Deno, Seth | Kissick, Taylor | Patterson, Luke | Souza, Caio | Spaulding-Price, Celeste
February 10th, 2025 - Spring 2025 – Ivy Tech Community College
System Software Analysis & Project - SDEV265-00D-LF-202430-LA-16R
Instructor: Jovanovich, Mike

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Overview

This document provides a comprehensive description of Ivy Ware's software, *Race Raffle*. It outlines the current planning state of the product regarding the system's architecture, composition, purpose, and internal interactions. The system component diagram visually represents the product's core components offering insight into its intended functionality, data flow, and communication protocols.

The system is designed to manage raffle operations for horse racing at county fairs, aiming to attract patrons and generate revenue to support the fairs. Raffle operation is comprised of multiple front-end interfaces—for ticket sale and redemption—and a centralized back end to handle ticket transactions, validation, reporting, and tracking.

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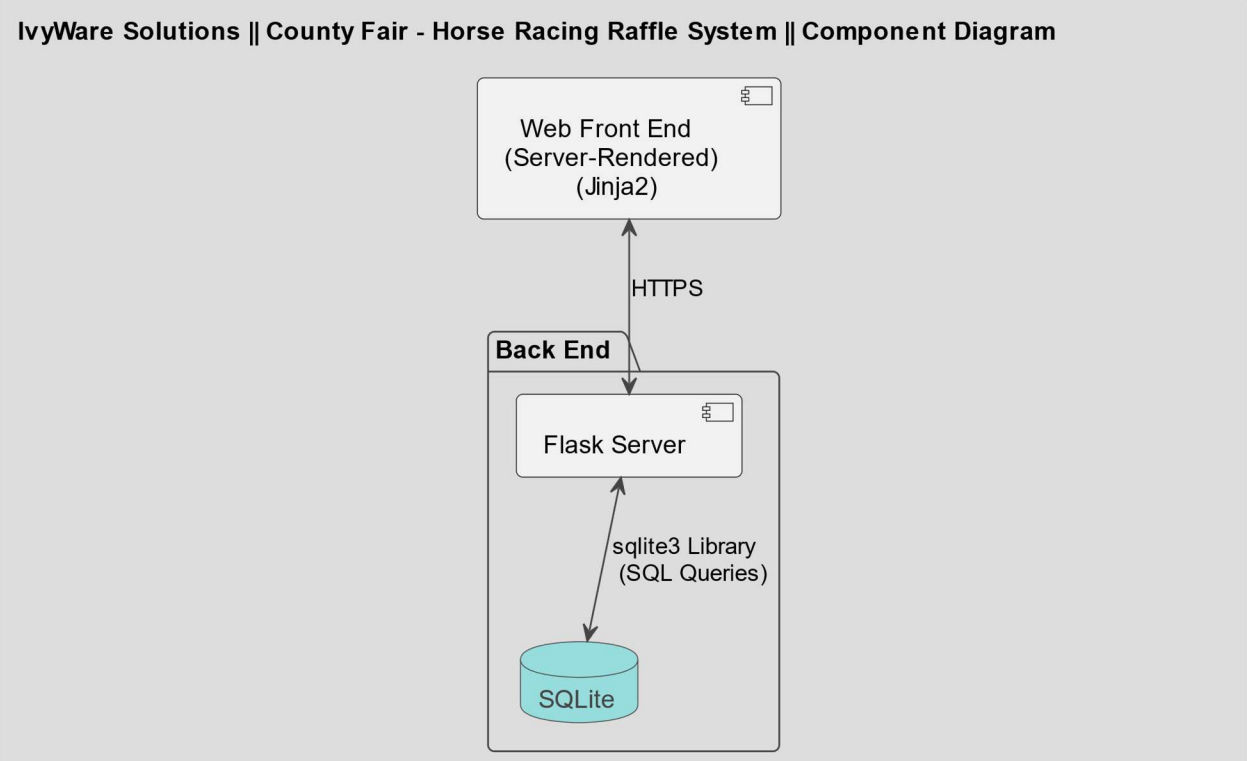
System Component Diagram



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Major Components

Web Front End

- Responsibility & Purpose
    - User interface for ticket sales, redemption, reporting, and administrative operations.
    - Dynamically display HTML pages using Jinja2.
    - Intuitive interface for better user experience.
- Implementation Technologies
    - Flask's Jinja2 templating engine for dynamic HTML generation.
    - HTML + CSS

Flask Server

- Responsibility & Purpose
    - Handles all business logic (ticket generation and validation, and report generation).
    - Processes HTTP requests from the front end, interacts with database for reading and writing, and supplies HTML data for page rendering.
- Implementation Technologies
    - Python
    - Flask Framework
    - Flask's Jinja2 templating engine for server-rendered web pages.

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SQLite Database

- Responsibility & Purpose
    - Persistent storage for ticket and event data.
    - Allow efficient insertion, update, and retrieval of data.
    - Ensure data integrity.

- Implementation Technologies
    - SQLite – Local single file database
    - sqlite3 (Python std Library) for SQL query execution.

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Communication Path Documentation

Direction	Action	Data Content	Data Format	Operations	Protocol
Web Front End -> Flask Server	- Ticket purchase - Ticket validation - Admin operations	- Ticket information - Report parameters - Event data updates	Form Data (URL-Encoded)	- HTTP POST - HTTP GET	HTTPS
Flask Server -> Database	- Process user request and send query to DB.	- Ticket information - Report parameters - Event data updates	Raw SQL queries	execute( ) and fetch() methods (sqlite3)	Local database connection via sqlite3 library
Database -> Flask Server	- Execute query, add, remove, or edit data - Return relevant data.	- Ticket information - Report and event data	Cursor object containing query results (Tuples, None or Integer type).	Query response	Local database connection via sqlite3 library
Flask Server -> Web Front End	- Return confirmation or report data.	- Ticket information - Report data - Process confirmation	Server-rendered HTML pages (Jinja2)	HTTP Response (returns render_template())	HTTPS

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Data Flow Diagram