Power Up Reports with Google

RIPL Webinar | Tuesday, September 24, 2019

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Assumptions

- You’re comfortable with getting the data you need from the places it lives (e.g. exporting .CSV files, writing SQL queries, etc.)
- You have an awareness of basic programming concepts (loops, conditionals, arrays), at least at a high level

What We Will Cover

- Two approaches to using Sheets to create enhanced reports
  - Dump and Format
  - Parse and Update
- High level overview of getting data into Google Sheets, including some automated methods using Google Apps Script

What We Won't Cover

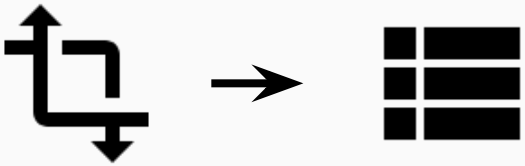
- Detailed instructions for using Sheets database functions
  - **https://github.com/sclsnj/power-up-reports-with-google/**
- Specific coding details about using Google Apps Script to interface with Sheets
  - **https://developers.google.com/apps-script/overview**

Two Approaches

Dump and Format

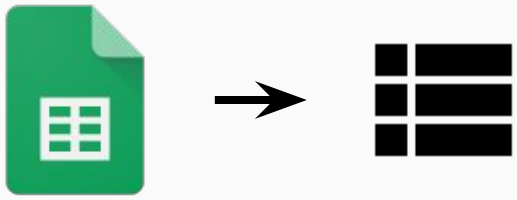
1. Dump a large amount of raw data into Google Sheets

2. Set up database functions and conditional formatting to create report



Parse and Update

1. Set up a report in Google Sheets that's ready to use



2. Use Google Apps Script to pull in new data

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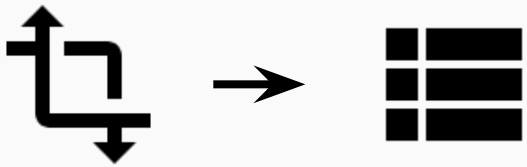


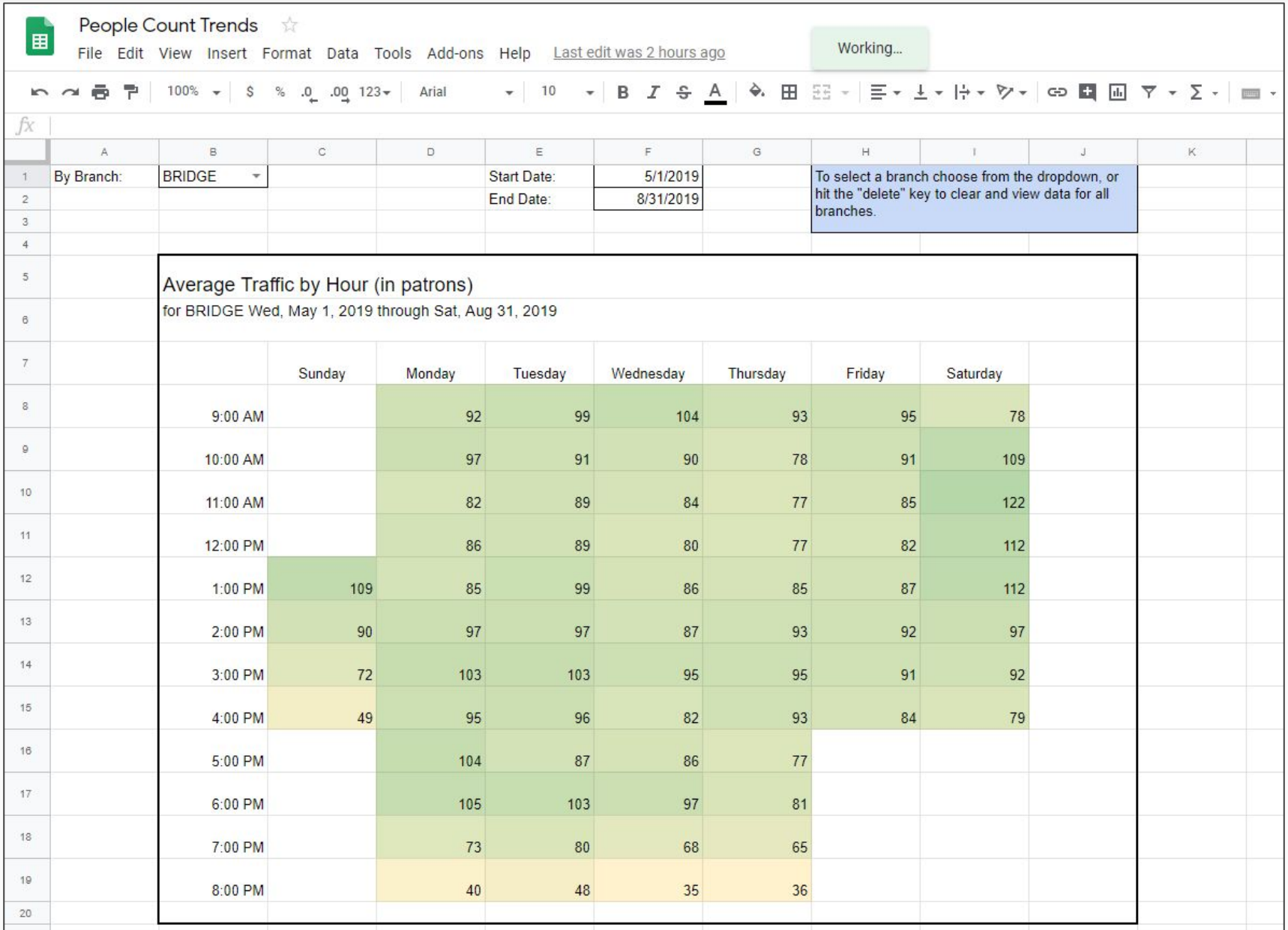
Parse and Update

Getting Data

- Copy and paste
- Export as a .CSV and import > Append
- Get data from an emailed report
- Query a database directly

pull in new data

Dump and Format



People Count Trends

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Working...

	By Branch:	BRIDGE			Start Date:	5/1/2019		To select a branch choose from the dropdown, or hit the "delete" key to clear and view data for all branches.
					End Date:	8/31/2019		

Average Traffic by Hour (in patrons)

for BRIDGE Wed, May 1, 2019 through Sat, Aug 31, 2019

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
9:00 AM		92	99	104	93	95	78
10:00 AM		97	91	90	78	91	109
11:00 AM		82	89	84	77	85	122
12:00 PM		86	89	80	77	82	112
1:00 PM	109	85	99	86	85	87	112
2:00 PM	90	97	97	87	93	92	97
3:00 PM	72	103	103	95	95	91	92
4:00 PM	49	95	96	82	93	84	79
5:00 PM		104	87	86	77		
6:00 PM		105	103	97	81		
7:00 PM		73	80	68	65		
8:00 PM		40	48	35	36		

Database Functions

DAVERAGE	Returns the average of a set of values selected from a database table-like array or range using a SQL-like query. Learn more
DCOUNT	Counts numeric values selected from a database table-like array or range using a SQL-like query. Learn more
DCOUNTA	Counts values, including text, selected from a database table-like array or range using a SQL-like query. Learn more
DGET	Returns a single value from a database table-like array or range using a SQL-like query. Learn more
DMAX	Returns the maximum value selected from a database table-like array or range using a SQL-like query. Learn more
DMIN	Returns the minimum value selected from a database table-like array or range using a SQL-like query. Learn more
DSUM	Returns the sum of values selected from a database table-like array or range using a SQL-like query. Learn more

```
DAVERAGE(database, field, criteria)
```

Working at Scale

Only use as many **columns** as you'll need for your data.

- Google default is 1,000 rows x 26 columns
  - 1,000 rows x 26 columns = 26,000 cells
  - 1,000 rows x 6 columns = 6,000 cells
- At larger scales, the difference gets more pronounced:
  - 10,000 rows x 26 columns = 260,000 cells
  - 10,000 rows x 6 columns = 60,000 cells

Two Approaches

Dump and Format

Getting Data

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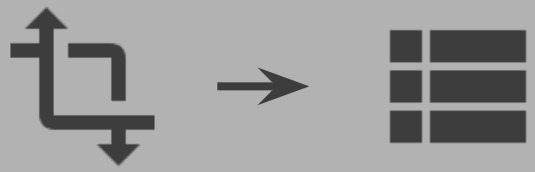
- **Query a database directly**

and conditional formatting to create report



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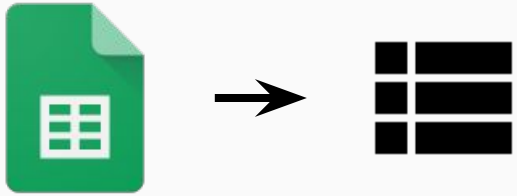

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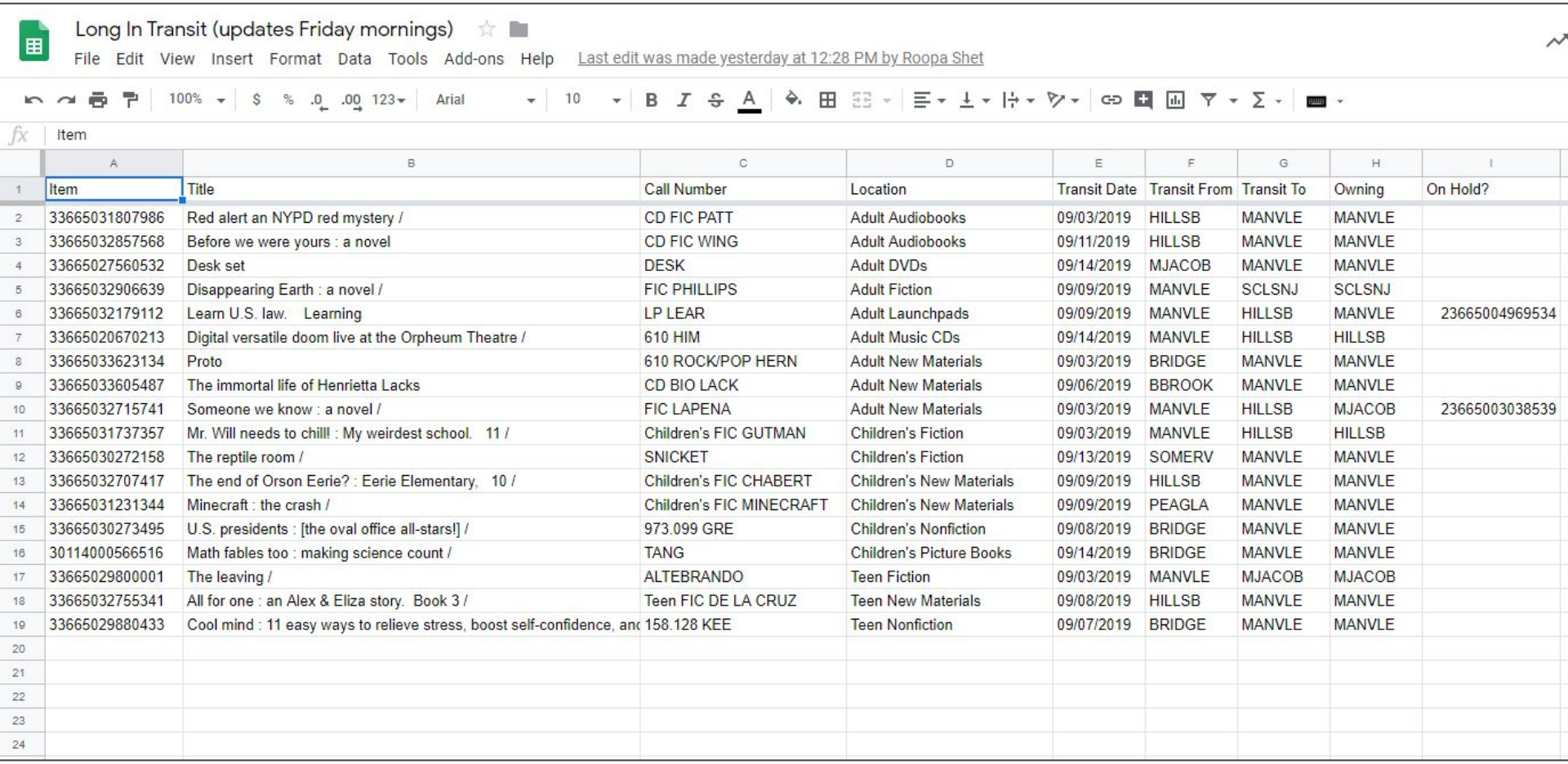
Parse and Update



Long In Transit (updates Friday mornings)

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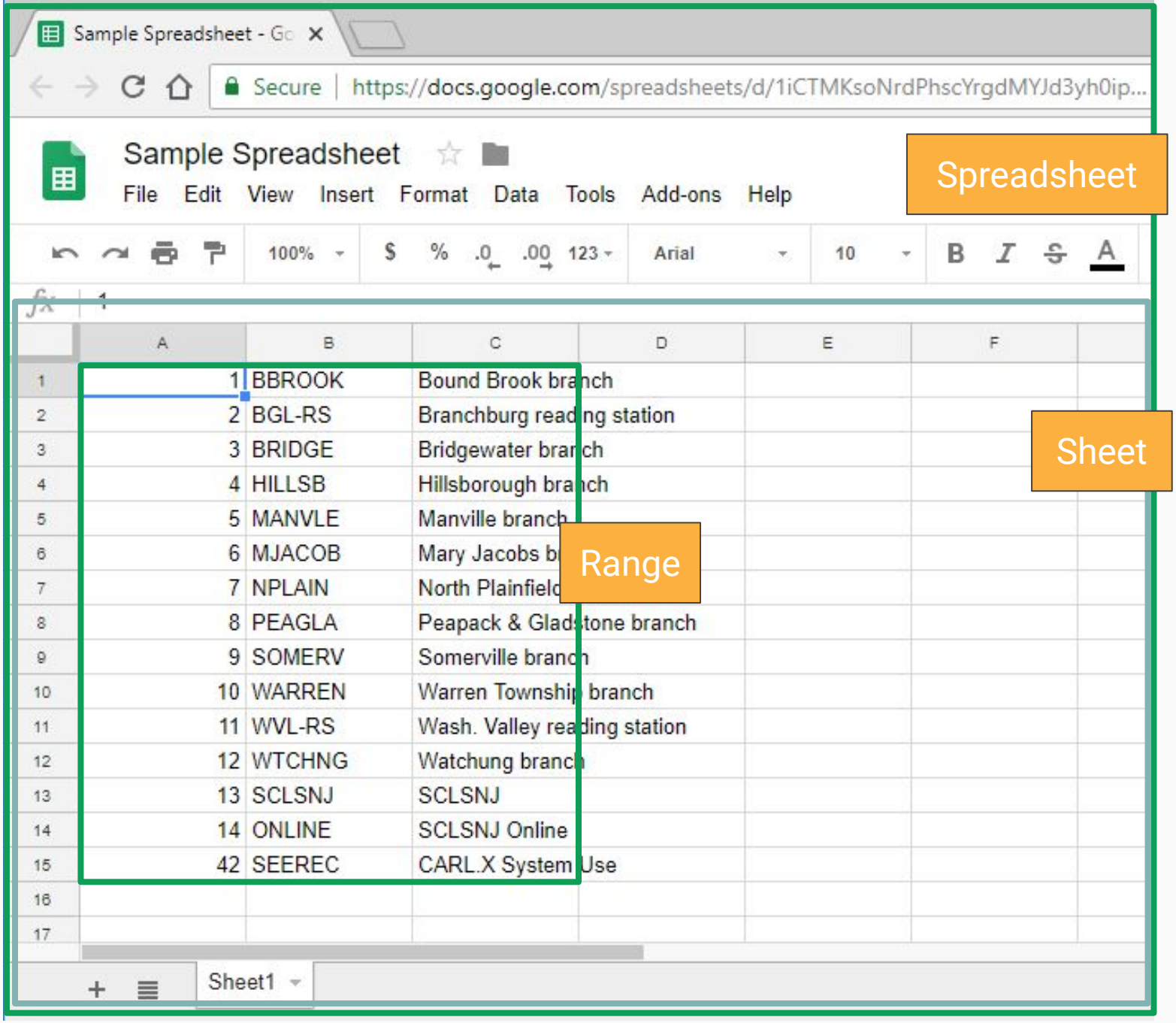
Item

	A	B	C	D	E	F	G	H	I
1	Item	Title	Call Number	Location	Transit Date	Transit From	Transit To	Owning	On Hold?
2	33665031807986	Red alert an NYPD red mystery /	CD FIC PATT	Adult Audiobooks	09/03/2019	HILLSB	MANVLE	MANVLE	
3	33665032857568	Before we were yours : a novel	CD FIC WING	Adult Audiobooks	09/11/2019	HILLSB	MANVLE	MANVLE	
4	33665027560532	Desk set	DESK	Adult DVDs	09/14/2019	MJACOB	MANVLE	MANVLE	
5	33665032906639	Disappearing Earth : a novel /	FIC PHILLIPS	Adult Fiction	09/09/2019	MANVLE	SCLSNJ	SCLSNJ	
6	33665032179112	Learn U.S. law. Learning	LP LEAR	Adult Launchpads	09/09/2019	MANVLE	HILLSB	MANVLE	23665004969534
7	33665020670213	Digital versatile doom live at the Orpheum Theatre /	610 HIM	Adult Music CDs	09/14/2019	MANVLE	HILLSB	HILLSB	
8	33665033623134	Proto	610 ROCK/POP HERN	Adult New Materials	09/03/2019	BRIDGE	MANVLE	MANVLE	
9	33665033605487	The immortal life of Henrietta Lacks	CD BIO LACK	Adult New Materials	09/06/2019	BBROOK	MANVLE	MANVLE	
10	33665032715741	Someone we know : a novel /	FIC LAPENA	Adult New Materials	09/03/2019	MANVLE	HILLSB	MJACOB	23665003038539
11	33665031737357	Mr. Will needs to chill! : My weirdest school. 11 /	Children's FIC GUTMAN	Children's Fiction	09/03/2019	MANVLE	HILLSB	HILLSB	
12	33665030272158	The reptile room /	SNICKET	Children's Fiction	09/13/2019	SOMERV	MANVLE	MANVLE	
13	33665032707417	The end of Orson Eerie? : Eerie Elementary, 10 /	Children's FIC CHABERT	Children's New Materials	09/09/2019	HILLSB	MANVLE	MANVLE	
14	33665031231344	Minecraft : the crash /	Children's FIC MINECRAFT	Children's New Materials	09/09/2019	PEAGLA	MANVLE	MANVLE	
15	33665030273495	U.S. presidents : [the oval office all-stars!] /	973.099 GRE	Children's Nonfiction	09/08/2019	BRIDGE	MANVLE	MANVLE	
16	30114000566516	Math fables too : making science count /	TANG	Children's Picture Books	09/14/2019	BRIDGE	MANVLE	MANVLE	
17	33665029800001	The leaving /	ALTEBRANDO	Teen Fiction	09/03/2019	MANVLE	MJACOB	MJACOB	
18	33665032755341	All for one : an Alex & Eliza story. Book 3 /	Teen FIC DE LA CRUZ	Teen New Materials	09/08/2019	HILLSB	MANVLE	MANVLE	
19	33665029880433	Cool mind : 11 easy ways to relieve stress, boost self-confidence, and	158.128 KEE	Teen Nonfiction	09/07/2019	BRIDGE	MANVLE	MANVLE	
20									
21									
22									
23									
24									

Google Apps Script, in General

- Script pulls in the data from a source
  - Emailed report (.CSV), database query
- Script parses through the data
  - Mapping, dividing out, aggregating, evaluating, etc.
- Script dumps the data into the Sheet
  - Either into an empty space or replacing the previous data

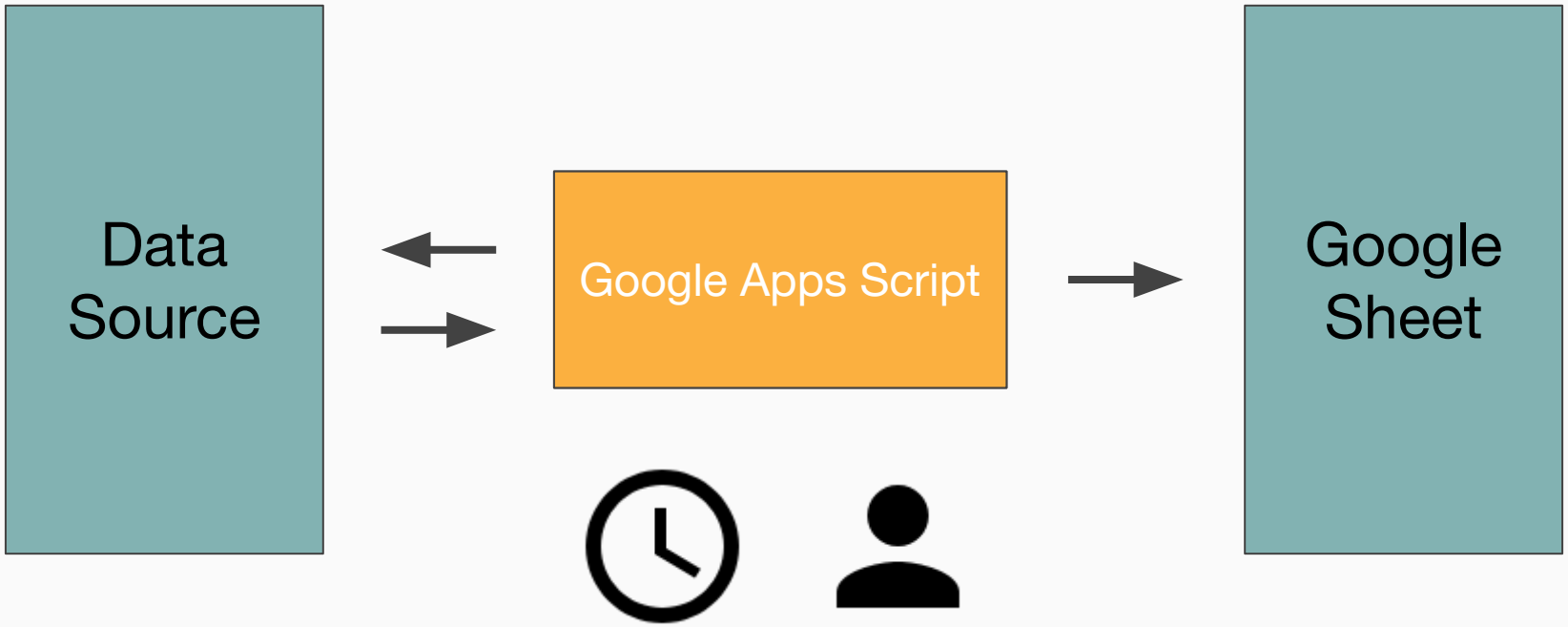

Sample Spreadsheet - Go
Secure
https://docs.google.com/spreadsheets/d/1iCTMKsoNrdPhscYrgdMYJd3yh0ip...
Sample Spreadsheet
File Edit View Insert Format Data Tools Add-ons Help
Spreadsheet
100% $ % .0 .00 123 Arial 10
1
A B C D E F
1 1 BBROOK Bound Brook branch
2 2 BGL-RS Branchburg reading station
3 3 BRIDGE Bridgewater branch
4 4 HILLSB Hillsborough branch
5 5 MANVLE Manville branch
6 6 MJACOB Mary Jacobs b
7 7 NPLAIN North Plainfield
8 8 PEAGLA Peapack & Gladstone branch
9 9 SOMERV Somerville branch
10 10 WARREN Warren Township branch
11 11 WVL-RS Wash. Valley reading station
12 12 WTCHNG Watchung branch
13 13 SCLSNJ SCLSNJ
14 14 ONLINE SCLSNJ Online
15 42 SEEREC CARL.X System Use
16
17
Sheet1
Sheet
Range

Bound Scripts

- Starts at the Google Sheet with a trigger
- Attached Google Apps Script gets the data from the source
- Data returns to Google Apps Script for parsing
- Google Apps Script puts the data in the Google Sheet

Unbound Scripts

- Starts with a trigger from within a standalone Google Apps Script
- Google Apps Script gets the data from the source
- Data returns to Google Apps Script for parsing
- Google Apps Script puts the data in the Google Sheet



Handouts

- Basic Scripts
- Tips and Hints
- Examples:
  - People Count Trends
  - Circ Transaction Trends
  - Monthly Statistics
  - Long In Transit
  - High Holds
  - **github.com/sclsnj/power-up-reports-with-google**