Hafez System

Deliverable 3

Course Name:		**Capstone Project**
Course Code:		MIS 451
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Agenda

- Application Architecture
- Network Architecture
- System Controls
- User Interface Design

Application Architecture

Application Architecture

Hafez is a web-based system accessible through any browser or device via the internet. It is built using a **three-tier client-server architecture** consisting of:

1. **View Layer** – The user interface, developed with HTML, CSS, and JavaScript, which allows users to interact with the system.

2. **Business Layer** – Handles data processing using web and application servers, secured with HTTPS and a cloud firewall.

3. **Data Layer** – Manages data storage and processing using SQL and PHP on a database server.

- The system leverages **cloud computing**, providing enhanced accessibility, scalability, reliability, and security. Unlike traditional hosting, it uses a network of connected physical and virtual cloud servers, which increases performance and cost efficiency.

Network Architecture

Network Architecture

The **network architecture** of the Hafez system illustrates the interaction between its three layers: the **view layer**, **application layer**, and **database layer**. It supports various devices (phones, tablets, laptops, desktops) and browsers (e.g., Chrome, Safari), ensuring accessibility via the internet.

•A **cloud firewall** (provided by GoDaddy) protects against cyber threats like hacking and malware.

•The **web server** handles user requests and delivers content (HTML, images, etc.).

•The **application server**, positioned between the web and database servers, manages logic, security, and communication.

•The **database server** securely stores data and restricts access to authorized users only. It uses **MySQL** and is hosted on the cloud for scalability and flexibility.

All servers operate in a **cloud environment**, improving performance, scalability, and cost-efficiency.

System security and controls

System Controls

The Hafez system includes two main types of controls to protect data and ensure secure operations: **Integrity Controls** and **Security Controls**.

Integrity Controls

These ensure accurate data input/output and protect against errors or unauthorized access.

1- Input Controls

- **value limit:** Reject unreasonable input values (e.g., too long passwords.).

- **Completeness:** Ensures all required fields are filled before proceeding.

-**Data validation:** validated identifiers like country codes.

2- Transaction Logging

Records database actions to detect fraud and support recovery from errors.

3- Complex Update Control

Prevents issues from simultaneous data updates or multi-step transactions.

4- Backup Recovery

Creates data copies to restore information after failures or attacks.

5- Output Control

Ensures outputs (e.g., reports) are correct, timely, and well-formatted, including the Hafez logo.

System Controls

System Controls

Security Controls

These protect the system from external threats and ensure a safe user experience.

1.1- Access Controls

- **Authentication**: Checks email, password, and user type.
- **Authorization**: Defines roles (Admin, Vendor, Customer) with specific access rights.

2- Secure Transactions

- Uses SSL encryption (HTTPS) to protect data during transmission.
- Implements session timeouts to log out inactive users.

3-Data Encryption

Uses hashing to secure sensitive data (like passwords), making it unreadable to unauthorized users.

User Interface Design

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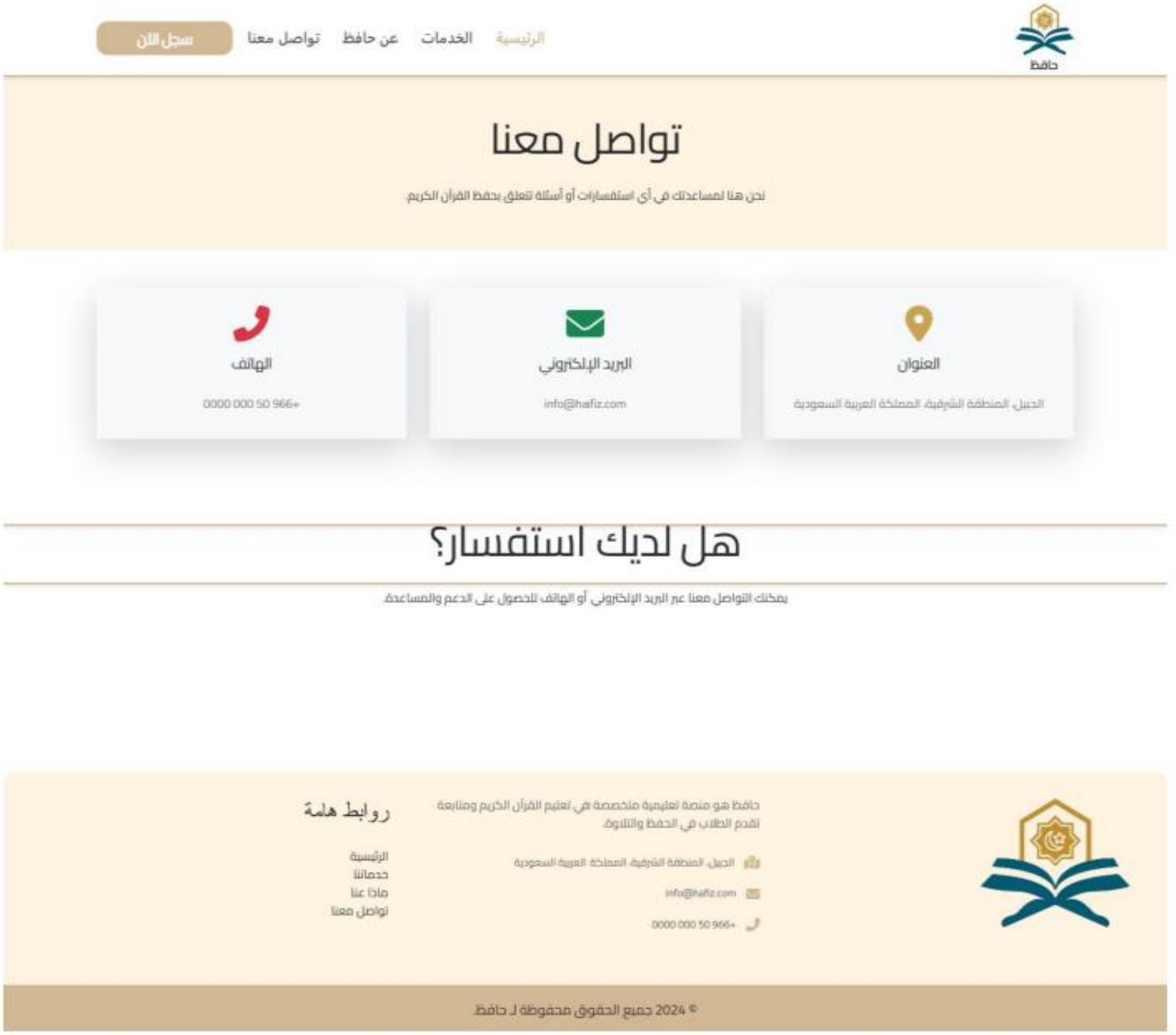

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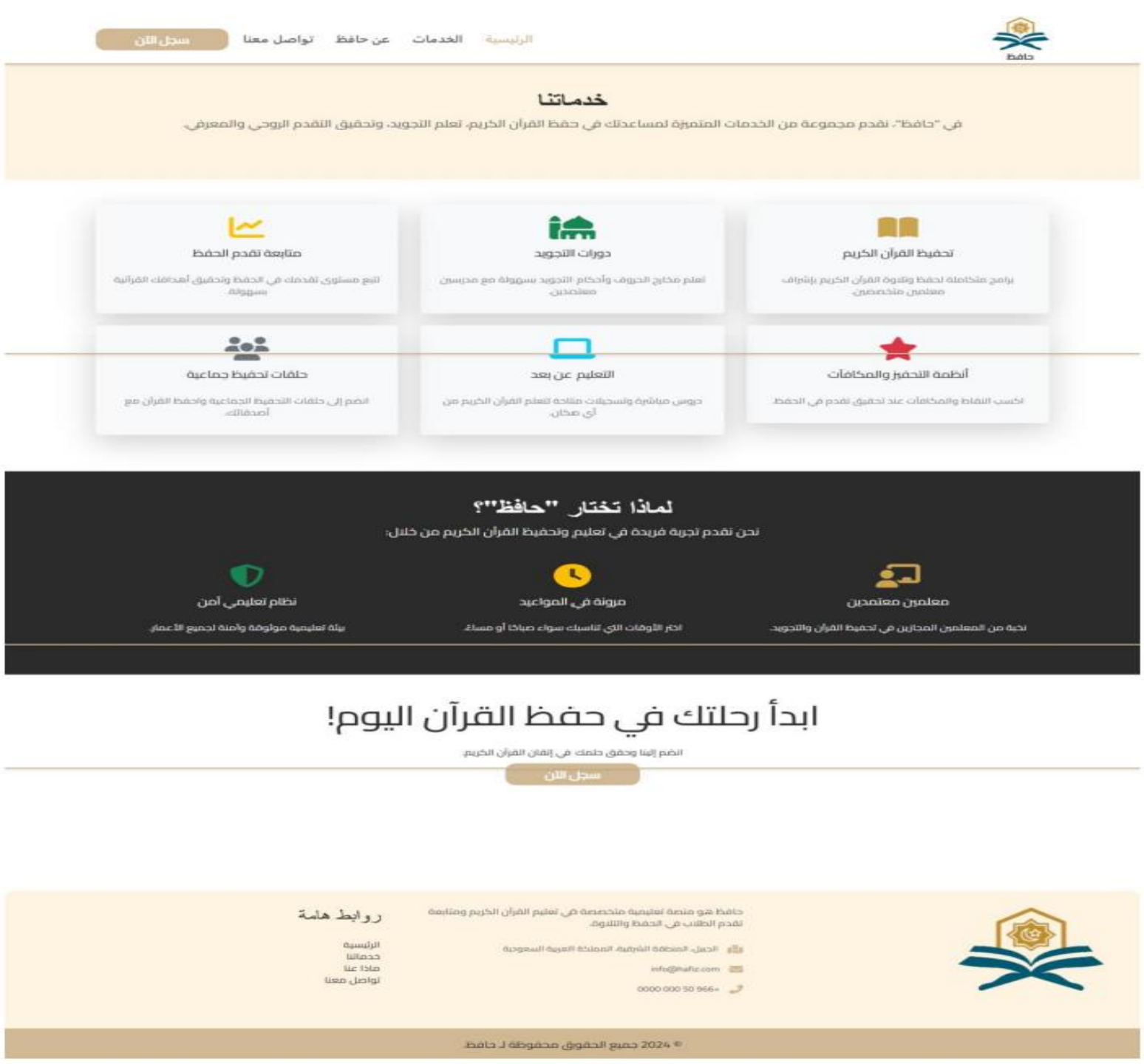

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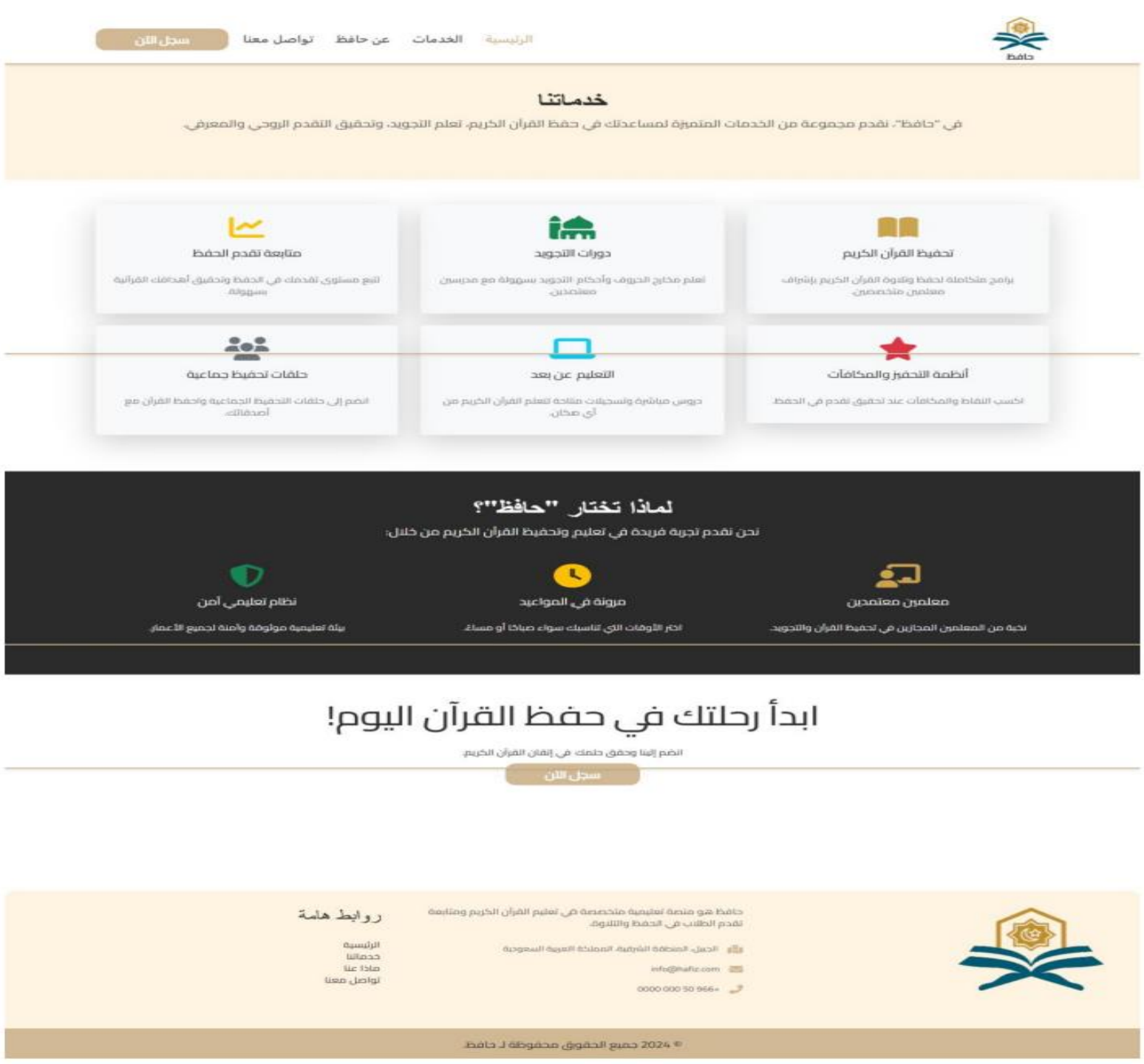

Thank you