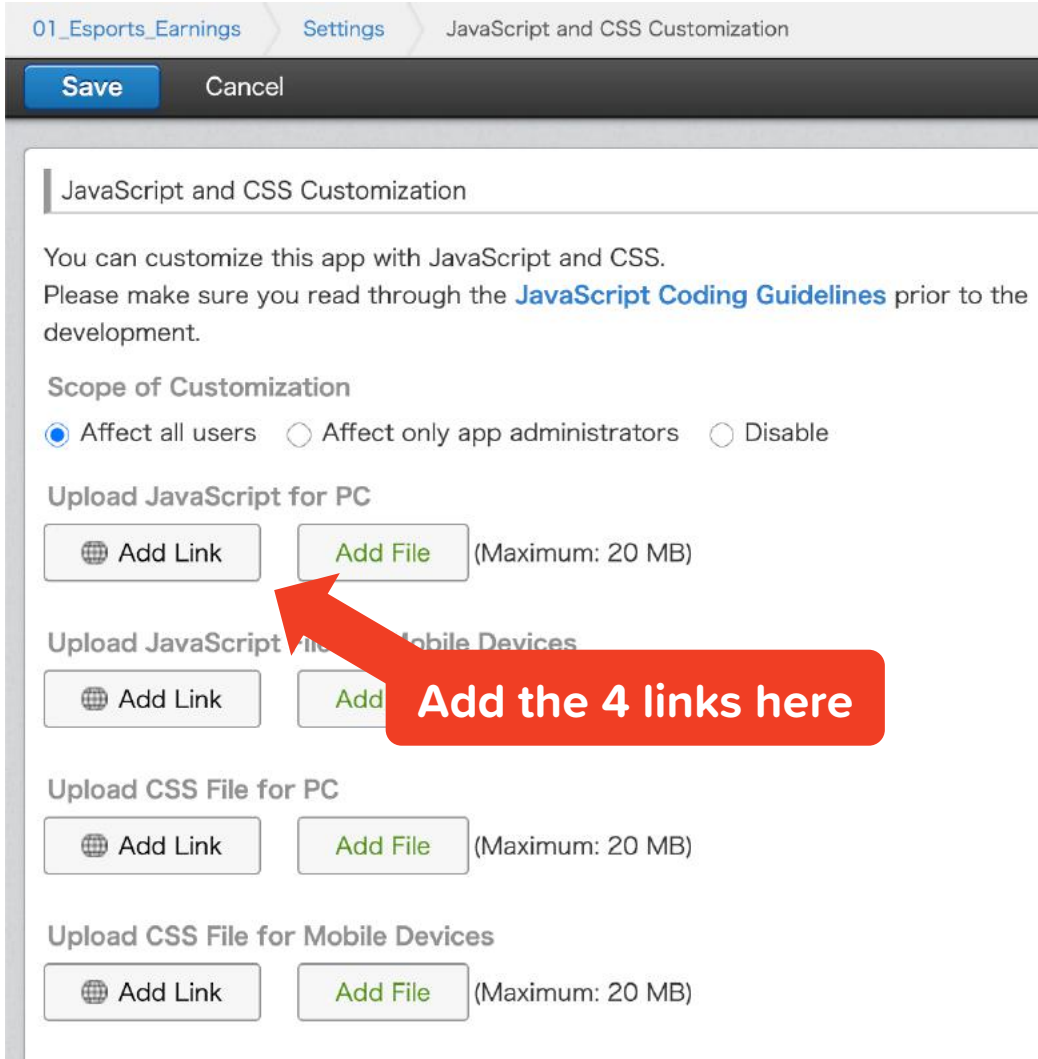


Add JavaScript Libraries to the App

Under **Upload JavaScript for PC**, click on **Add Link** to add the following amCharts libraries in order:

https://www.amcharts.com/lib/4/core.js
https://www.amcharts.com/lib/4/maps.js
https://cdn.amcharts.com/lib/4/geodata/worldLow.js
https://www.amcharts.com/lib/4/themes/animated.js

Don't click on the top blue Save button yet!



amCharts Customization for Kintone

1. Create a new Kintone App from a CSV file
2. Add amCharts libraries to the App
3. **Add a custom JavaScript file to the App**
4. Redeploy the Kintone App

Add a Custom JavaScript File to the App

1. Download the JS file: **03_Map_Script.js** bit.ly/KDP_CCMAP
2. Click on **Add File** button & upload the JS file
3. Click on Save button
4. Click on Update App button

02_CDN_URLs.txt

```
1  // Order matters when inserting CDN URLs into Kintone App settings
2
3  https://www.amcharts.com/lib/4/core.js
4  https://www.amcharts.com/lib/4/maps.js
5  https://cdn.amcharts.com/lib/4/geodata/worldLow.js
6  https://www.amcharts.com/lib/4/themes/animated.js
```

03_Map_Script.js

```
1  (function () {
2    'use strict';
3
4    // Kintone event triggered after the record list page is displaye
5    kintone.events.on('app.record.index.show', function (event) {
6
7      // Retrieve & configure the space element below the record list
8      var spaceDiv = kintone.app.getHeaderSpaceElement();
9      spaceDiv.style.height = '500px';
10     spaceDiv.style.marginLeft = '25px';
11     spaceDiv.style.marginRight = '25px';
12     spaceDiv.style.border = 'solid';
```

Add a Custom JavaScript File to the App

1. Download the JS file:
   03_Map_Script.js
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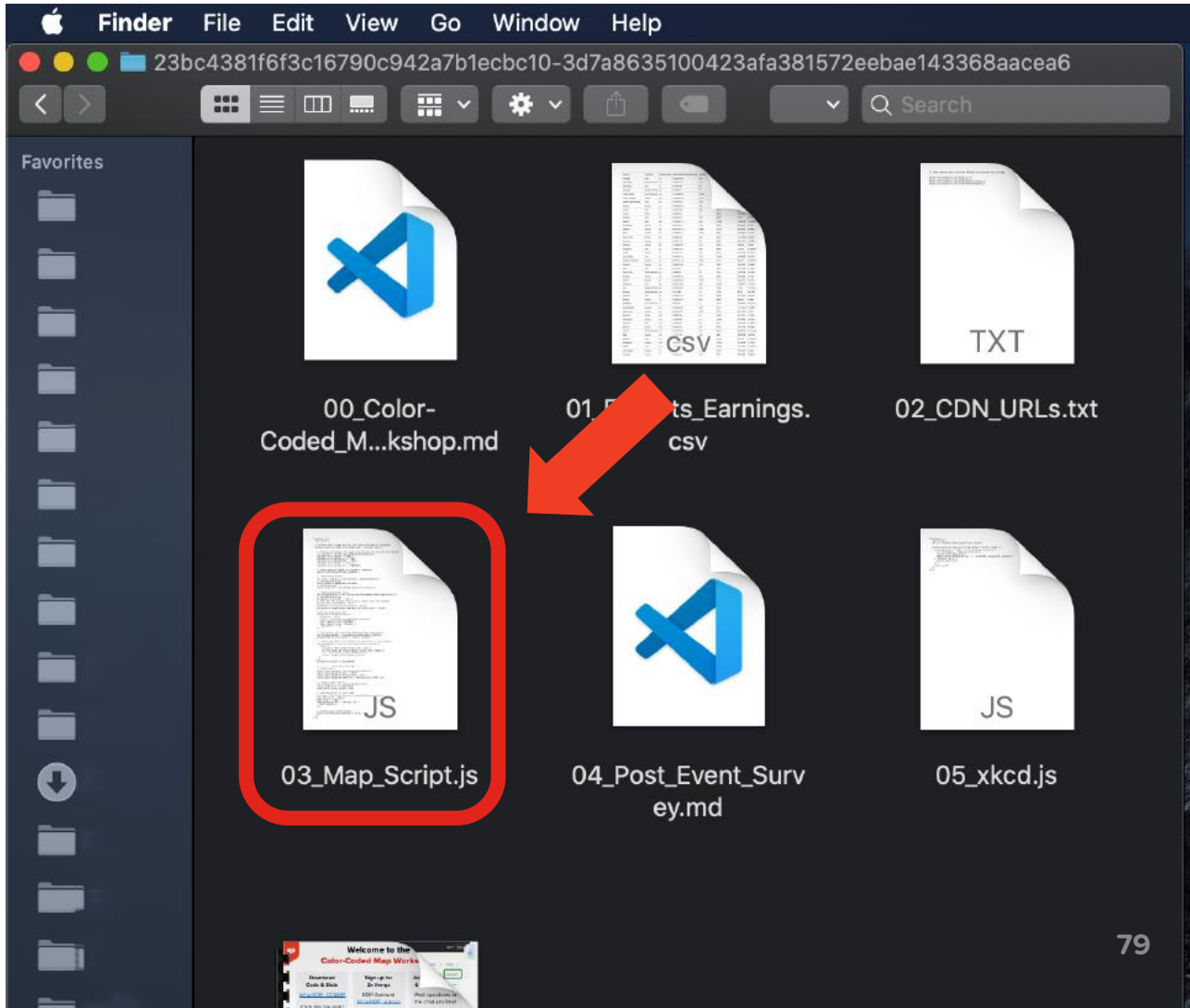

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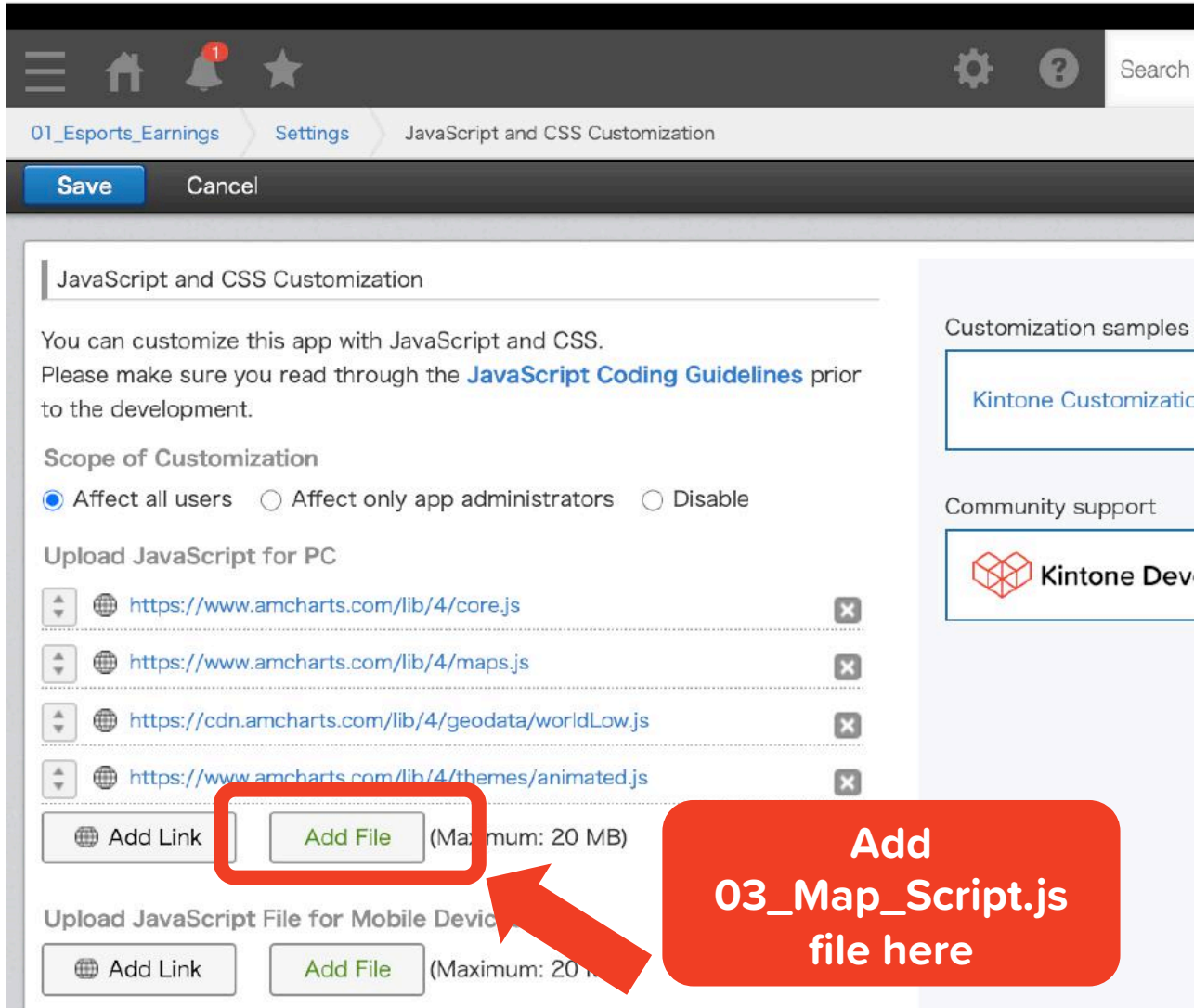

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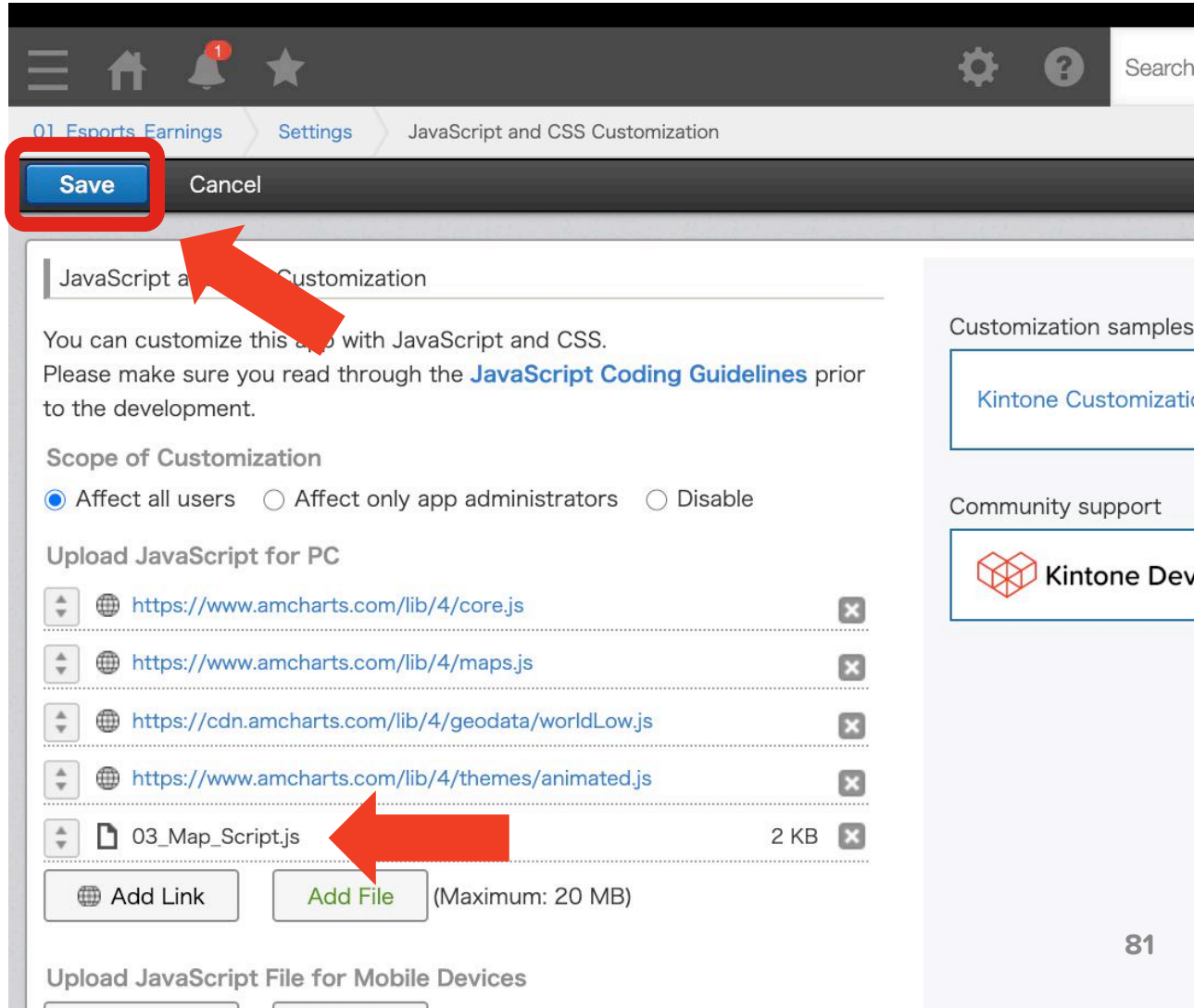


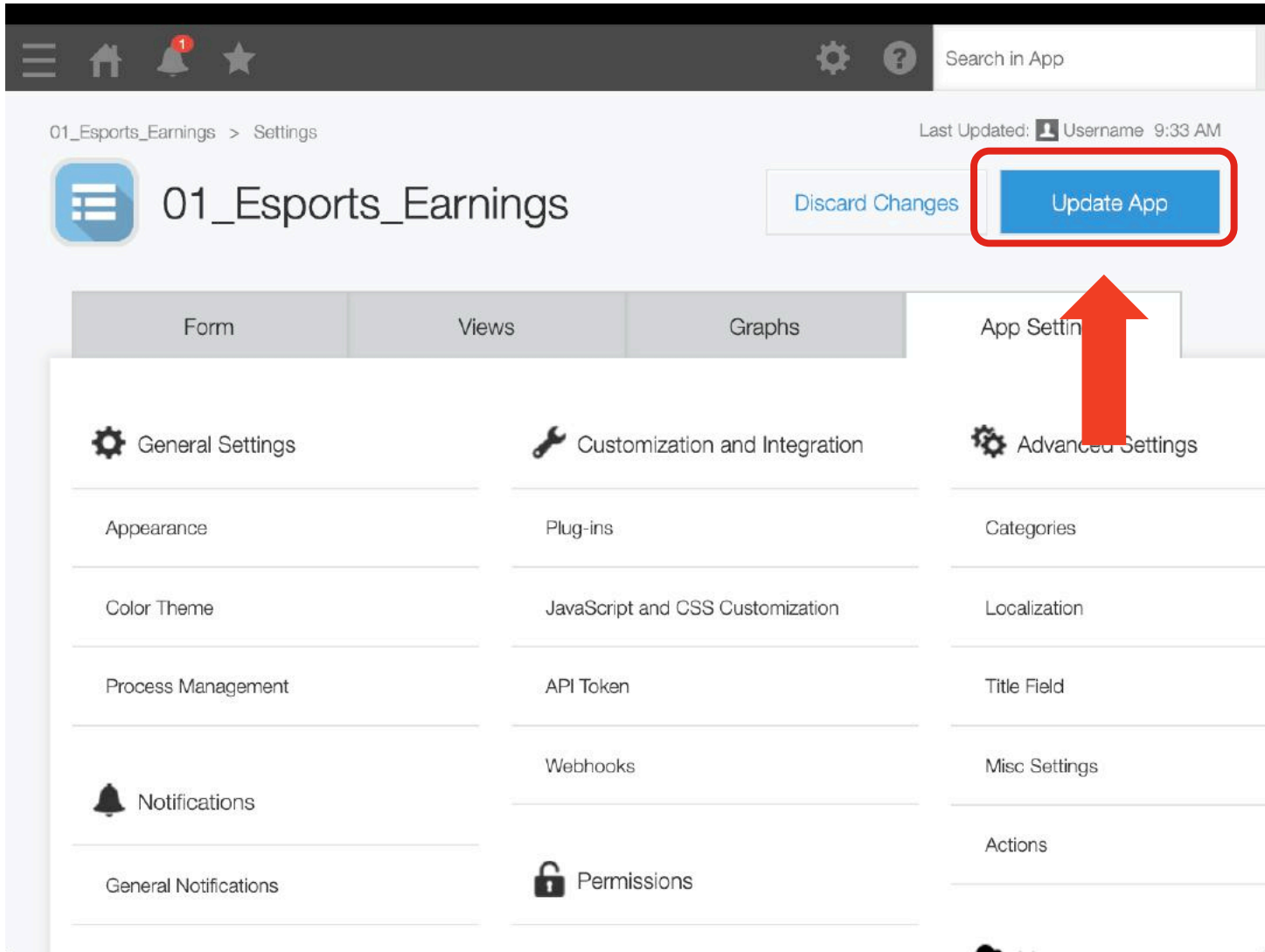
amCharts Customization for Kintone

1. Create a new Kintone App from a CSV file
2. Add amCharts libraries to the App
3. Add a custom JavaScript file to the App
4. **Redeploy the Kintone App**

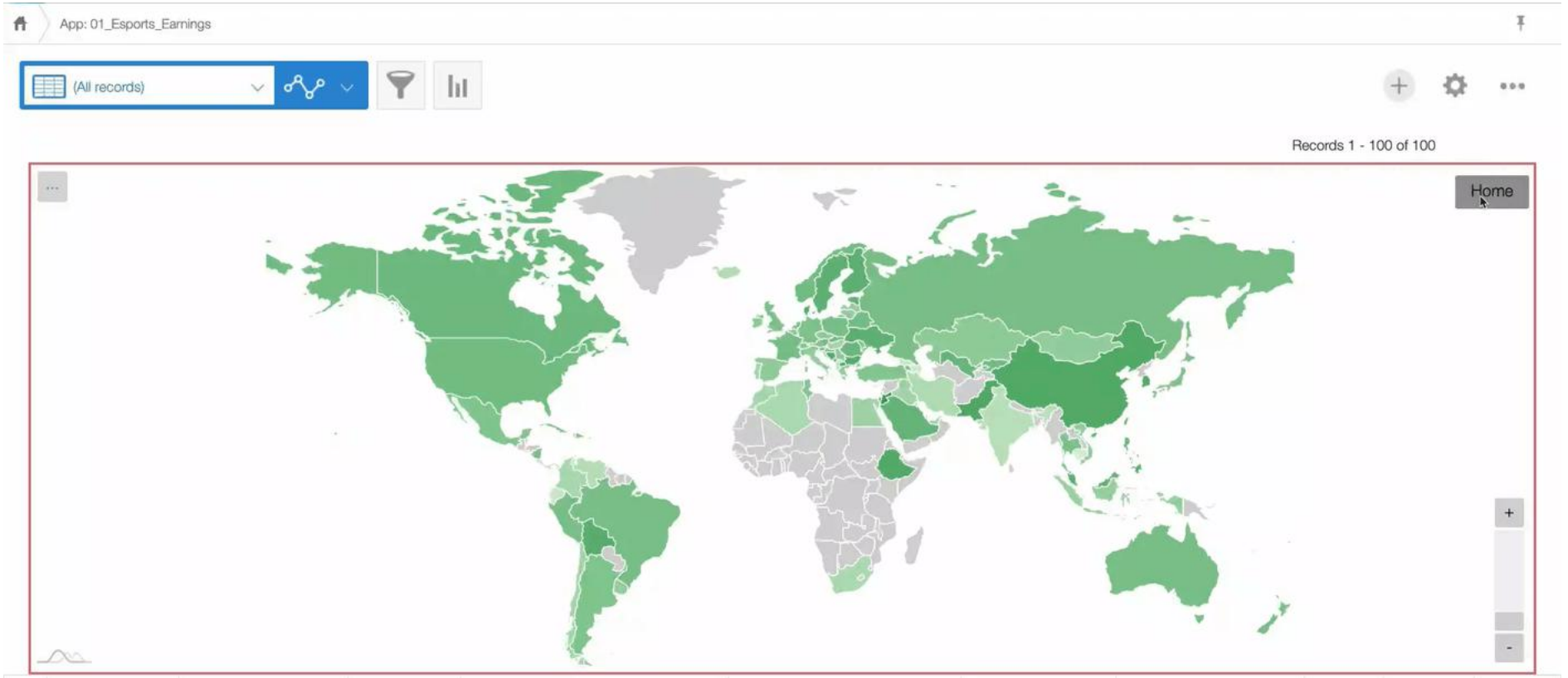
Redeploy the Kintone App

1. Download the JS file: **03_Map_Script.js**
2. Click on **Add File** button & upload the JS file
3. Click on Save button
4. Click on Update App button

Changes made are applied (adding libraries & JS file)



Results

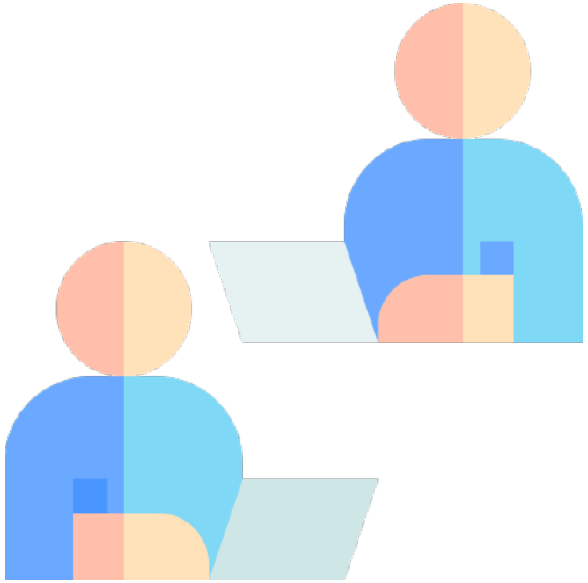


	Record number	Country	Continent	Country Code	Total Earned Prize Money ($)	Number of Players	Prize Money per Player	Latitude	Longitude	
	100	Albania	Europe	al	38621.6	22	1756	41.1533	20.1683	
	99	Algeria	Africa	dz	73040.04	40	1826	28.0339	1.6596	

Time To Get Started!

Want the Slides? Hit the **Download ZIP** button at bit.ly/KDP_CCMAP

1. Create a Kintone App from a CSV file
   - **Create from CSV** option
   - Import the Esports Earnings CSV file
2. Add JavaScript libraries to the App
   - amCharts CDN links
3. Add a custom JavaScript file to the App
   - Download and upload **03_Map_Script.js**
4. Redeploy the Kintone App
   - Click on **Update App**
5. Raise Hand on Zoom when you are done



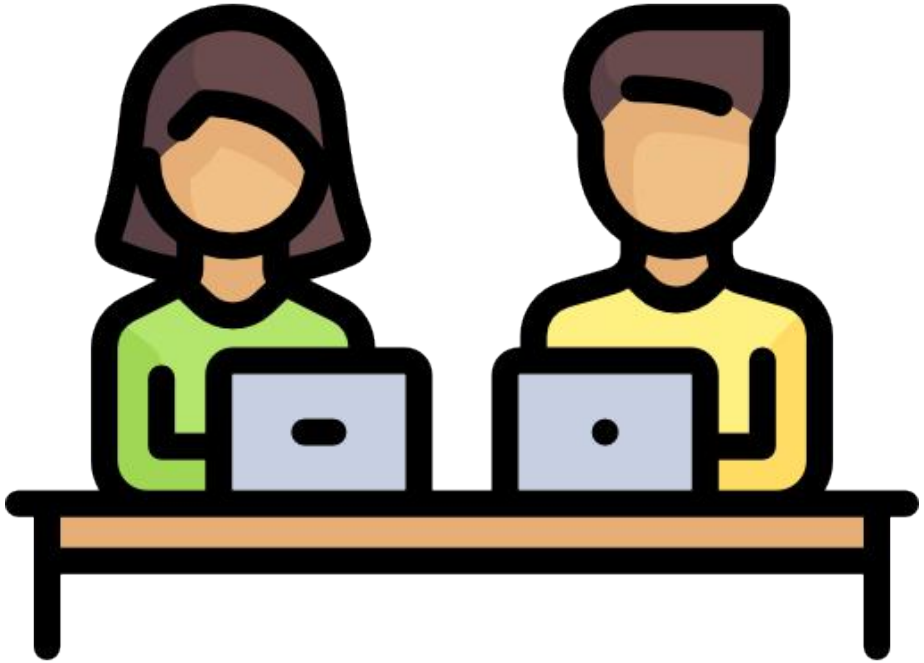
Want to Win a $25 Amazon Gift Card?

Stay tuned till the end & fill out our quick survey

Short Break

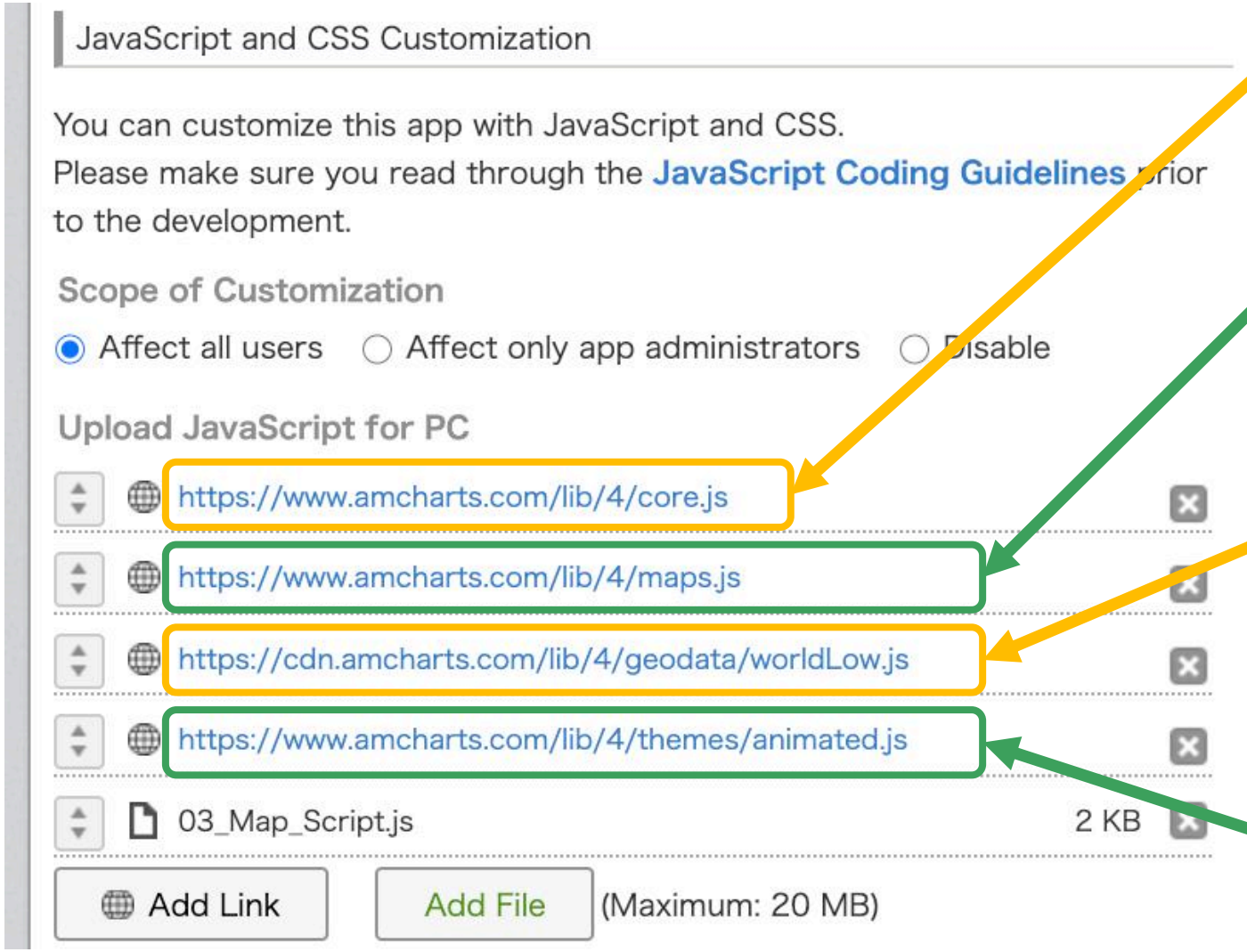
10 min break

Let’s look through the code!



Code Review

amCharts Libraries



Core library needed for all amCharts

amCharts library for creating charts

geodata package that contains data of world maps

contains the amCharts "Animated" theme which automatically provides smooth transitions

Code - 2 Main Parts

Kintone Event + Header & Loading Map

```
(function () {
  'use strict';

  // Kintone event triggered after the record list page is displayed.
  kintone.events.on('app.record.index.show', function (event) {

    // Retrieve & configure the space element below the record list's header
    var spaceDiv = kintone.app.getHeaderSpaceElement();
    spaceDiv.style.height = '500px';
    spaceDiv.style.marginLeft = '25px';
    spaceDiv.style.marginRight = '25px';
    spaceDiv.style.border = 'solid';
    spaceDiv.style.borderColor = '#ED7B84';

    // Apply amCharts Themes for automatic animation
    am4core.useTheme(am4themes_animated);

    // Create map instance
    var chart = am4core.create(spaceDiv, am4maps.MapChart);

    // Set map definition
    chart.geodata = am4geodata_worldLow;

    // Set projection
    chart.projection = new am4maps.projections.Miller();
...
  });
})();
```

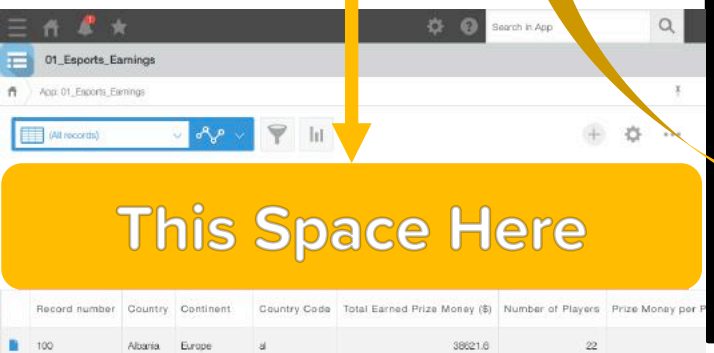
Getting the Data & Configuring the Map

```
// Create map polygon series
var polygonSeries = chart.series.push(new am4maps.MapPolygonSeries());
// Exclude Antarctica
polygonSeries.exclude = ['AQ'];
// Make map load polygon (like country names) data from GeoJSON
polygonSeries.useGeodata = true;
polygonSeries.calculateVisualCenter = true;
polygonSeries.mapPolygons.template.tooltipPosition = 'fixed';

//Set min & max fill color
polygonSeries.heatRules.push({
  'property': 'fill',
  'target': polygonSeries.mapPolygons.template,
  'min': am4core.color('#e5f5e0'),
  'max': am4core.color('#31a354'),
  'logarithmic': true
});

// Set tooltip with data to be displayed when hovered over
var polygonTemplate = polygonSeries.mapPolygons.template;
polygonTemplate.tooltipText = '{name}: ${value}';

// Create JSON object from Kintone records & pass it onto amCharts
var polygonData = event.records.map(function (record) {
  return {
    // Country Code default field code = Text_0
    // Prize Money per Player default field code = Number_1
    'id': record.Text_0.value.toUpperCase(),
    'value': Number(record.Number_1.value)
  }
});
polygonSeries.data = polygonData;
```

Code - events (Line 1 - 13)

Kintone native event that triggers when the Record List page loads

Retrieve & configure the space element below the record list's header




```
(function () {
  'use strict';
  kintone.events.on('app.record.index.show', function (event) {

    var spaceDiv = kintone.app.getHeaderSpaceElement();
    spaceDiv.style.height = '500px';
    spaceDiv.style.marginLeft = '25px';
    spaceDiv.style.marginRight = '25px';
    spaceDiv.style.border = 'solid';
    spaceDiv.style.borderColor = '#ED7B84';
```

Code - Map Instance (Line 15 - 23)

am4themes_animated is a theme that automatically animates many amCharts actions. It is a system-wide setting.

```
// Apply amCharts Themes for automatic animation
am4core.useTheme(am4themes_animated);
```

Create a map instance.

1st parameter is the target HTML element to create the map in

2nd parameter references an amCharts map type class.

```
// Create map instance
var chart = am4core.create(spaceDiv, am4maps.MapChart);
// Set map definition
chart.geodata = am4geodata_worldLow;
// Set projection
chart.projection = new am4maps.projections.Miller();
```

Code - Map Instance (Line 15 - 23)

Import the geodata package for basic world map info (e.g. borders & country names).

'wordLow' imports Map data of the whole world with lower resolution in terms of country position & shapes.

Alternatively, 'worldHigh' Map data provides higher resolution but are heavier & slower to work with.

```
// Apply amCharts Themes for automatic animation
am4core.useTheme(am4themes_animated);

// Create map instance
var chart = am4core.create(spaceDiv, am4maps.MapChart);
// Set map definition
chart.geodata = am4geodata_worldLow;
// Set projection
chart.projection = new am4maps.projections.Miller();
```

Code - chart.projection (Line 15 - 23)

The Miller projection is used to display this map.

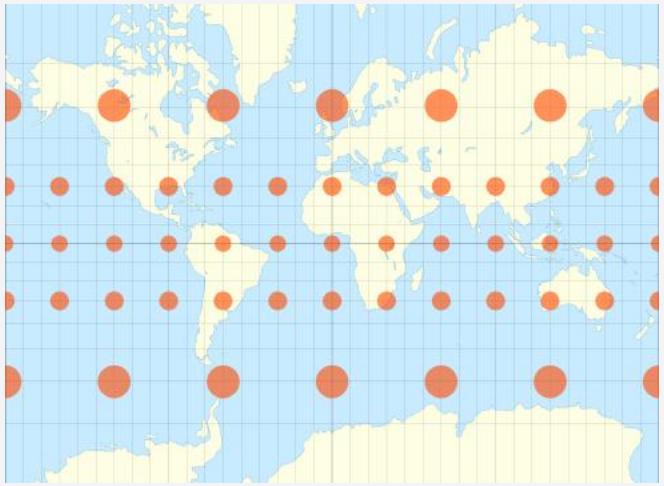
Details on amCharts projections: amcharts.com/dataviz-tip-15-choose-map-projection

Source: Why all world maps are wrong Vox

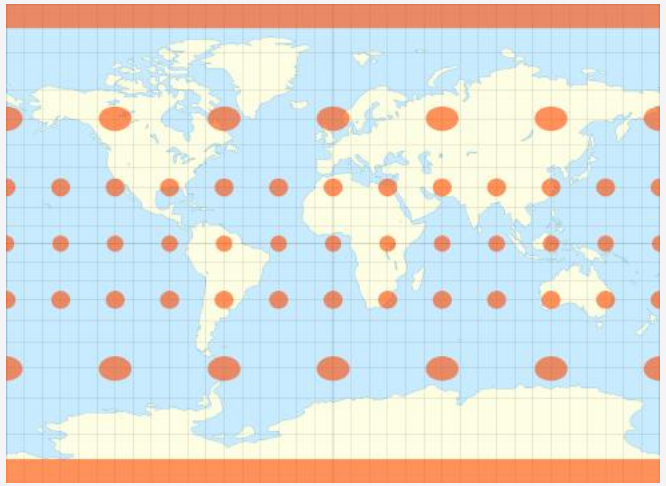
```
// Apply amCharts Themes for automatic animation
am4core.useTheme(am4themes_animated);

// Create map instance
var chart = am4core.create(spaceDiv, am4maps.MapChart);
// Set map definition
chart.geodata = am4geodata_worldLow;
// Set projection
chart.projection = new am4maps.projections.Miller();
```

Map Projections

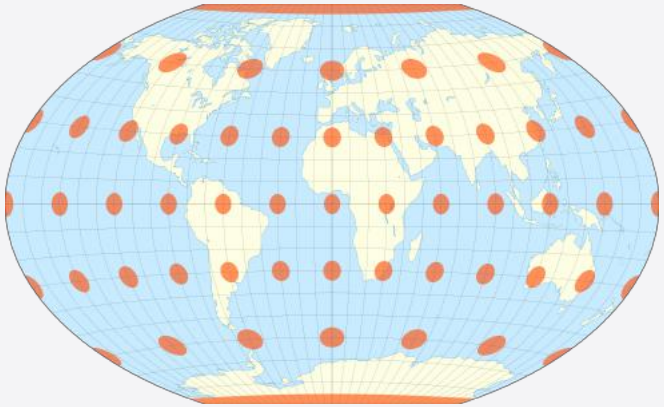
Mercator



Miller Cylindrical



Winkel Tripel



Source: Mercator projection Wiki, Miller cylindrical projection Wiki, & Winkel tripel projection

Code - polygonSeries (Line 25 - 32)

MapPolygonSeries is a series of map polygon elements, used to display the country shapes on the map

Exclude Antarctica from the map to save space

```
// Create map polygon series
var polygonSeries = chart.series.push(new
am4maps.MapPolygonSeries());

// Exclude Antarctica
polygonSeries.exclude = ['AQ'];

// Make map load polygon (like country names) data from
GeoJSON
polygonSeries.useGeodata = true;
polygonSeries.calculateVisualCenter = true;
polygonSeries.mapPolygons.template.tooltipPosition = 'fixed';
```

Code - polygonSeries (Line 25 - 32)

The series uses the imported geodata for country borders, names, & center point.

The country's information will be displayed in a tooltip in the country's center when the mouse hovers over.

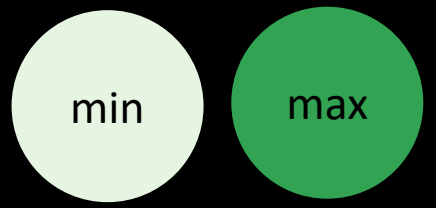
```
// Create map polygon series
var polygonSeries = chart.series.push(new
am4maps.MapPolygonSeries());


// Exclude Antarctica
polygonSeries.exclude = ['AQ'];

// Make map load polygon (like country names) data from GeoJSON
polygonSeries.useGeodata = true;
polygonSeries.calculateVisualCenter = true;
polygonSeries.mapPolygons.template.tooltipPosition = 'fixed';
```

Code - heatRules & template (Line 34 - 45)

Set the heatmap rules where areas with higher values will have color closer to max color value. The opposite case for areas with lower values.

The coloring is set to a logarithmic scale to handle extreme values.

```
//Set min & max fill color
polygonSeries.heatRules.push({
  'property': 'fill',
  'target': polygonSeries.mapPolygons.template,
  'min': am4core.color('#e5f5e0'),
  'max': am4core.color('#31a354'),
  'logarithmic': true
});

// Set tooltip with data to be displayed when hovered over
var polygonTemplate = polygonSeries.mapPolygons.template;
polygonTemplate.tooltipText = '{name}: ${value}';
```



Code - heatRules & template (Line 34 - 45)

Make a change to the template to alter the map's behavior.

The tooltip is updated to display bound "name" data from the geodata, & "value" data from Kintone (explained on the next slide)

```
//Set min & max fill color
polygonSeries.heatRules.push({
  'property': 'fill',
  'target': polygonSeries.mapPolygons.template,
  'min': am4core.color('#e5f5e0'),
  'max': am4core.color('#31a354'),
  'logarithmic': true
});

// Set tooltip with data to be displayed when hovered over
var polygonTemplate = polygonSeries.mapPolygons.template;
polygonTemplate.tooltipText = '{name}: ${value}';
```

Code - polygonData (Line 47 - 56)

Get data from Kintone Records & Fields, create a JSON object with it, and then pass it onto amCharts.

The **event object** contains data of all the records that are displayed in the record list.

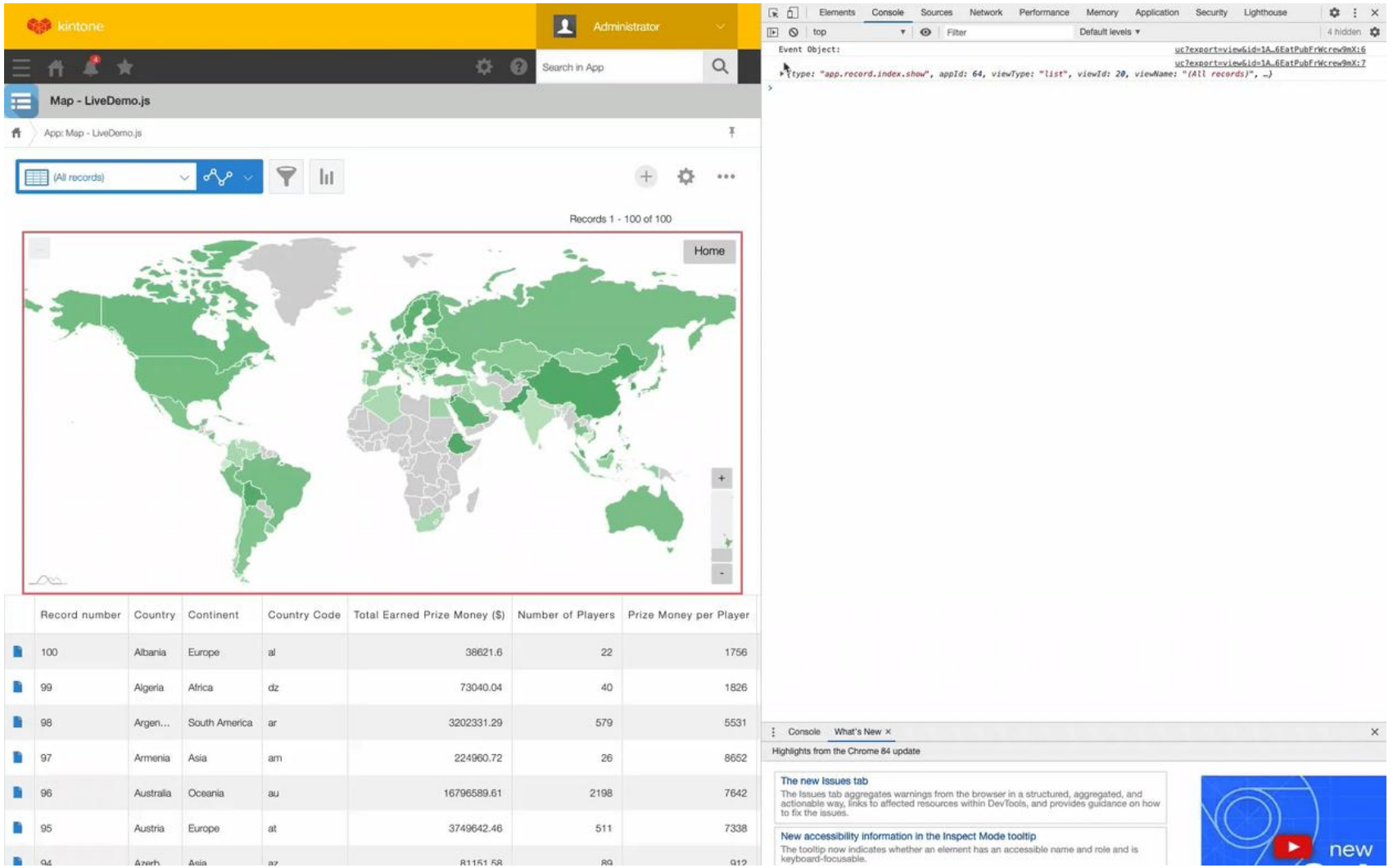
```
// Create JSON obj from Kintone records & pass it onto amCharts
var polygonData = event.records.map(function (record) {
  return {
    // Country Code default field code = Text_0
    // Prize Money per Player default field code = Number_1
    'id': record.Text_0.value.toUpperCase(),
    'value': Number(record.Number_1.value)
  }
});

polygonSeries.data = polygonData;
```

What are Event objects?

- In Kintone, an Event object refers to an object filled with **record data**, related to the Kintone event that the JavaScript customization is using.
  - The **event** object being used in JavaScript code contains all the data within the list view.
- Event objects contains the field values of the record(s) listed on the page.

```
kintone.events.on('app.record.index.show', function(event){ … });
```

What are Event objects?



Code - polygonData (Line 47 - 56)

Field codes are used to extract data from the Kintone App.

Country Code's default field code is "Text_0"

Prize Money per Player's default field code is "Number_1"

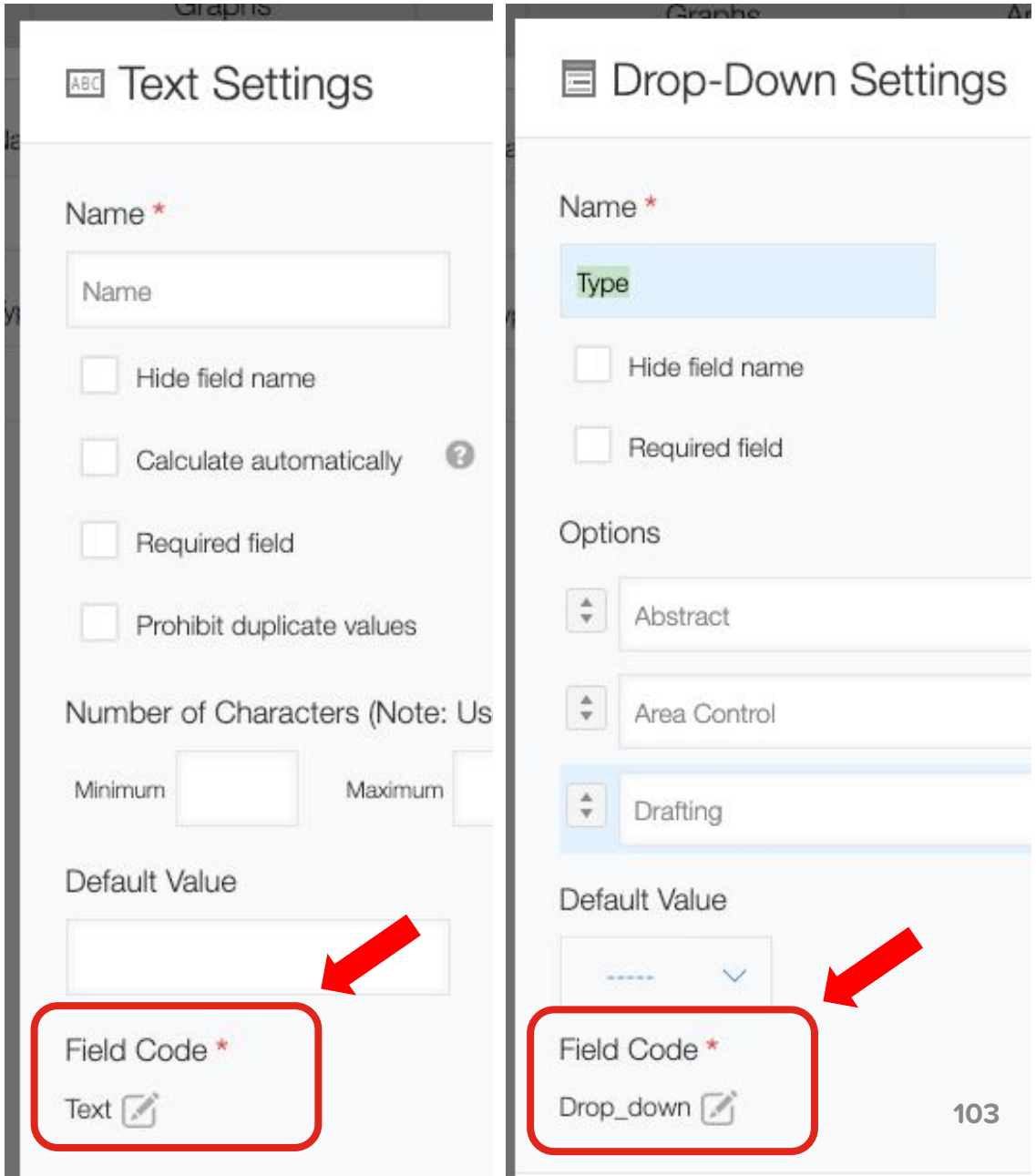
```
// Create JSON obj from Kintone records & pass it onto amCharts
var polygonData = event.records.map(function (record) {
  return {
    // Country Code default field code = Text_0
    // Prize Money per Player default field code = Number_1
    'id': record.Text_0.value.toUpperCase(),
    'value': Number(record.Number_1.value)
  }
});

polygonSeries.data = polygonData;
```

Do You Remember?

The field code is the identifier for each field, represented as a string

- Name's field code = Text
- Type's field code = Drop_down

These are the default field code values for their respective fields



Code - polygonData (Line 47 - 56)

Apply the JSON object to the map.

This amCharts map likes the JSON in the following format:

```
[
  {
    id: "VN",
    value: 3881
  },
  {
    id: "VE",
    value: 1450
  },
  ....etc....
]
```

```
// Create JSON obj from Kintone records & pass it onto amCharts
var polygonData = event.records.map(function (record) {
  return {
    // Country Code default field code = Text_0
    // Prize Money per Player default field code = Number_1
    'id': record.Text_0.value.toUpperCase(),
    'value': Number(record.Number_1.value)
  }
});

polygonSeries.data = polygonData;
```

Code - exporting (Line 58 - 62)

Create and configure the amCharts exporting menu button.

Set it to the top left corner (avoiding overlap with zoom controls).

Exporting background is set to transparent.

```
// Enable export
chart.exporting.menu = new am4core.ExportMenu();

chart.exporting.menu.align = "left";
chart.exporting.menu.verticalAlign = "top";

chart.exporting.backgroundColor = am4core.color("#f00", 0);
```

Code - Zoom Controls (Line 64 - 79)

// Create a zoom control

For better map navigation experience.

// Add Home button to reset zoom

The button will reset the viewing to the center.

// Disable mouse wheel zooming

To prevent conflict when scrolling down to Kintone records below the map.

```
var zoomControl = new am4maps.ZoomControl();
chart.zoomControl = zoomControl;
zoomControl.slider.height = 100;

var home = chart.chartContainer.createChild(am4core.Button);
home.label.text = "Home";
home.align = "right";
home.events.on("hit", function (ev) {
  chart.goHome();
});

chart.chartContainer.wheelable = false;
```

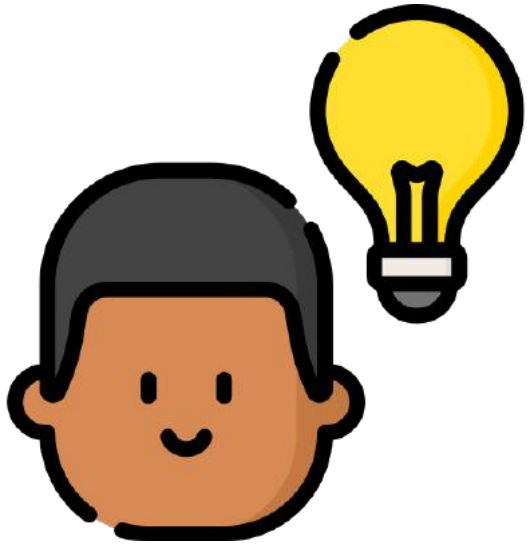
Any Questions?

developer.kintone.io

Today's Agenda

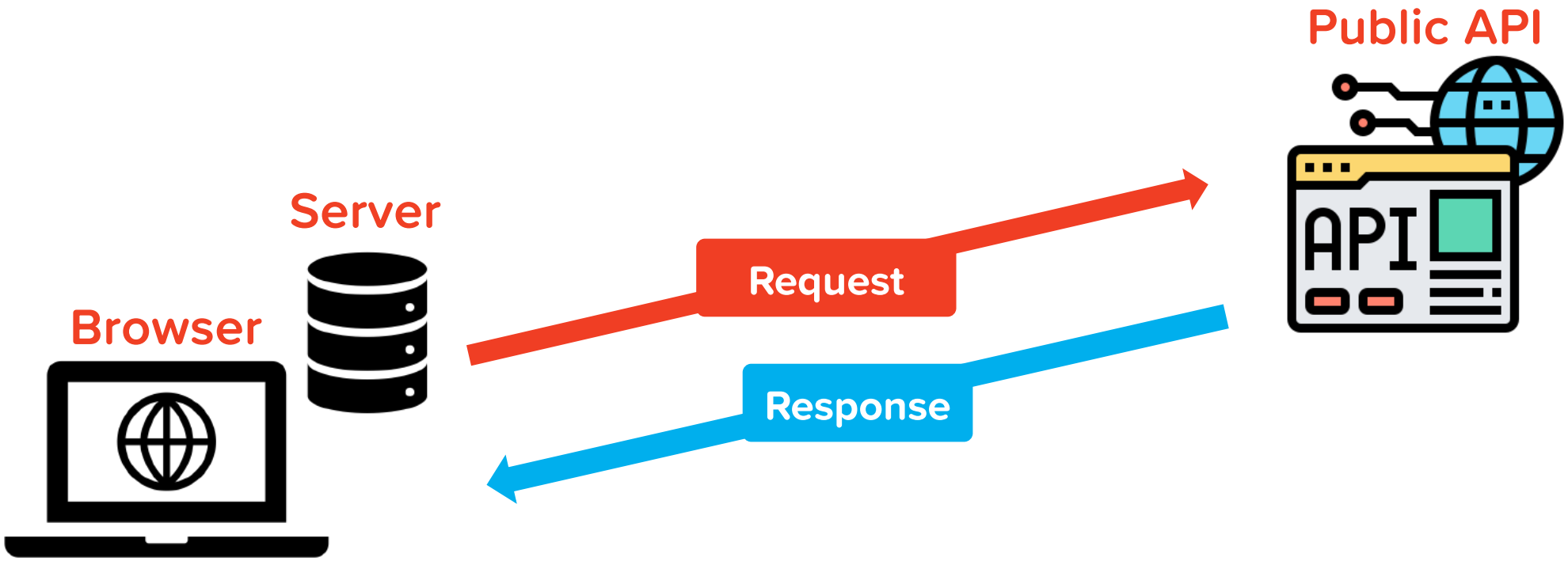
1. Get the Big Picture
2. Create a Kintone App
3. Display amCharts on Kintone
4. **Call REST APIs from Kintone**

Since We Are Talking About Data



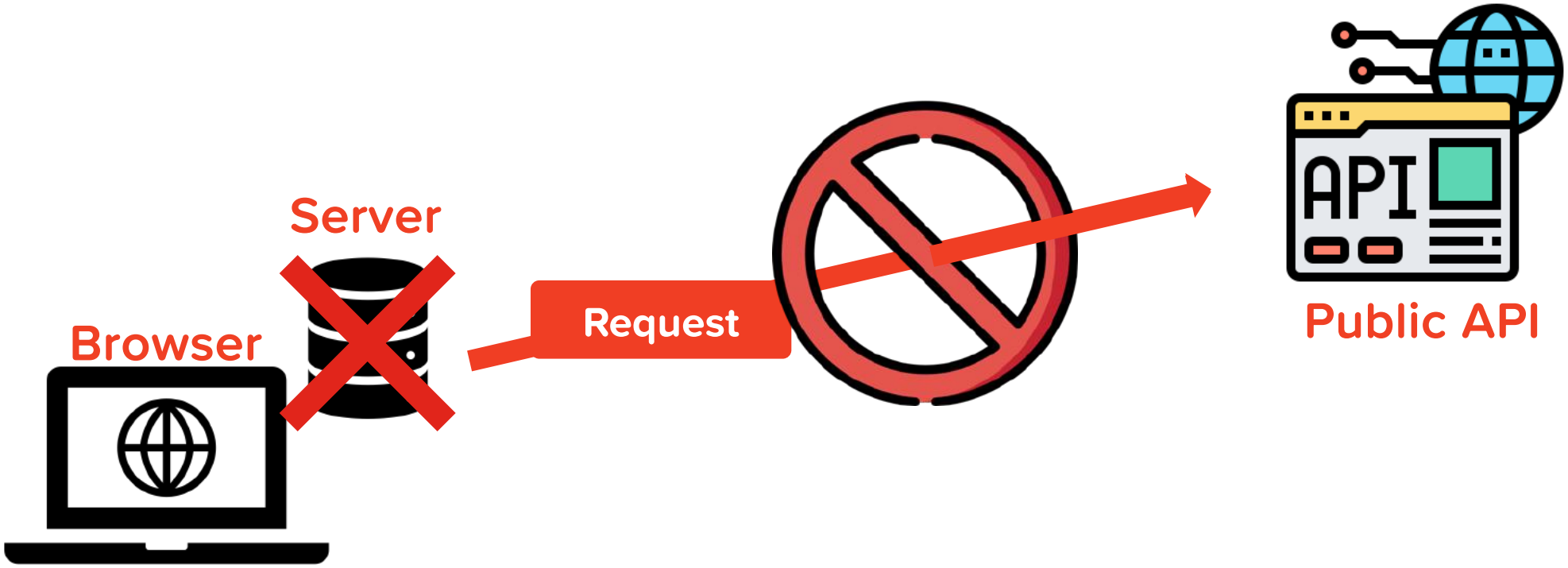
Wouldn’t it be great, if we could get data from public APIs?

REST API Calls From the Server



REST API calls are usually called through a server

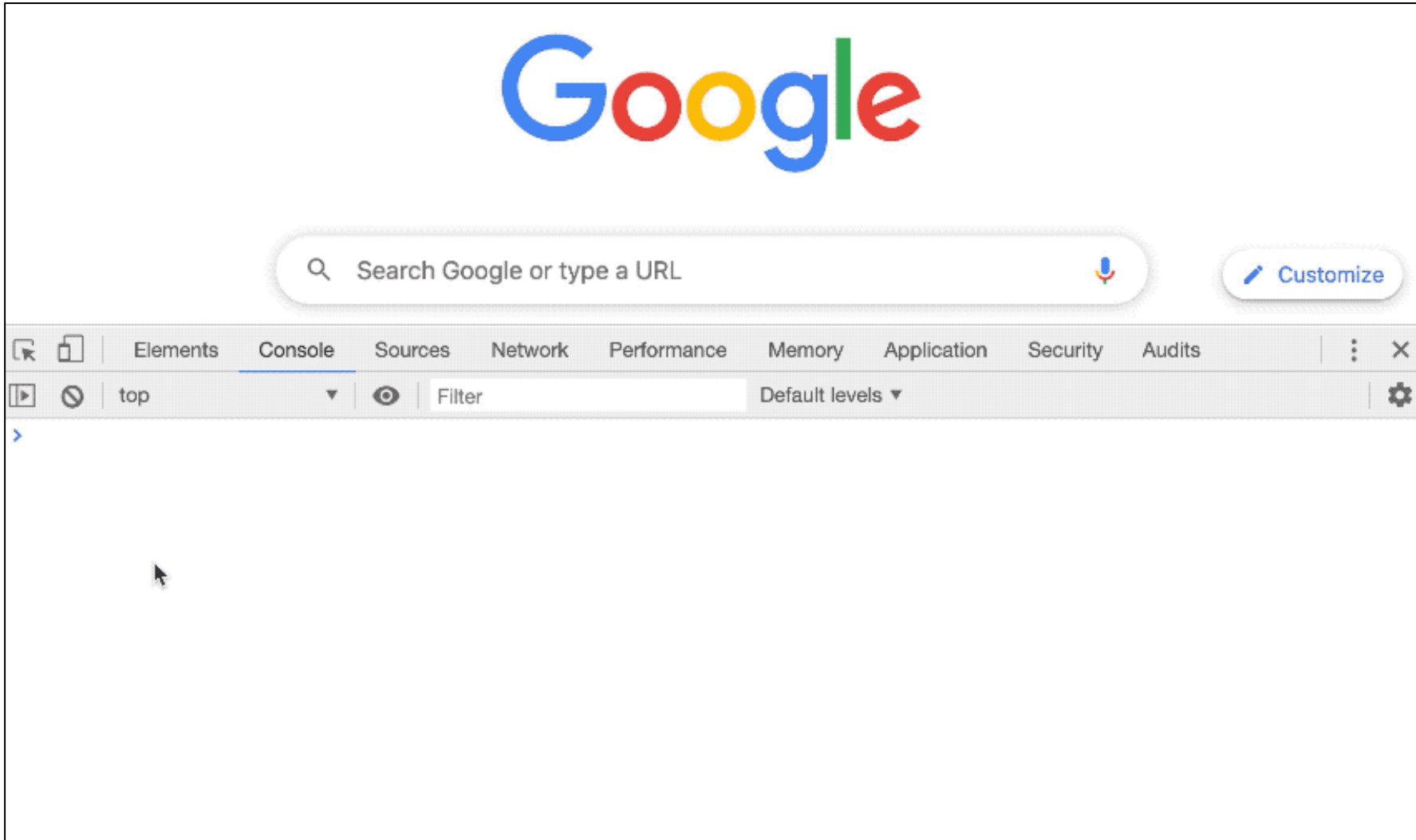
REST API Calls From the Browser



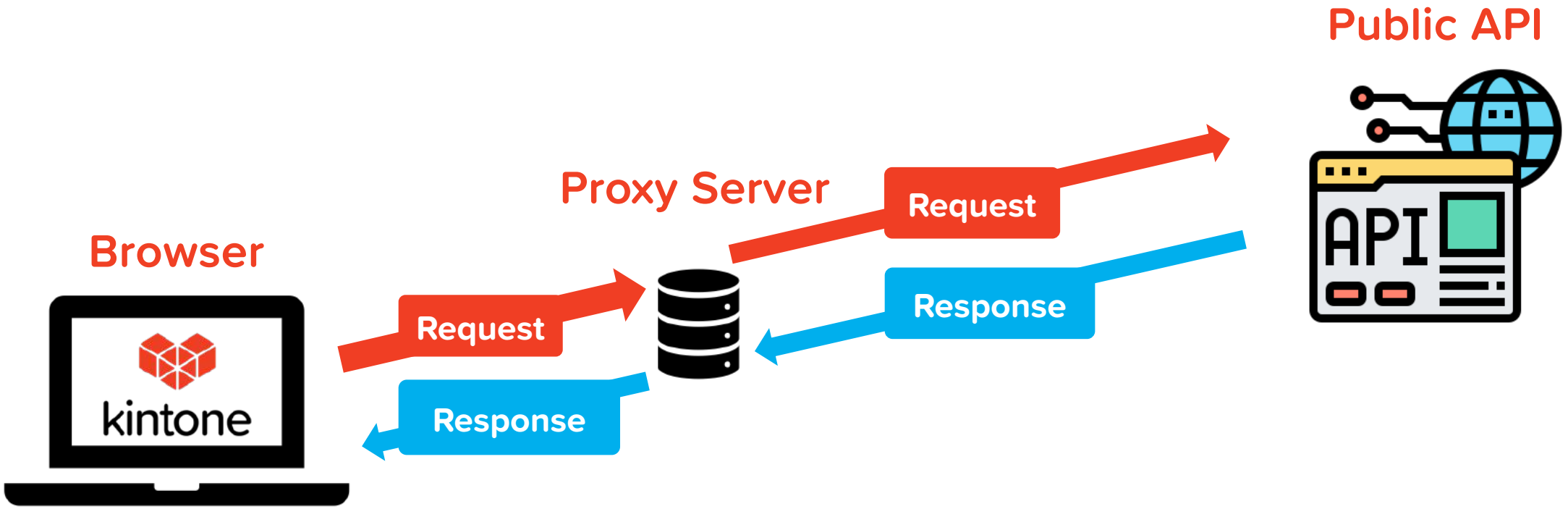
Calling REST APIs directly from the browser can often results in CORS errors

CORS Error Example

Yes, xkcd has an API for retrieving comic images.



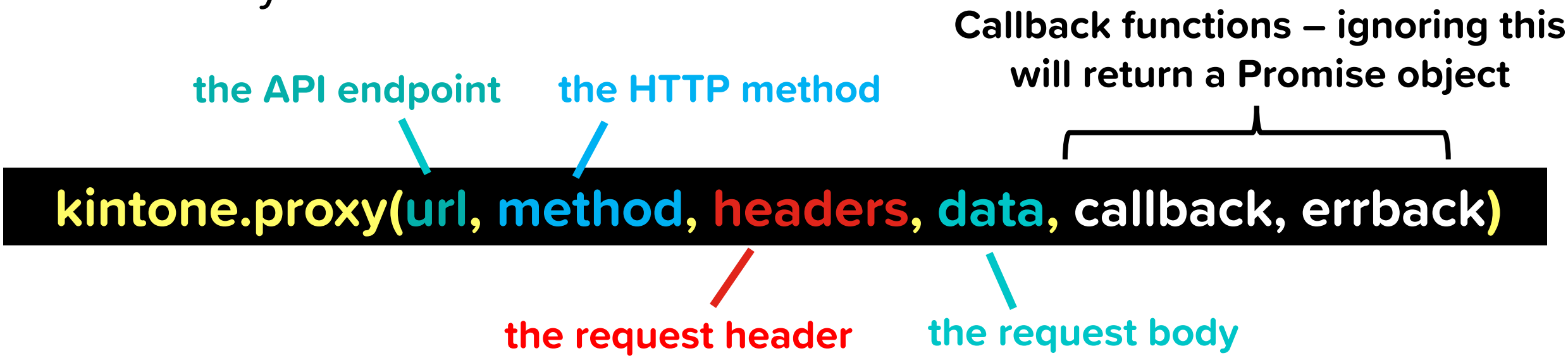
REST API Calls from Kintone



The JavaScript codes on Kintone can call REST APIs by passing the call through a proxy server

The REST API Initiator

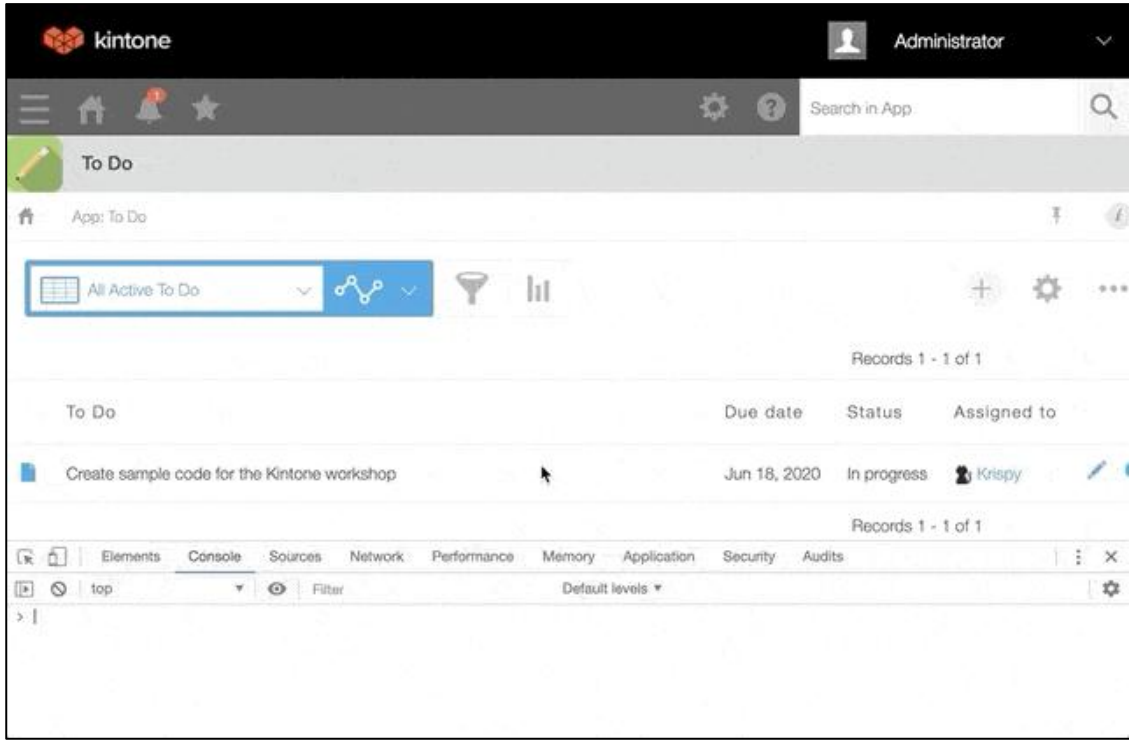
Kintone has a method called **kintone.proxy()** that calls REST APIs from the client-side JavaScript without running into any CORS errors.



Docs: https://developer.kintone.io/hc/en-us/articles/213148917

Example Call Result

```
(function () {
    'use strict';
    var url = "https://xkcd.com/327/info.0.json";

    kintone.events.on('app.record.index.show', function (event) {
        kintone.proxy(url, 'GET', {}, {}, function (success) {
            var jsonResponse = JSON.parse(success);
            console.log(jsonResponse);
            window.open(jsonResponse.img,"","width=800,height=200");
        }, function(error) {
            console.log(error);
        });
        return event;
    });
})();
```



kintone.proxy(url, method, headers, data, callback, errback)

Benefits of the REST API Initiator

- Similar to how the fetch method works, **kintone.proxy** **returns a promise** object
- **kintone.proxy** can be used on all browsers that Kintone is compatible with, **including IE**
- **REST API calls can be made from the browser without being blocked by CORS errors**

Any Questions?

developer.kintone.io

Wrap Up

1 Get the Big Picture

- Kintone is a **no-code/low code** cloud platform
- You can use your **free Kintone Developer License** for your projects

2 Create a Kintone App

- **Databases** can be created with **no coding**
- **Customize** any Kintone App with **JavaScript**

3 Display amCharts on Kintone

- Kintone Apps can **run JavaScript** files
- JavaScript files can **interact with data** stored in Kintone Apps

4 Call REST APIs from Kintone

- Front-end JavaScript can make **REST API calls**
- REST API calls from Kintone can **bypass CORS errors**

Finally

Benefits of Using Kintone for Your Projects

There is no need to set up or maintain a server

Databases can be created easily with GUI

Front-end JavaScript can utilize the Database data

REST APIs can be called from Front-end JavaScript and avoid CORS errors

Projects to Work On Next!

For Developers who want to try out more visualization projects on Kintone

There are many more charts you can use on the amCharts website:

https://www.amcharts.com/demos/

Try linking to different libraries & reuse the code we used in the workshop!

Finally

Projects to Work On Next!

For Developers who want to create projects on Kintone, and want to retrieve and store data from public APIs

Health

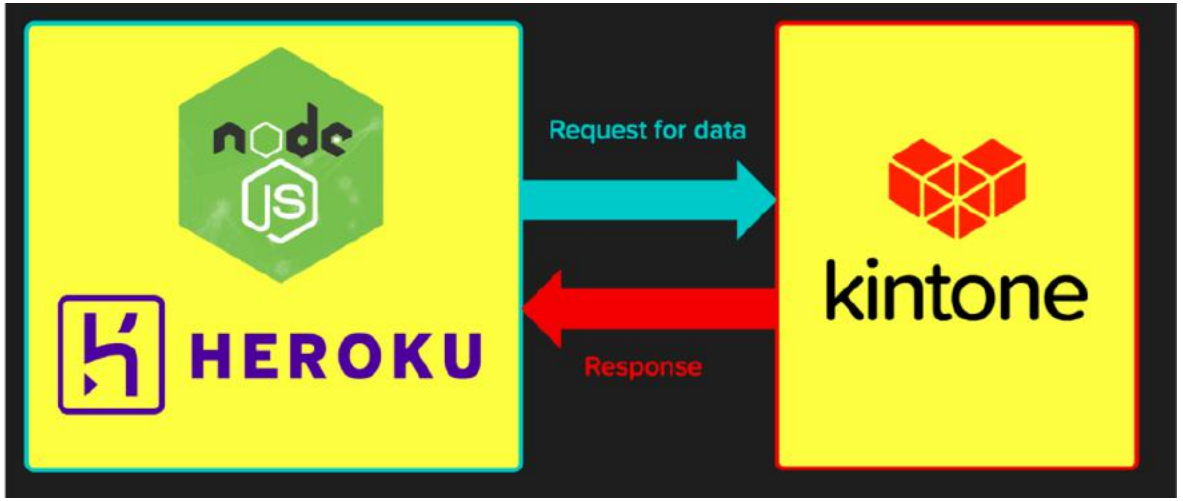
API	Description	Auth	HTTPS	CORS
BetterDoctor	Detailed information about doctors in your area	`apiKey`	Yes	Unknown
Covid-19	Covid 19 spread, infection and recovery	No	Yes	Yes
Diabetes	Logging and retrieving diabetes information	No	No	Unknown
Flutrack	Influenza-like symptoms with geotracking	No	No	Unknown
Healthcare.gov	Educational content about the US Health Insurance Marketplace	No	Yes	Unknown
Lexigram	NLP that extracts mentions of clinical concepts from text, gives access to clinical ontology	`apiKey`	Yes	Unknown
Makeup	Makeup Information	No	No	Unknown
Medicare	Access to the data from the CMS - medicare.gov	No	Yes	Unknown
NPPES	National Plan & Provider Enumeration System, info on healthcare providers registered in US	No	Yes	Unknown
Nutritionix	Worlds largest verified nutrition database	`apiKey`	Yes	Unknown
openFDA	Public FDA data about drugs, devices and foods	No	Yes	Unknown
USDA Nutrients	National Nutrient Database for Standard Reference	`apiKey`	Yes	Unknown

You can find a list of APIs to call from the link below:

https://github.com/public-apis/public-apis#index

Projects to Work On Next!

For Developers who want to use Kintone as a back-end database, and retrieve data via Kintone's REST API

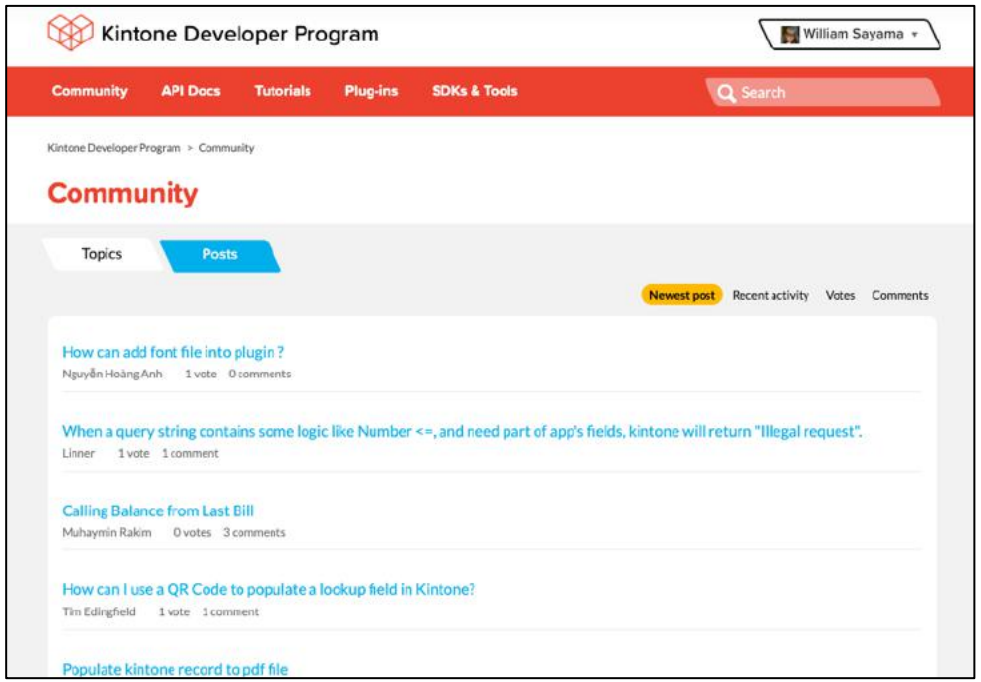


You can follow a tutorial where Node.js is used to call Kintone's REST APIs from the link below:

https://dev.to/will_yama/deploy-a-rest-api-calling-node-js-app-to-heroku-2mia

Where Can I Get Help?

If you're stuck, share your code on the Kintone Developer Community forum or on Stack Overflow!



stackoverflow

Any Questions?

developer.kintone.io

Our Upcoming Workshops!

Join us at the next Workshop! (PST)

- **Thu | Dec 3rd** - Build a **Bar Chart Race** Data Project

bit.ly/KDP_Events

Workshop Recording on YouTube

This workshop's recording will be posted on our YouTube Channel!

Our past workshops are posted as well:
Charts: Bubble Cloud, Word Cloud
Introductions: REST API, JS Promise

bit.ly/KDP_Video

Thank You for Your Participation!

Fill out our quick survey for a chance to win a $25 Amazon gift card!

bit.ly/KDP_Q