Event Ticketing System

You will build an application that will allow event managers to create any type of event, assign number of tickets and create ticket categories with different selling price. For end users, system will allow them to purchase event tickets, and manage their online profile. The system will allow selling tickets and manage any type of event such as a concert, fund raiser, conference or sports event.

High Level Functional Requirements:

- Registration for Event Managers and Customers.
- Event Managers:
    - Manage events.
    - Manage ticket inventory.
    - Manage discount coupons.
    - Manage sales.
    - Reports: customers per event, monthly sales, etc.
- Customers:
    - Purchase tickets.
    - Support different payment methods.
    - Purchase history.
    - Manage profile.

Evaluation

Stage 1: Requirements Engineering

In this stage you will create the definition for the functional and non-functional requirements for the given system.

- Functional requirements.
- Non functional requirements.
- Roadmap definition.

Output:

- Requirements Document (Functional and Non-Functional)
- Roadmap (Excel file or MS Project file)

Stage 2: Architecture

In this stage you will design the software architecture. This architecture will take into consideration the non-functional requirements and will also provide information on constraints or Key Architectural Decisions that are impossible to infer just by talking a look at the code (e.g. why use Framework X instead of Y).

Output:

- Software Architecture Document.

Stage 3: Security Advanced

In this stage you will implement a Security Service (and any other relevant component), which will provide authentication and authorization for the given system.

- Common threats and vulnerabilities
- Criptography / Encryption / Hashing
- Authentication and Authorization
- Infraestructure security
- Auditing
- Secure Design
- Data Confidentiality (PII and non-PII data, storage techniques, tokenization, etc)

Output:

- Security REST API

Stage 4: Database Design

In this stage you will assess the database requirements, propose a database technology (or multiple if you consider it is appropriate), and design the database schema(s) to support the requirements.

Output:

- Database schema design.
- Database deployment and initialization scripts.

Stage 5: Web Services and Microservices

In this stage you will implement:

- Communication Service: Email notifications.

And will pick at least one of the following services and implement them as well:

- Event Service: Manage events.
- Ticket Service: Manage tickets, purchases.
- Payment Service: Integrate system with payment providers.
- Reporting Service: Service for admin reporting.

In other words: you need to implement at least 2 services, the Communication Services and another one of your preference from the list above.

This stage will be evaluated by a panel of experts, you will present the implementation and a functional demo.

Stage 6: Cloud Basics

In this stage you will need to deploy the system to the cloud (AWS, Azure, Google Cloud).

Output:

- Cloud setup.
- One-click deployment.
- Monitoring capabilities setup in the chosen cloud vendor.