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 in-house, 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.
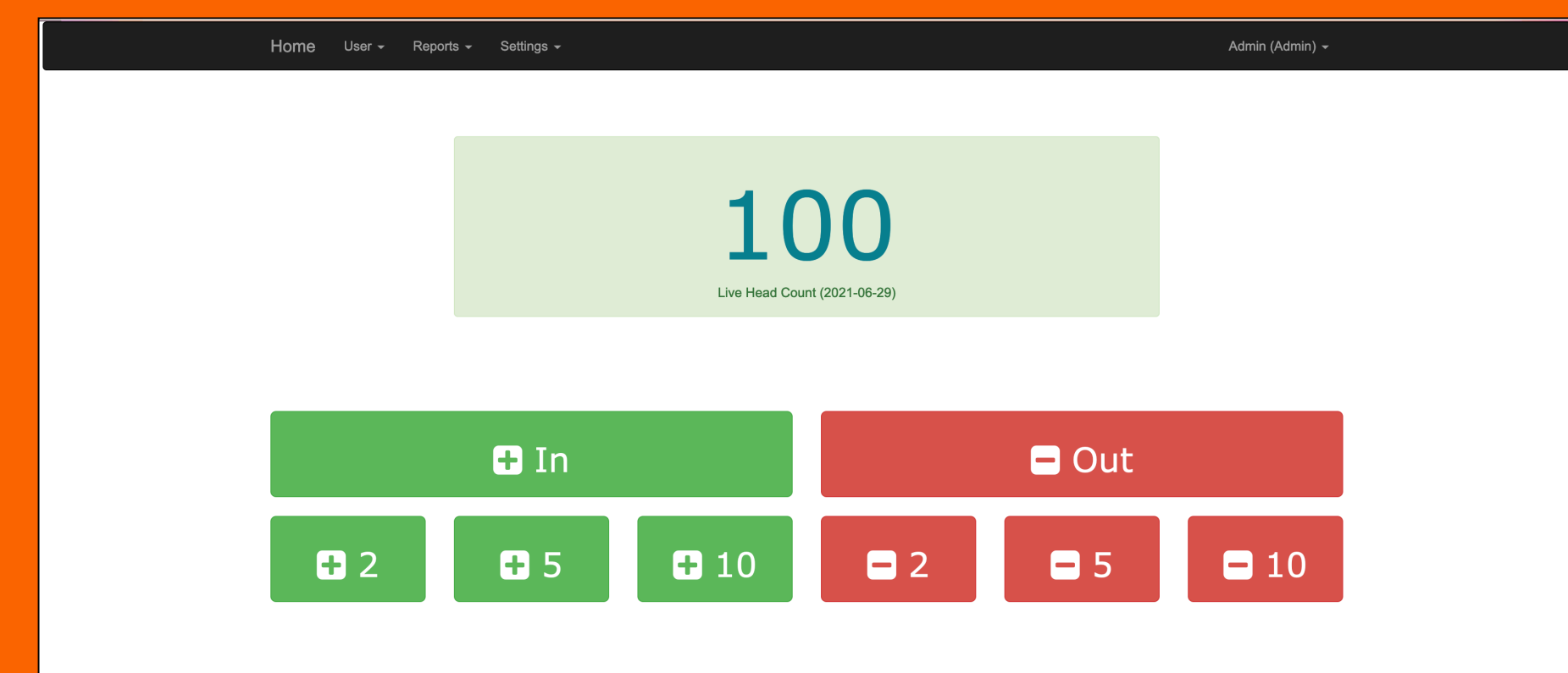
Background

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.
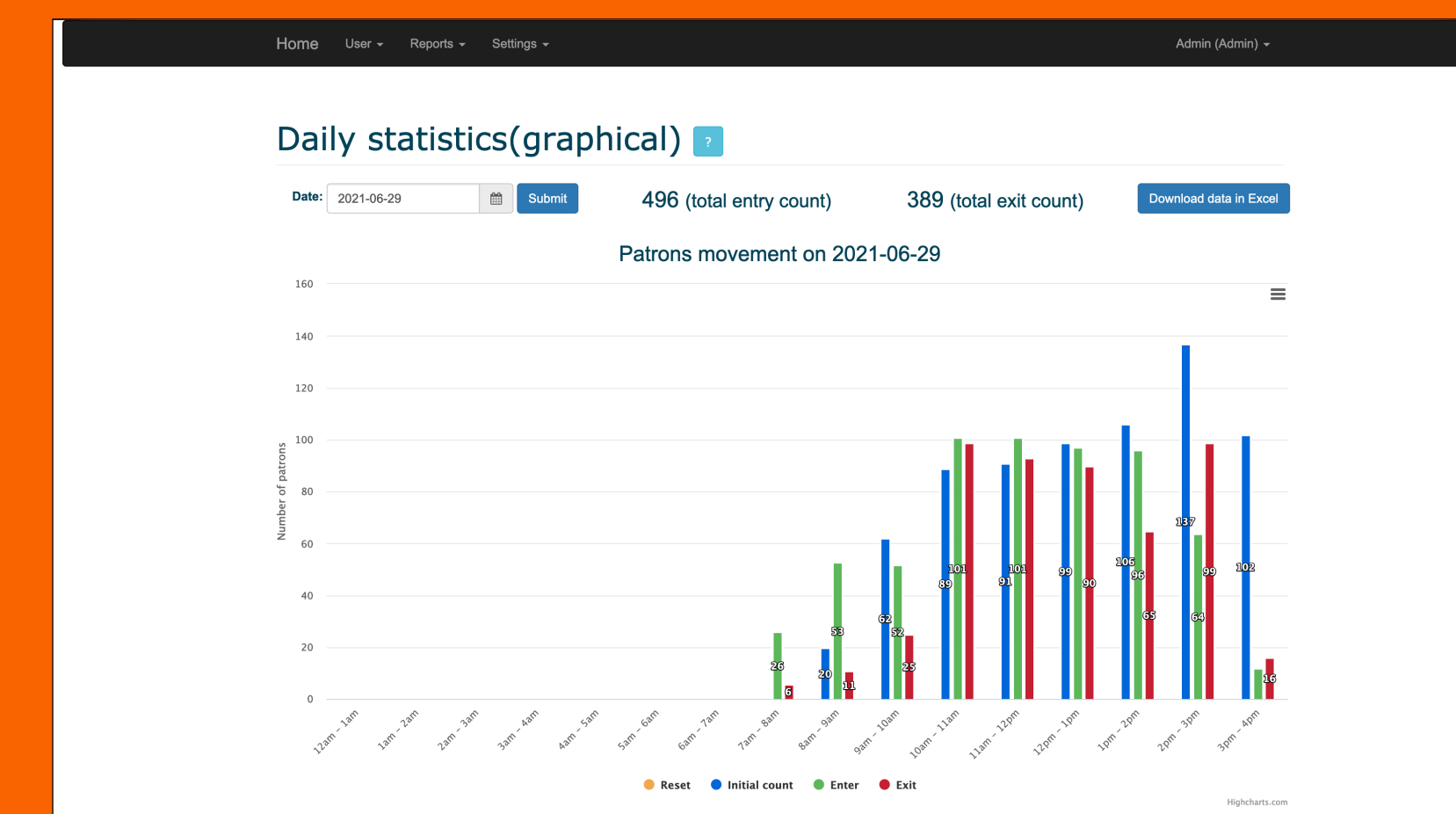
Application Development

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.
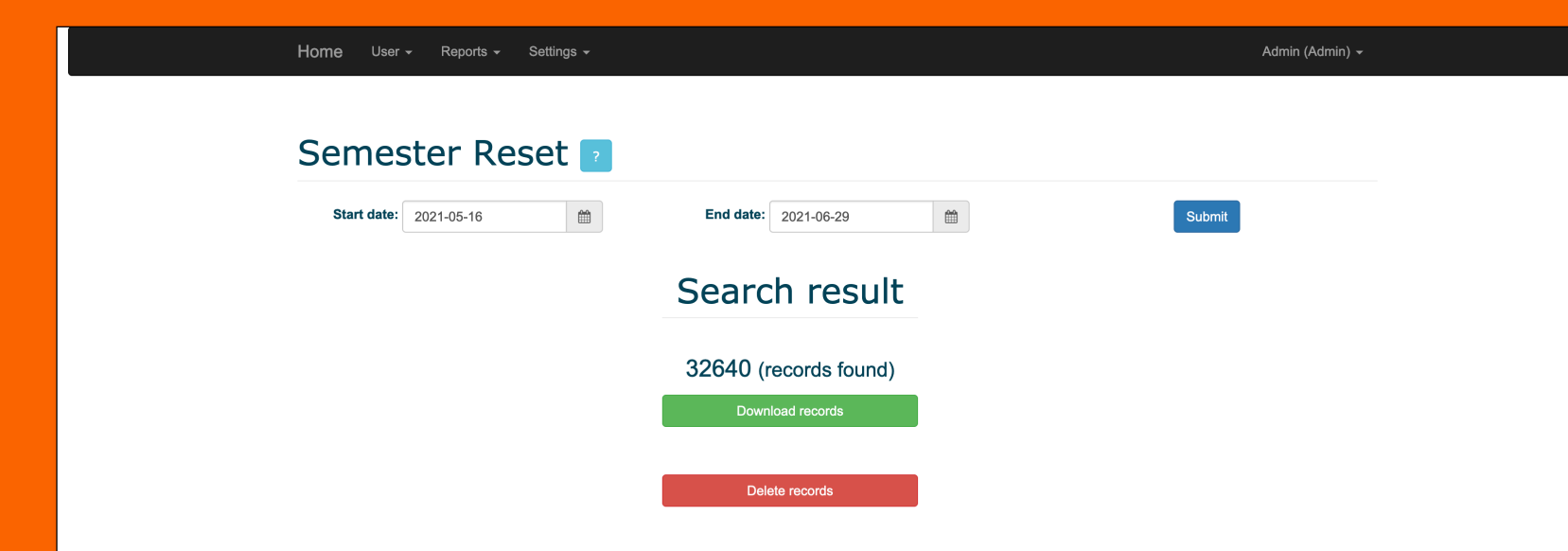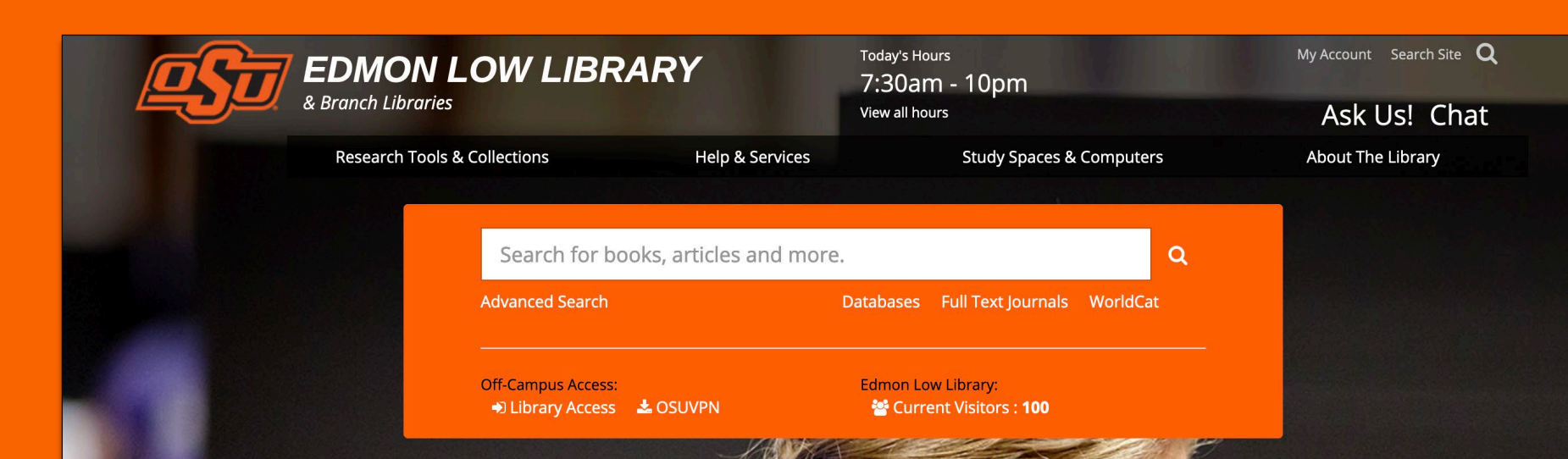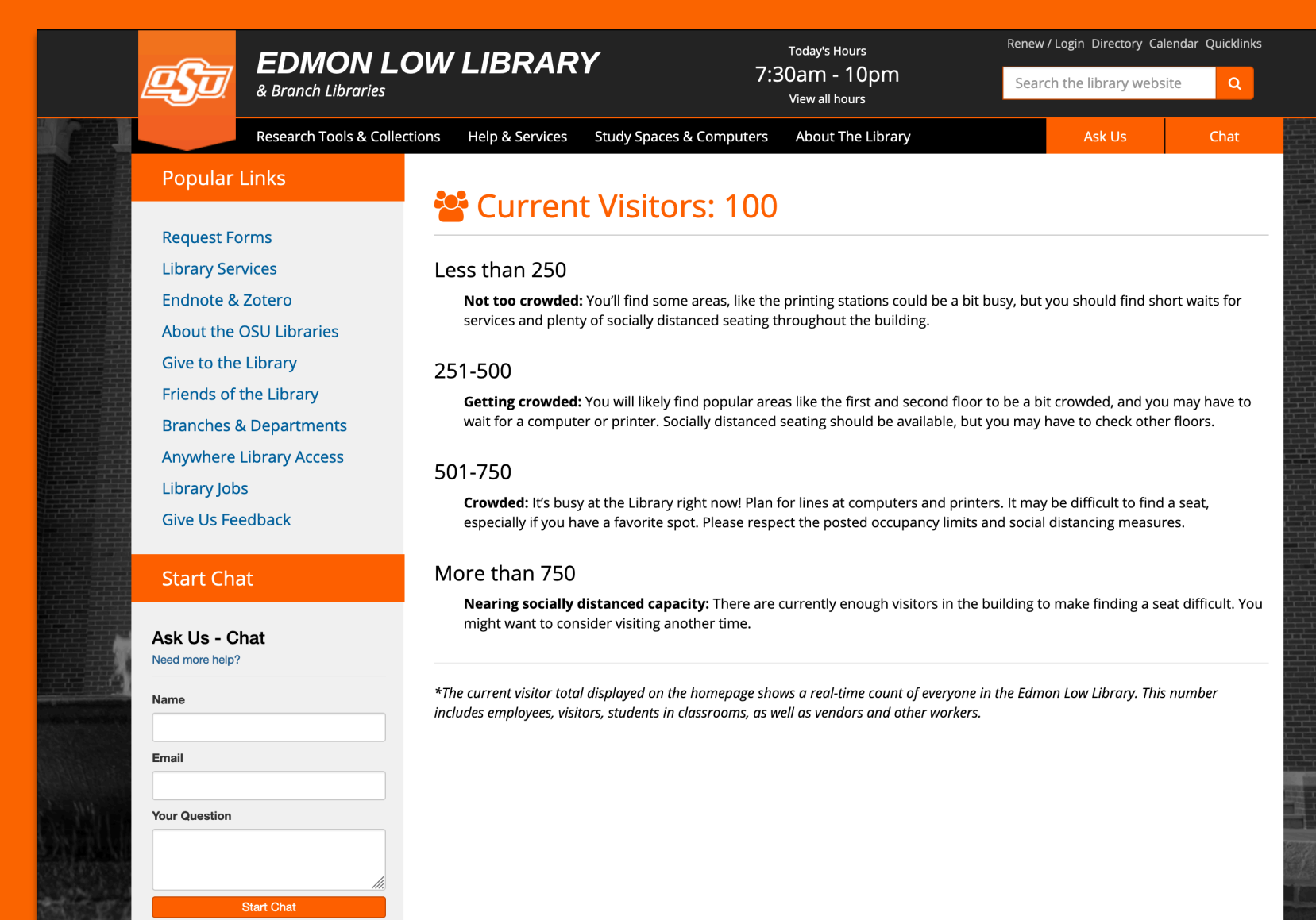

Application dashboard with real-time data

Administrator's daily statistics screen with ability to download files

Library homepage display of current visitors via the API

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

Administrator's headcount reset

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-to-click 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