# **Creating an Open-Source Solution** to Record Library Gate Counts

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### Introduction

In response to COVID-19, the Oklahoma State University (OSU) Libraries developed an open-source application to better record visitor gate counts. This data helps inform users and administration of real-time capacity within the library's physical building. While there are several vendor options on the market, OSU decided to build the program inhouse, taking advantage of cost savings and, more importantly, speed to implement a solution quickly. In production since 2020, this application improved what was once a very manual process into one that is semi-automated.

### Background

At OSU's main campus library in Stillwater, there are two defined entrances on the north and south sides of the building staffed by student security. Before COVID-19, security would only record patron exits using a hand tally counter. When security switched doors every thirty minutes, they would log the counts on paper. Then they would transfer the data from paper to an online form that tracked hourly exits.

In the development process for this new application, the program had to be flexible, user-friendly, and consider the security team's needs. The library's dev team started building a prototype web application in mid-June 2020. A week later, the application was ready for initial testing and further development with a target launch of July 2020, when the library was slated for reopening.

### **Application Development**

After the development team created an initial user interface (UI) mock-up, a usability analysis was conducted. Upon receiving feedback and approval of the UI, the team started the design process. After each rapid development cycle, the UI was shared with stakeholders, including library administration and building security staff.

By developing an application to record gate counts, the OSU Libraries can better inform users of real-time capacity within the physical building.



Application dashboard with real-time da	ta
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Daile Chatiatian					
Daily Statistics	S ?				
Date: 2021-06-29	Submit	491 (total er	try count) 382	(total exit count)	Download data in
		Patrons move	ment on 2021-06-29		
Show 10 v entries					Search:
Time	t≊ I	Entry / Exit	Live count	Count 🎝	User
2021-06-29 07:04:42.0	E	ntry	0	1	Security North
2021-06-29 07:04:43.0	E	ntry	1	2	Security North
2021-06-29 07:10:45.0	E	ntry	3	1	Security North
2021-06-29 07:15:00.0	E	ntry	4	1	Security North
2021-06-29 07:28:57.0	E	ntry	5	1	Security North
2021-06-29 07:28:57.0	E	ntry	6	1	Security North
2021-06-29 07:29:00.0	E	xit	7	1	Security North
2021-06-29 07:29:01.0	E	xit	6	1	Security North
2021-06-29 07:29:02.0	E	xit	5	1	Security North
2021-06-29 07:29:03.0	E	ntry	4	1	Security North

Administrator's daily statistics screen with ability to download files



Library homepage display of current visitors via the API

Daily	statistics(graphical) ?	count) 389 (total exit count) Downlo	oad data in Excel
	Patrons moveme	ent on 2021-06-29	
160			≡
140			
120			
100			5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5

Graphical view of daily statistics from administrator's login (illustrates entrances/exits per hour)

Home User - Reports - Settings -	Admin (Admin) ~
Semester Reset 💿	
Start date: 2021-05-16	End date: 2021-06-29
	Search result
	32640 (records found) Download records
	Delete records

### Administrator's headcount reset

			Today's Hours	Renew / Login Directory Calendar Quicklink	
<u>es</u> j	& Branch Libraries		7:30am - 10pm View all hours	Search the library website Q	
	Research Tools & Collectio	ons Help & Services Study Space	es & Computers About The Library	Ask Us Chat	
Popula	r Links	皆 Current Visito	ors: 100		
Request	Forms				
Library S	Services	Less than 250			
Endnote	& Zotero	Not too crowded: You'll find some areas, like the printing stations could be a bit busy, but you should find short waits for			
About th	e OSU Libraries	services and pienty of socially di	stanced seating throughout the building.		
Give to t	he Library	251-500			
Friends o	of the Library	<b>Getting crowded:</b> You will likely find popular areas like the first and second floor to be a bit crowded, and you may ha wait for a computer or printer. Socially distanced seating should be available, but you may have to check other floors.			
Branche	s & Departments				
Anywher	re Library Access	501-750			
Library Jo	obs	<b>Crowded:</b> It's busy at the Librar	v right now! Plan for lines at computers and pri	nters. It may be difficult to find a seat.	
Give Us I	Feedback	especially if you have a favorite	spot. Please respect the posted occupancy limit	s and social distancing measures.	
Start C	hat	More than 750			
Ask Us - Need more he	Chat	<b>Nearing socially distanced cap</b> might want to consider visiting a	<b>Dacity:</b> There are currently enough visitors in th another time.	e building to make finding a seat difficult. Yo	
Name		*The current visitor total displayed on includes employees, visitors, students i	e in the Edmon Low Library. This number rs.		
Email					
Your Questio	n				
	Chart Ohat				

Description of building occupancy for users on library webpage

### **Application Features**

- Ability to display the live count on library's website through a built-in API.
- Application dashboard featuring large font and easy-toclick buttons.
- Keyboard hotkeys to assist with recording data.
- Ability to download statistics.
- Data backups.
- Additional options for administrators to reset counts, download, and view statistics.

## **Lessons Learned**

- Gate counts were considerably lower when the new process rolled out. After training, student security became comfortable with the process.
- Gate count input during class changes or high-volume activities sometimes made it difficult to log visits. Hotkeys and additional buttons were developed in response.
- Increased activity resulted in performance issues at first. Regular data downloads at the end of the semester have reduced lag times.

### Conclusions

While the pandemic led to the development of a door count application to help better track and understand building capacity, there are several tangible benefits resulting from this effort:

- 1. The application has helped streamline a manual process for recording door count data.
- 2. The availability of current visitors denoted on the library's website helps stakeholders understand how busy the building is at the point of need.
- 3. Creating this application as an open-source program can assist other libraries in exploring or developing low-cost solutions to improve gate count processes.



Take a picture to view the code in GitHub

