# CS 319-1 Group 8

## Deliverable 3 - Final

## Bilkent Tanıtım Ofisi Management System

Short-name: BILFO

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# 1. Design Goals

## 1.1 Functionality

One of BILFO's most important design goals is its functionality. BILFO aims to satisfy the needs of the Information Office and provide a comprehensive program that contains all of the functionalities of the previous system. In addition to implementing already existing features that were previously manually done, we aim to implement more features that we think are useful and weren't possible previously, such as a feedback system, statistical data collection and viewing system, a viewing and editing system for availability schedules of guides and advisors, and an e-mail notification system for users.

### 1.1.2 Functionality vs Efficiency

These features will increase the usefulness of our program, but they may lead to performance issues because more features mean more data stored, and more data makes it time-consuming to find the necessary information.

### 1.1.3 Functionality vs Usability

Additionally, the presence of too many features may lead to UI clusters, decreasing usability. However, the functionalities are imperative for our program.

## 1.2 Security

BILFO aims to serve the entire staff of the Bilkent Information Office, along with applicants such as high school counselors and individuals who want to apply for a tour. The fact that the system stores sensitive personal information—including names, passwords, phone numbers, emails, and Bilkent IDs, if applicable—makes **security one of the top design goals**.

Without strong security measures, this sensitive data could be exposed to unauthorized access, leading to privacy breaches and loss of trust in the system. Additionally, as BILFO operates across multiple user types—such as coordinators, acting directors, guides, and office staff—it is crucial to enforce proper authorization mechanisms to ensure that each user has access only to the parts of the system they are entitled to use. For example:

- The entire list of counselors, schools, and previously gathered data can only be seen by the coordinator, acting director, and the admin.
- Staff of the Information Office do not register themselves; they are added to the system by the admin at the outset. Coordinators can also add guides.

To further enhance security:

- Users receive an email with their initial passwords, which they are required to change. The new password must include a special character, a number, and an uppercase letter to ensure its strength.
- After five failed log-in attempts, users are temporarily blocked from attempting to log in, preventing brute-force attacks.
- Captcha validation is integrated into each application form to mitigate bot activity.

- Passwords are securely stored in the database using a hashing algorithm, ensuring that even if data is compromised, passwords remain protected.
- User input is sanitized before passing queries to our MongoDB database, offering protection against injection attacks.

By implementing these security measures, BILFO not only ensures the protection of sensitive information but also upholds its reputation as a reliable and secure platform. Given the sensitive nature of the data being managed, **security is not optional but an essential pillar** of the system.

### 1.2.1 Security vs Performance

While essential, some of these security measures may introduce minor drawbacks. For instance, encrypting and decrypting passwords can take additional processing time, potentially decreasing performance.

### 1.2.2 Security vs Usability

Security measures can also impact usability. Captchas, while effective against bots, may annoy users, and stringent password requirements can make it difficult for users to remember their passwords. Additionally, security features, such as temporary account locks after failed login attempts, may sometimes result in false positives, temporarily hindering legitimate user access.

## 2. Subsystem Decomposition Diagram

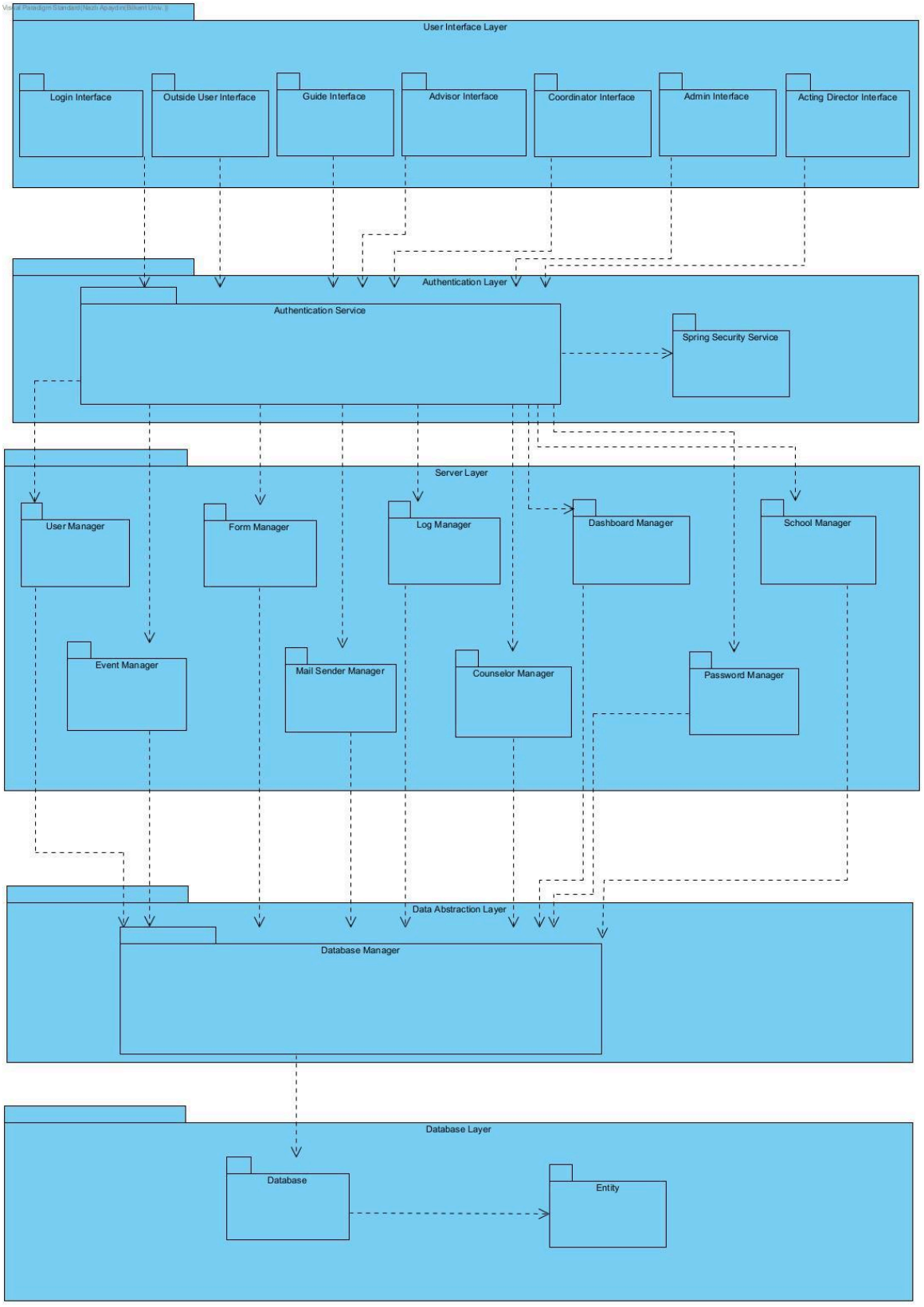


Fig. 1. Subsystem Decomposition Diagram