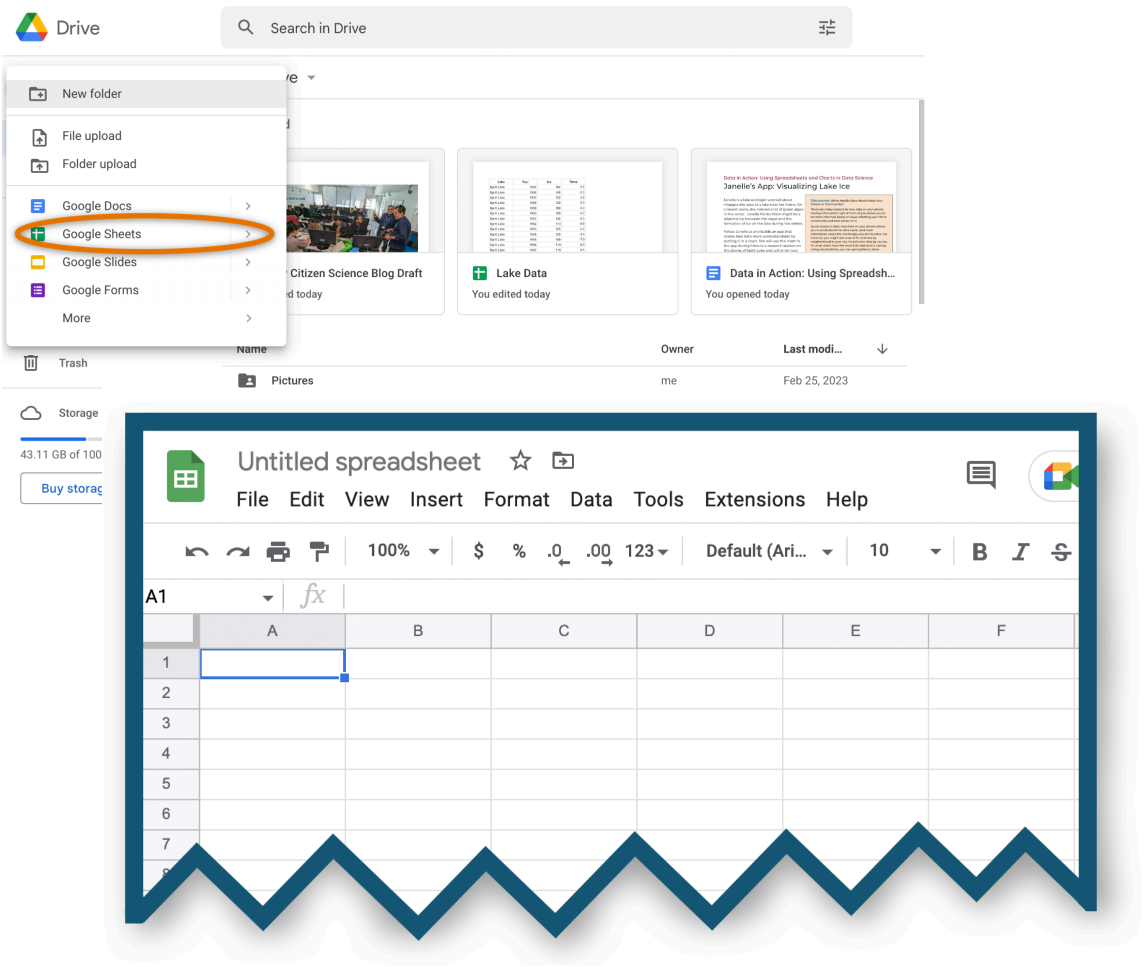
Appendix A: Connect Your App to Your Own Spreadsheet

In this guide, you will:

- **Connect your app to your own spreadsheet**
  - a. **Find the SpreadsheetID**
  - b. **Add headers**
  - c. **Troubleshooting**
- We recommend doing the main activity, "Data in Action: Using Spreadsheets and Charts in MIT App Inventor," to become familiar with the Spreadsheet and Chart components.
- This guide lets you connect your app to any Google Sheets spreadsheet.

1. Create a spreadsheet on your Google account.

- In your Google account, **create an empty Google Sheets spreadsheet**:

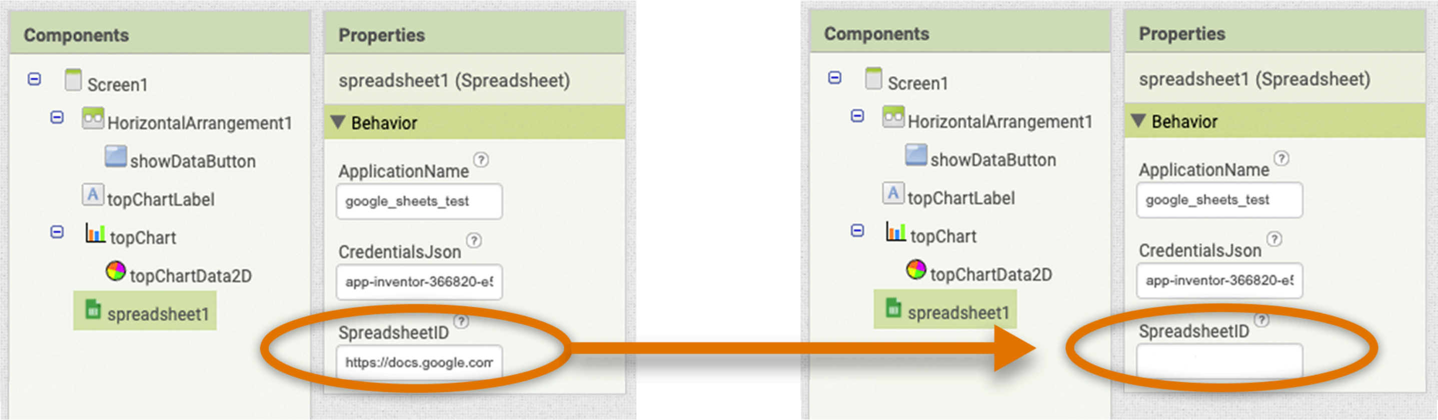


2. Get the app template (or any app that used the template)

- Locate the file (**Basic_Data_template.aia**) provided in the appendix folder. The template saves time because it already includes the right components.
- Of course, once you import the template, you can modify the template to make the app show whatever data you want. For example, you could create an app that shows the current number of endangered species by type or country.
    - Or an app that suggests dog names using a database of popular dog names in New York City.
    - Or an app that gives player statistics for your favorite sport (for example, soccer or basketball)

3. Add the SpreadsheetID for your new spreadsheet

- Click on the **spreadsheet** component in the designer view.
- In the spreadsheet properties, click on the **SpreadsheetID and delete the ID currently in the box** (if any):

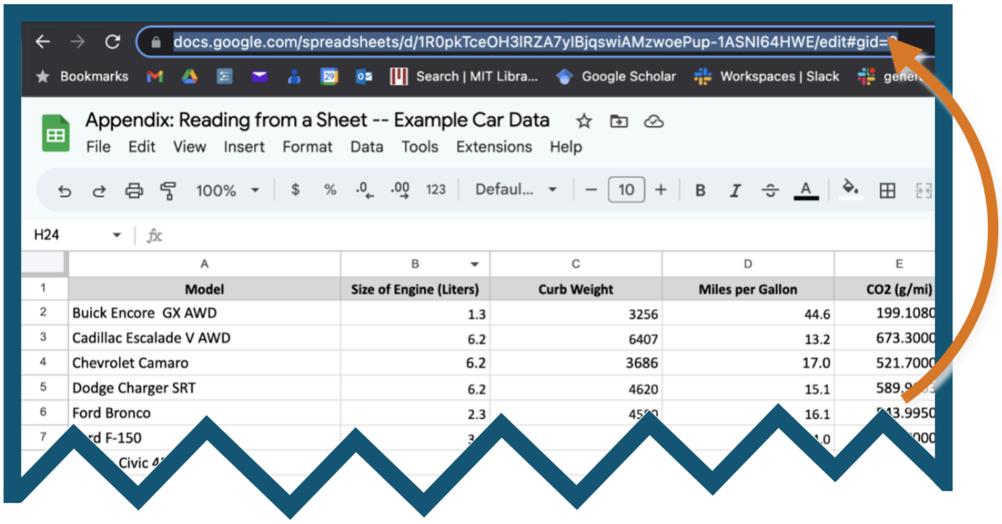


ApplicationName: google_sheets_test
CredentialsJson: app-inventor-366820-e
SpreadsheetID: https://docs.google.com

ApplicationName: google_sheets_test
CredentialsJson: app-inventor-366820-e
SpreadsheetID:

- **Please Note**: If your file does not have an entry for the property CredentialsJson, it is not a problem. A credential is not necessary to read data from a Google Sheet, only for writing data to a spreadsheet. Please see Appendix B for details on this property.

- Next, provide a new **SpreadsheetID**.
    - You can practice the following steps on your own spreadsheet or with the sample data below.
    - Find the **web address** for the spreadsheet in your browser window:



docs.google.com/spreadsheets/d/1R0pkTceOH3IRZA7yIBjqswiAMzwoePup-1ASNI64HWE/edit#gid=

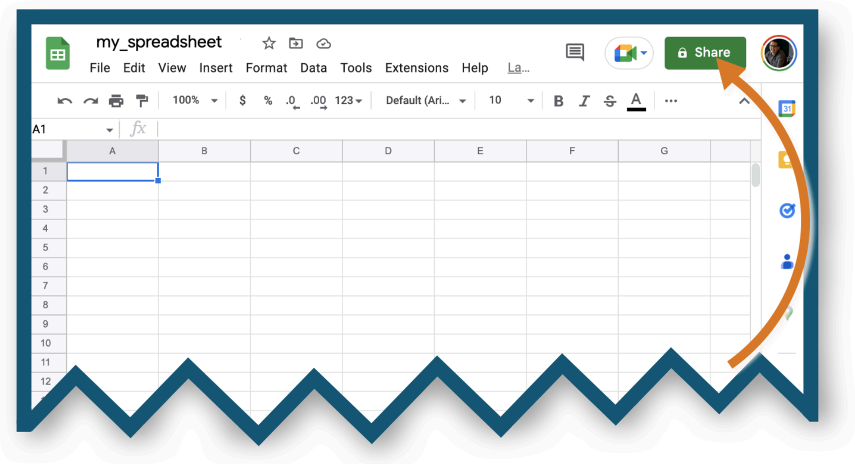
Appendix: Reading from a Sheet -- Example Car Data

	A	B	C	D	E
1	Model	Size of Engine (Liters)	Curb Weight	Miles per Gallon	CO2 (g/mi)
2	Buick Encore GX AWD	1.3	3256	44.6	199.1080
3	Cadillac Escalade V AWD	6.2	6407	13.2	673.3000
4	Chevrolet Camaro	6.2	3686	17.0	521.7000
5	Dodge Charger SRT	6.2	4620	15.1	589.9
6	Ford Bronco	2.3	45	16.1	3.9950
7	rd F-150	3		.0	000
	Civic 4				

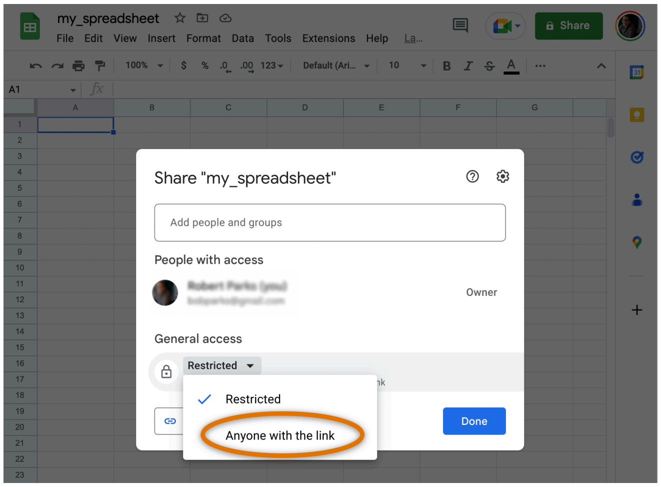
    - **Copy (Ctrl-c or ⌘-c) the whole address**
    - **Paste (Ctrl-v** or **⌘-v) the address into Properties in App Inventor.**

4. Make your spreadsheet globally viewable

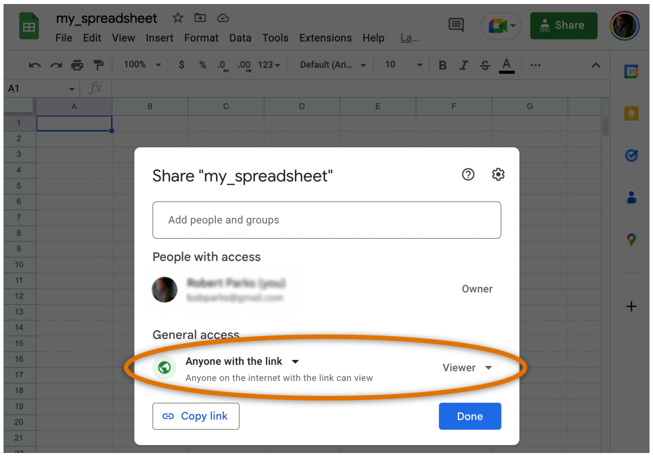
- If you are using your own Google Sheets spreadsheet for this project, **click the Share button**


my_spreadsheet
File Edit View Insert Format Data Tools Extensions Help La...
Share
100%
Default (Ari...
10
A1
A B C D E F G

- **Give general access to “Anyone with the link”**



- **Your access page should look like this:**



General access

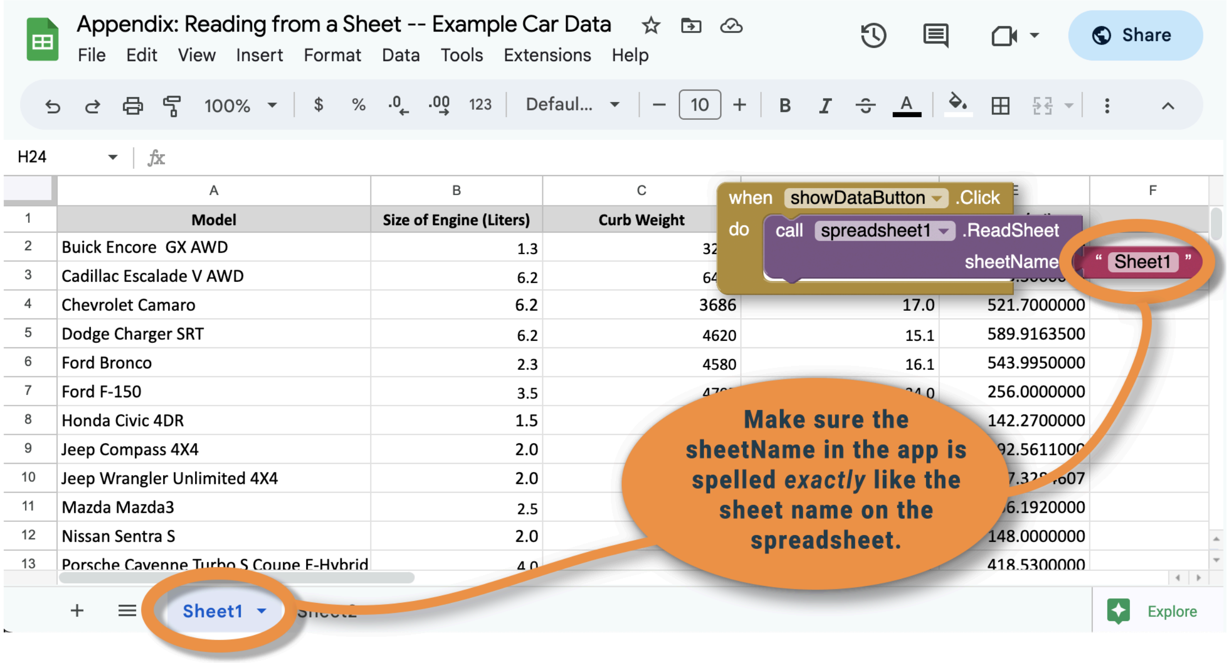
Anyone with the link
Anyone on the internet with the link can view
Viewer

Please note:

- If you want to **connect your app to a private ("Restricted") spreadsheet**, obtain a free Google Sheets credential by following Appendix B.

5. Code your app to import the new sheet.

- **Switch to Blocks view in App Inventor.**
- **Make sure the sheet name is entered and spelled correctly in the ReadSheet block.** In the example below, we show the car data spreadsheet.



Appendix: Reading from a Sheet -- Example Car Data

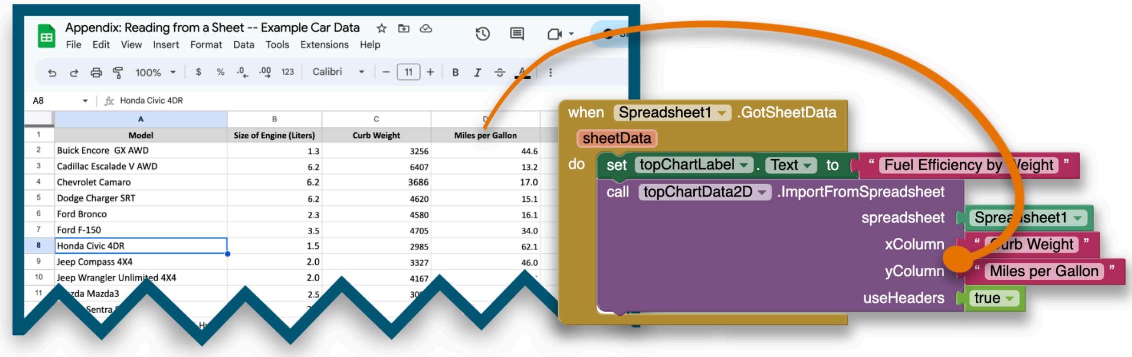
H24

	Model	Size of Engine (Liters)	Curb Weight		
2	Buick Encore GX AWD	1.3	32		
3	Cadillac Escalade V AWD	6.2	64		
4	Chevrolet Camaro	6.2	3686	17.0	521.7000000
5	Dodge Charger SRT	6.2	4620	15.1	589.9163500
6	Ford Bronco	2.3	4580	16.1	543.9950000
7	Ford F-150	3.5	47	4.0	256.0000000
8	Honda Civic 4DR	1.5			142.2700000
9	Jeep Compass 4X4	2.0			92.5611000
10	Jeep Wrangler Unlimited 4X4	2.0			7.32 607
11	Mazda Mazda3	2.5			6.1920000
12	Nissan Sentra S	2.0			148.0000000
13	Porsche Cayenne Turbo S Coupe E-Hybrid	4.0			418.5300000

```
when showDataButton .Click
do  call spreadsheet1 .ReadSheet
                      sheetName  " Sheet1 "
```

Make sure the sheetName in the app is spelled *exactly* like the sheet name on the spreadsheet.

- **Make sure the spreadsheet header names are correct** in the code, such as the ChartData2D block:



Appendix: Reading from a Sheet -- Example Car Data

A8 Honda Civic 4DR

	Model	Size of Engine (Liters)	Curb Weight	Miles per Gallon
2	Buick Encore GX AWD	1.3	3256	44.6
3	Cadillac Escalade V AWD	6.2	6407	13.2
4	Chevrolet Camaro	6.2	3686	17.0
5	Dodge Charger SRT	6.2	4620	15.1
6	Ford Bronco	2.3	4580	16.1
7	Ford F-150	3.5	4705	34.0
8	Honda Civic 4DR	1.5	2985	62.1
9	Jeep Compass 4X4	2.0	3327	46.0
10	Jeep Wrangler Unlimited 4X4	2.0	4167	
11	zda Mazda3	2.5	30	

```
when Spreadsheet1 .GotSheetData
  sheetData
do  set topChartLabel . Text to " Fuel Efficiency by Weight "
    call topChartData2D .ImportFromSpreadsheet
                        spreadsheet  Spreadsheet1
                        xColumn      " Curb Weight "
                        yColumn      " Miles per Gallon "
                        useHeaders   true
```

- **Test your app!**

Troubleshooting

Problem	Solution
I changed my code, but the chart does not update in the app.	● While connected to the app, go to the App Inventor menu and press **Connect —-> Refresh Companion Screen** ● When using the Emulator, you may need to **Connect —-> Reset Connection**
Nothing appears in the chart.	● Depending on your internet speed, **you may have to press the Show Data button twice** ● **Double check the spelling of the spreadsheet headers** in your code ● Go to the Google Sheets spreadsheet you are trying to read. **Double check the Sharing settings.** Is "General access" set to "Anyone with a link" to be "Viewer" or "Editor"? (Either "Viewer" or "Editor" works.) ● **Double check the SpreadsheetID** in the properties of your Spreadsheet component, as described above. Does it match the ID of the Google Sheets spreadsheet? ● Double check that your Spreadsheet blocks reference **the correct sheet names ("sheet1").** If you have multiple Spreadsheet components, check that your blocks reference **the correct Spreadsheet components** (spreadsheet1, spreadsheet2).
I have entered the correct sheet name, but the component is reading the wrong sheet.	● Double check that you have a **Google Sheets credential entered in the properties** for the Spreadsheet component. If this property is missing, you can use an example credential from App Inventor (located in the appendix folder) for the time being. Please see Appendix B for details on this property.

I am reading a large spreadsheet into my app, and nothing appears in the chart.	● Reading a large spreadsheet may strain your internet connection and device's memory. ● For example, **a spreadsheet of 2 megabytes** can take more than 10 seconds to show up in your app. Larger spreadsheets may cause the app to crash on older mobile devices with low memory. ● To fix this, read smaller portions of the sheet into your app. **Experiment with the ReadColumn, ReadRow, ReadRange, or ReadCell blocks.** ● Alternatively, edit down the data in your Google Sheets spreadsheet. For example, **remove columns or rows unrelated to what you are analyzing.** Or, if you do not want to lose data, copy the spreadsheet, cut rows/columns, and update the SpreadsheetID in the app.
"Error 4101: Invalid Chart Entry Value(s) . . ."	● This error means the chart has found **empty spaces or non-numbers** in your data. Look again at your spreadsheet for any gaps in data or letters/words instead of numbers. This work is part of "data cleaning" every data scientist must do! ● **Remove any commas from numbers** in your spreadsheet (for example, *12,940*). In Google Sheets, go to Format —> Number. Choose a number format with no commas.
My chart reads data from hidden columns and rows.	● The Google Sheets API reads all columns and rows, even if hidden. **Delete any unwanted columns or rows in your spreadsheet to ensure they are omitted.**