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Development of Tickit, A Ticket Reservation System

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Development of TickIt, A Ticket Reservation System

by
Catheryn Jayde Holbrook, Ben Lukins, Patrick Berzins, Van Hudson, and Nathaniel Smith

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Abstract

The world we live in is becoming more and more digitized. Nowadays, most errands can be completed virtually, from placing an order for groceries to buying concert tickets. With recent conflicts of existing ticketing platforms, the development of a new platform would be beneficial to consumers frustrated with current conditions regarding ticketing. This is the purpose of the design and development of TickIt. It is a functional prototype designed for use regarding ticketing for events in the Von Braun Center Playhouse and Concert Hall in Huntsville, Alabama. Using real-world software development strategies, the students assigned to this project designed and developed TickIt in several project cycle phases. As the need and demand for more technology grows, TickIt has the potential to one day be expanded and integrated for use by any ticketing venue.
Process

Overall Process

At the beginning of the Spring 2023 semester, five students were assigned to the ticket reservation system project. The team first discussed our strengths, weaknesses, and preferred roles in the team. The team was subdivided into a front-end development and a back-end development team. TickIt was created with the Scrum software development management strategy that uses two-or-three week bursts called sprints to organize and complete tasks. As outlined as part of the Scrum development process, the team as a whole met at least twice a week. Meetings were used to provide task updates, prepare for presentations, discuss and solve issues, assign tasks to team members, collaborative work efforts among multiple team members, etc. Weekly meetings were also used to discuss and decide major decisions regarding the project called Key Decisions. For example, some of these Key Decisions include what languages the project would be written in and what software tools would be used in the project development process. Some development tools were websites or applications used for team communication and planning, such as Discord, GitHub, GitHub Desktop, Lucidchart, Figma, Jira, and the Google Suite (Docs, Sheets, Slides, etc.). The team used Visual Studio Code and third-party libraries were used for the software development aspect of the project.

Project Process Breakdown

There were five main development stages, referred to as sprints, for this project. These stages were Software Development Planning, User Stories and Requirements,
Architectural Design, Preliminarily GUI Design, and Final Delivery. Each sprint ended in a presentation by the team for the purpose of providing status and progress updates.

In the Software Development Plan sprint, all members of the team worked collaboratively to plan the development of the project. This resulted in the Software Development Plan, which describes and summarizes details of the project development cycle for the team and the project director.

Next, in the User Stories and Requirements sprint, all members of the team again worked collaboratively to produce a list of user stories and requirements. User Stories are used to describe what the system should do from a user or developer’s point of view. In a similar nature, Requirements are used to list the basic tasks the project should accomplish definitively. The User Stories and Requirements were then used to begin generating tasks for all team members to accomplish in later sprints.

In the following sprint, Architectural Design, the back-end sub-team designed a Unified Modeling Language (UML) chart for the purpose of outlining classes and their predicted interactions with each other. Refer to Appendix A for the UML chart. The back-end sub-team used the UML chart as a basic foundation for implementing the software classes that would be used in the system. At this time, the front-end team began working on a basic prototype of the visual design. Refer to Appendix B for the prototype GUI design mock-up. Testing procedures also began in this phase. Code was tested and reviewed by other team members before being integrated into the main master branch of the code archive.

Once the Architectural Design was complete, the Preliminary GUI Design sprint began. The back-end sub-team continued their work by creating new classes as needed
and establishing communication between the back-end and front-end code. An issue with a circular structure/dependency between two of the classes was discovered early in this phase. Once found, it was quickly resolved with no negative effects by re-writing one of the problematic classes. The front-end team used this sprint to finalize the preliminary GUI design/architecture and establish communication between the back-end and front-end code.

Last, but certainly not least, the Final Delivery sprint is one of the most important parts of the software development cycle. In this sprint, team members finished any outstanding tasks and performed bug fixing.
Assessment

Overall, the team is very happy with the end result of this project. The end goal was to complete requirements as lined out in the project description and to deliver the final web application product to the project director. The end of each sprint was received positively by the project director and the team with presentations and progress updates. The team worked well and communicated regularly with each other in and out of class.
Appendix A

This section consists of the Unified Modeling Language diagram for TickIt.
Appendix B

This section consists of the GUI prototype mock-up for TickIt.

Home Page

Admin Log-In Page
Admin Page

Seat Selection Page
Check-Out Page

![Check-Out Page](image)

Small Event 1 Row B, Seat 3: $55.00
Tax: $4.95
Total: $59.95

Pay Online OR Pay at Door
Project Links

GitHub development code archive: https://github.com/PatrickBerz/tick-it