Documenting The Data Of Students And Faculty Members

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1.0 Introduction: 3 main paragraphs: problem, objective and outline

Problem:

One of the key challenges faced by educational institutions is effectively documenting and managing the data of students and faculty members. The absence of a centralized and robust database system can lead to a range of issues, including data inconsistencies, duplication of efforts, and difficulty in retrieving accurate information. This lack of efficient data documentation can hinder the accreditation and quality assurance processes of an institution, as accurate and up-to-date data is essential for assessing educational programs and ensuring compliance with standards. Without a reliable database, institutions may struggle to demonstrate the quality of their education and impede their ability to make informed decisions for improvement.

Objective:

The primary objective is to establish a comprehensive and reliable database within the Accreditation and Quality Assurance Center to document the data of students and faculty members. The database should be designed to store and manage all relevant information, such as personal details, academic records, and any other data necessary for accreditation and quality assurance processes. The objective is to ensure that accurate and up-to-date data is readily accessible, enabling efficient evaluation and monitoring of educational programs. By implementing a robust database system, the institution aims to streamline data management, eliminate redundancies, improve data integrity, and enhance the overall efficiency of accreditation and quality assurance activities.

Outline:

1. Database Design: The first step in documenting the data of students and faculty members is to design a database and we will get it from unit admission and registration which has all the information of students and administrators.

2. Data Collection and Entry: Since the required data is available, work will be done on the Power BI program, so that the data is unloaded into charts, which facilitates its analysis.

3. Data Management and Quality Assurance: After the initial data entry, ongoing data management and quality assurance are essential to maintain the integrity and reliability of the database. Regular data updates, validation checks, and error correction processes should be established to ensure that the information remains current and accurate. Data backups and disaster recovery procedures should also be implemented to safeguard against potential data loss. Additionally, periodic audits and reviews can be conducted to identify any data discrepancies or inconsistencies, enabling timely corrective actions. The goal is to establish a culture of data quality and ensure that the database remains a trusted source of information for accreditation and quality assurance purposes.

1.1Need Analysis and Description

Accurate data documentation is crucial for the accreditation and quality assurance processes of educational institutions. A centralized database streamlines data management and evaluation, and eliminates redundancies.

Documenting student and faculty data on the Accreditation and Quality Assurance Center's database involves designing a scalable and secure system. Information such as personal details, academic records is collected and entered using standardized processes -It was mentioned in the previous section-. Ongoing data management, quality assurance, and periodic audits ensure data integrity, accuracy, and compliance. A centralized database improves administrative efficiency.

1.2 Project Constraints

1. Time Constraint: Implementing the database system within specified deadlines requires efficient project planning and timely execution.
2. Data Privacy and Security Constraints: Compliance with data protection regulations and ensuring robust security measures are essential to safeguard sensitive data.
3. Resource limitations: Continuous modification may require qualified personnel to handle such data.

1.3 System Environment

1. Integration Interfaces: Interfaces are implemented to connect the database with other systems in the organization.
2. Data access and user interface: User-friendly interfaces allow data entry, search, retrieval, and reporting, with appropriate access controls.
3. business intelligence: we will use Power BI, is a business intelligence and data visualization tool developed by Microsoft. It allows users to connect to various data

sources, including databases, to gather and analyze data. Power BI can connect to DBMSs and retrieve data from them, it is not a standalone DBMS itself. Instead, it is a tool used to visualize and analyze data from multiple sources, including databases.

1.4 Project Software and Hardware Requirements

- Software Requirements: need power bi and the data from excelsheet.

- Hardware Requirements: The project necessitates appropriate hardware infrastructure, including servers, storage devices, and networking equipment to support the database system. The hardware should be capable of handling the expected data volume, processing power, and storage capacity. Additionally, a secure network infrastructure is needed to ensure safe data transmission and prevent unauthorized access.

By fulfilling these software and hardware requirements, the project can establish a robust system for documenting student and faculty data on the database of the Accreditation and Quality Assurance Center.

1.5 Project Schedule

Table 1-project schedule

Task	Duration	Start date	End date
Project Planning	2 weeks	20/3/2023	3/4/2023
Requirements Gathering	1 week	4/4/2023	11/4/2023
Software Installation	1 week	15/4/2023	22/4/2023
GUI Implementation	3 week	1/5/2023	22/5/2023
Deign GUI	1 week	23/5/2023	3/6/2023
Test the system	1 week	4/6/2023	6/6/2023

2.0 Project Background and Existing Technologies

In today's educational landscape, accreditation and quality assurance is vital for institutions to demonstrate their commitment to providing quality education. Accreditation ensures that institutions meet certain criteria and standards set by accreditation bodies, while quality assurance processes monitor and evaluate the effectiveness of educational programs. These processes require accurate and up-to-date student and faculty data to evaluate program outcomes, track progress, and ensure compliance with applicable standards.

The site uses power pi technology, which is a business analytics tool that can be used to visualize and analyze data. By connecting to a database, Power BI can generate interactive charts, graphs, and reports that provide insights into student and faculty data. This tool facilitates data-driven decision-making and enhances database usability.

3.0 Software Requirements Document

3.1 Targeted Users

Holders of powers in humanitarian and scientific faculties such as:

- deans of colleges
- heads of departments
- Admission and Registration Unit
- Human Resources Department

3.2 Requirements Gathering and Customer Feedback Techniques

For requirement gathering we interviewed Mantasha (Employee at the University Presidency)

and this was the questions that we asked for:

1. Is there an existing system?
2. What is the system should do?
3. Who will use this system?
4. How to authenticate users of this system?
5. Is there a database or we will design?
6. What are the main features to show (KPI)?

Also, We observe some functionality from an existing system for Faculty of Tropic Sciences

Like filtering data according Gender, Type of admission and appointment also knowing the main component (CARDs, Slicers and tiles).

Customer Feedback Techniques

We will use questionnaires to get feedback from the users of the system.

- We will use Google Forms

See Appendix A

3.3 Functional Requirements

1. **Log in.**

Each user could log in with their username and passwords to check their privileges.

2. **Read about**

Users can get more information about this website in the login interface.

3. **View student dashboard (if the user click it):**

Users can visualize students' data.

In Student dashboard there are other functionality:

3.1 filter the student's data according to Type of Admission

3.2 filter the student's data according to Students state

3.3 display student data according to the filter selection, and the data is:

1. The total number of them
2. total number according to their major
3. Genders
4. Accounting status
5. Year of admission to the university
6. holding an administrative position

4. **View employee dashboard (if the user click it):**

User can visualize employees' data:

In employee dashboard there are other functionality:

4.1 filter the employee's data according to Collage

4.2 filter the employee's data according to Year of graduates

4.3 filter the employee's data according to Country of graduates

4.4 display employee data according to the filter selection, and the data is:

1. The total number of them
2. Genders
3. Academic Rank
4. Employee status (on the job, leave)
5. holding an administrative position.

5. **Print a report**

If the user would like to print a report of the result, he can do so by pressing the Print a report button, and the printed data will be according to the chosen filter.

6. **Log out**

The user can log out of his account by clicking on the log out button

3.4 Non-Functional Requirements

1. **Usability:** The application should be efficient, easy to use and have a consistent interface.
2. **Security:** Emails and passwords must be kept secure to prevent tampering and the data should be secure and only accessed by the right owner.
3. **Availability:** The application should be available around the clock and on all days due to the need for it always in making decisions.
4. **Performance:** The application must be efficient and provide all these functions in a very quick time with suitable algorithms.
5. **Maintainability:** The application shall be easy to maintain; faults must be easy to correct.

3.5 Usability and User Experience Goals

- **usability goals:**

Included website should be efficient, secure, effective, easy to learn and has a consistent interface.

- **user experience goals:**

Increase user satisfaction.

Enjoyable: Interesting to use.

Helpful: Achieving its objective.

Enhancing sociability.

Memorable: easy to remember how to use.

Readable: displays data in a clear and understandable way.

4.0 System Design Document

4.1 Low-Fidelity Prototyping

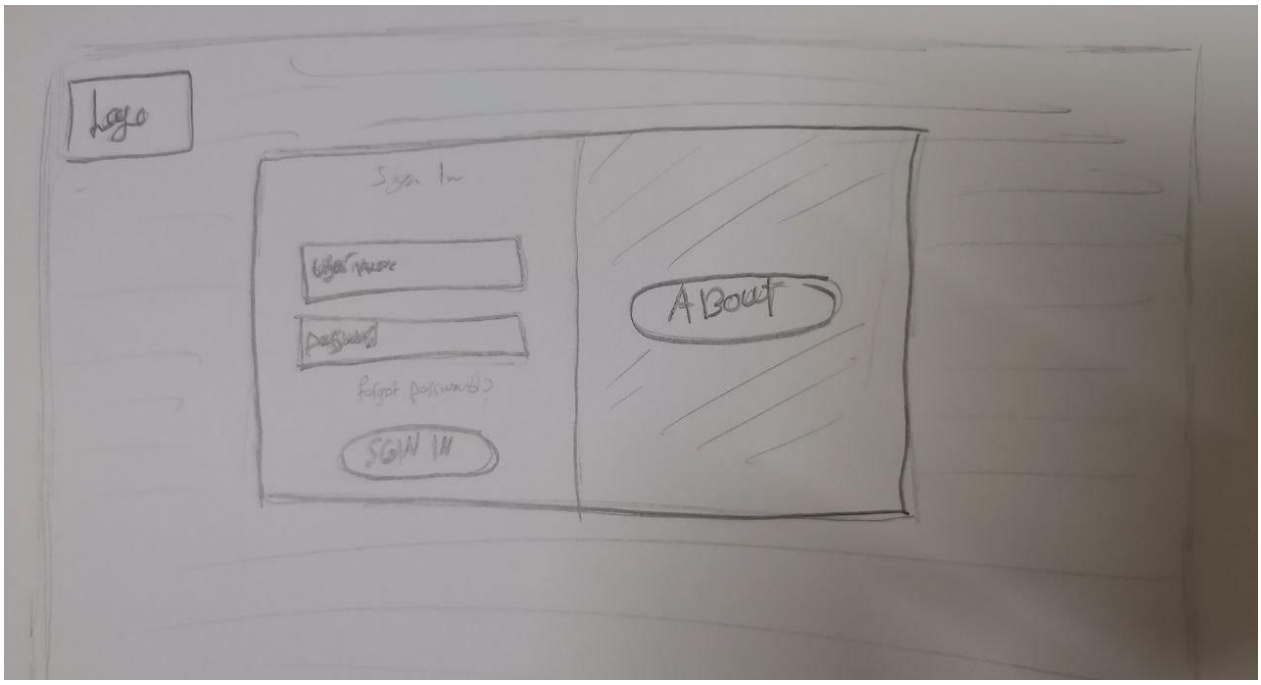

Figure 1: Sign in low-fidelity prototyping

Figure 2: About low-fidelity prototyping

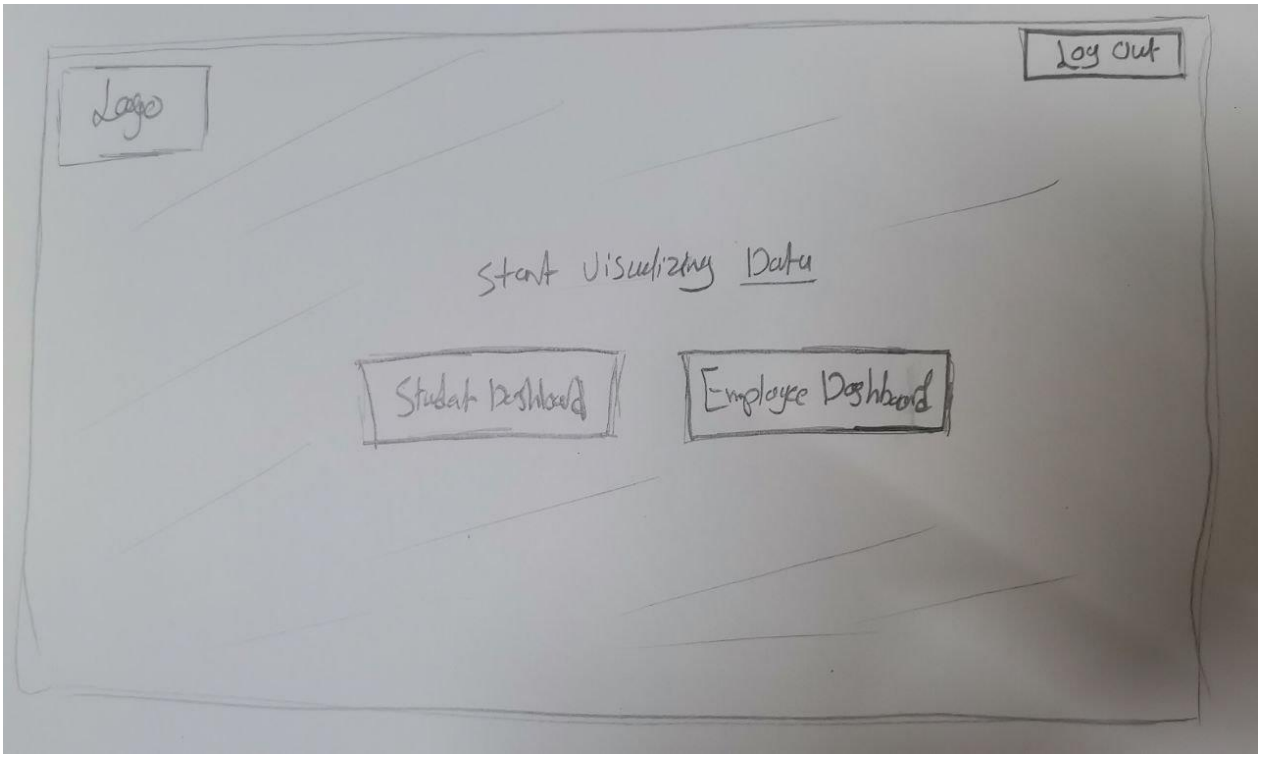

Figure 3: Home page low-fidelity prototyping

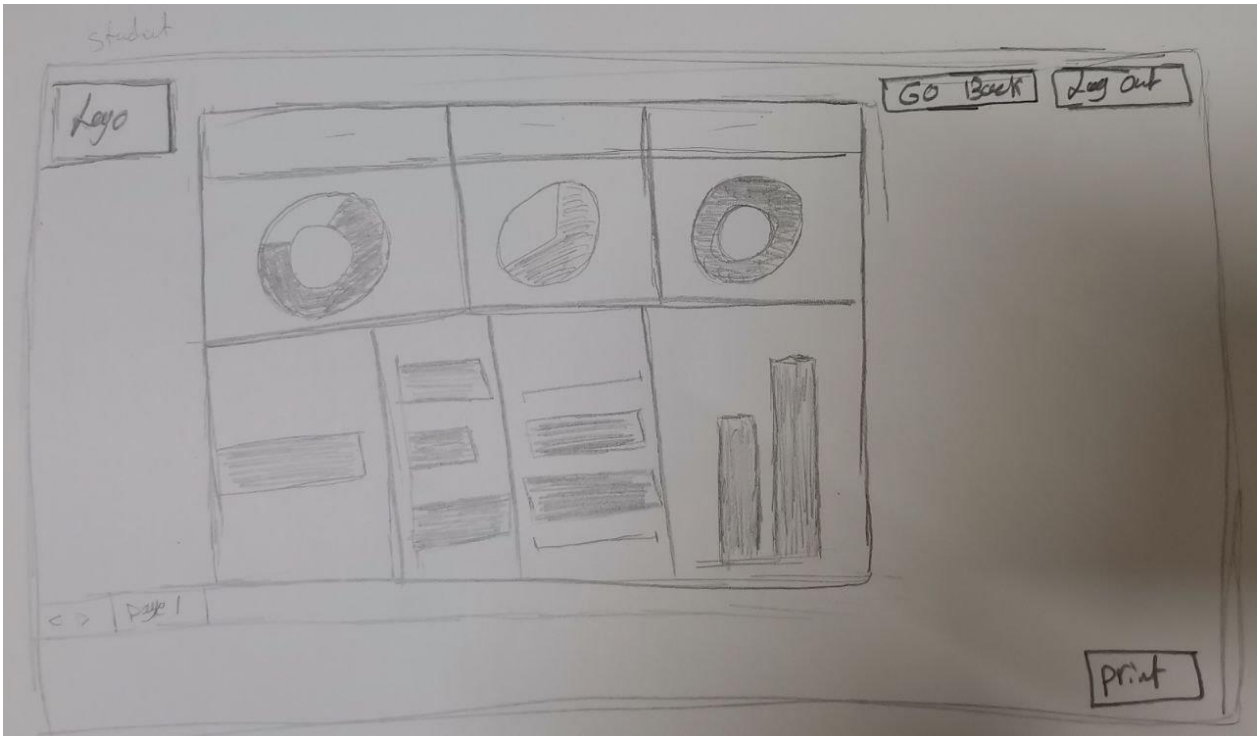

Figure 4:Student low-fidelity prototyping

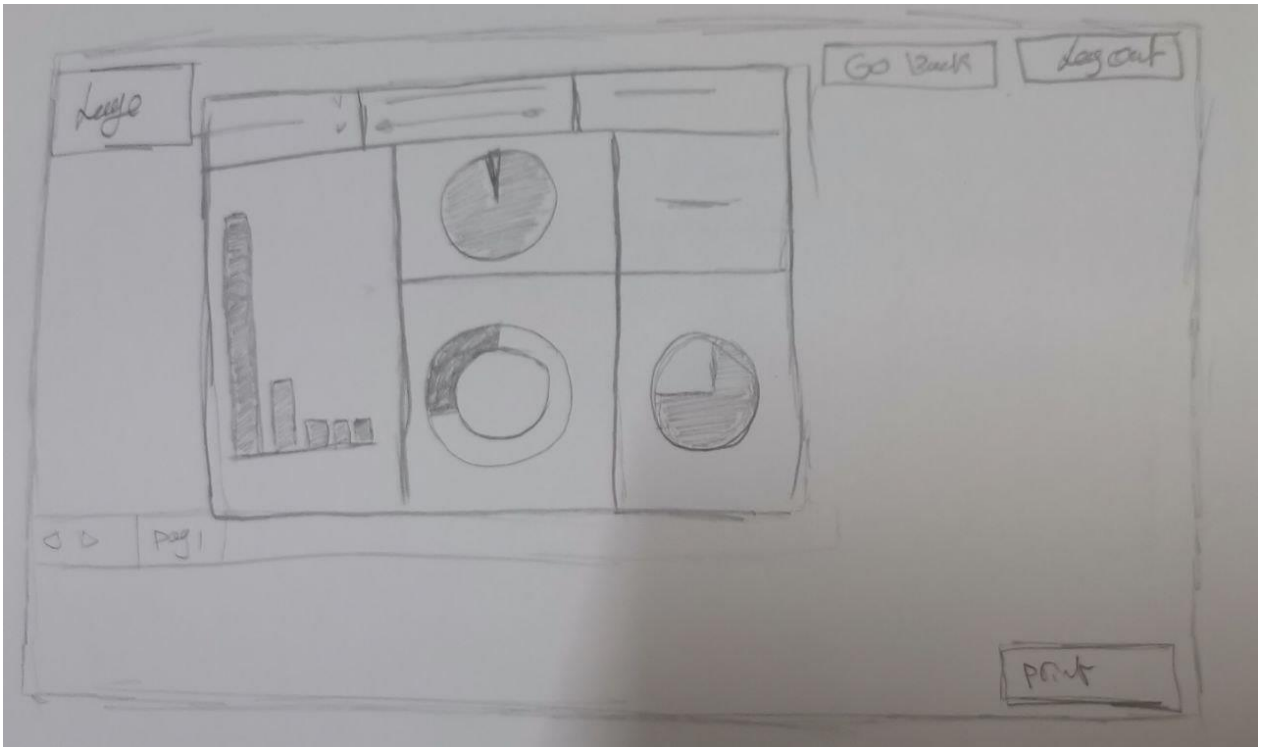

Figure 5: Employee dashboard low-fidelity prototyping

4.2 Medium-Fidelity Prototyping

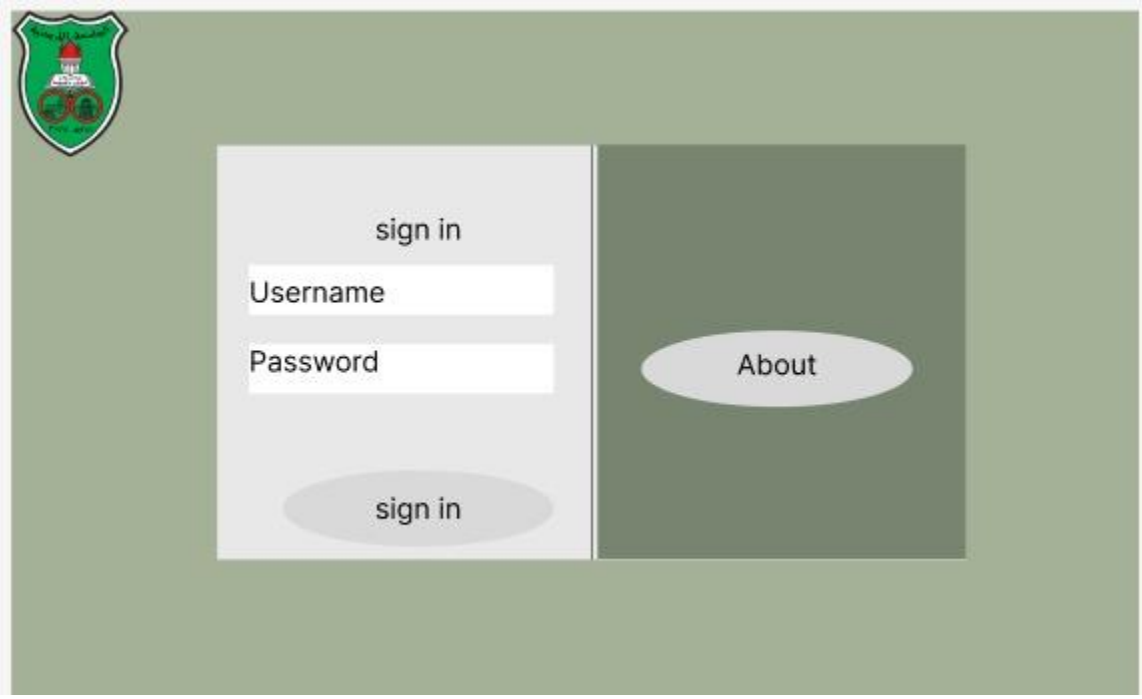

Figure 6: sign in Medium-Fidelity Prototyping

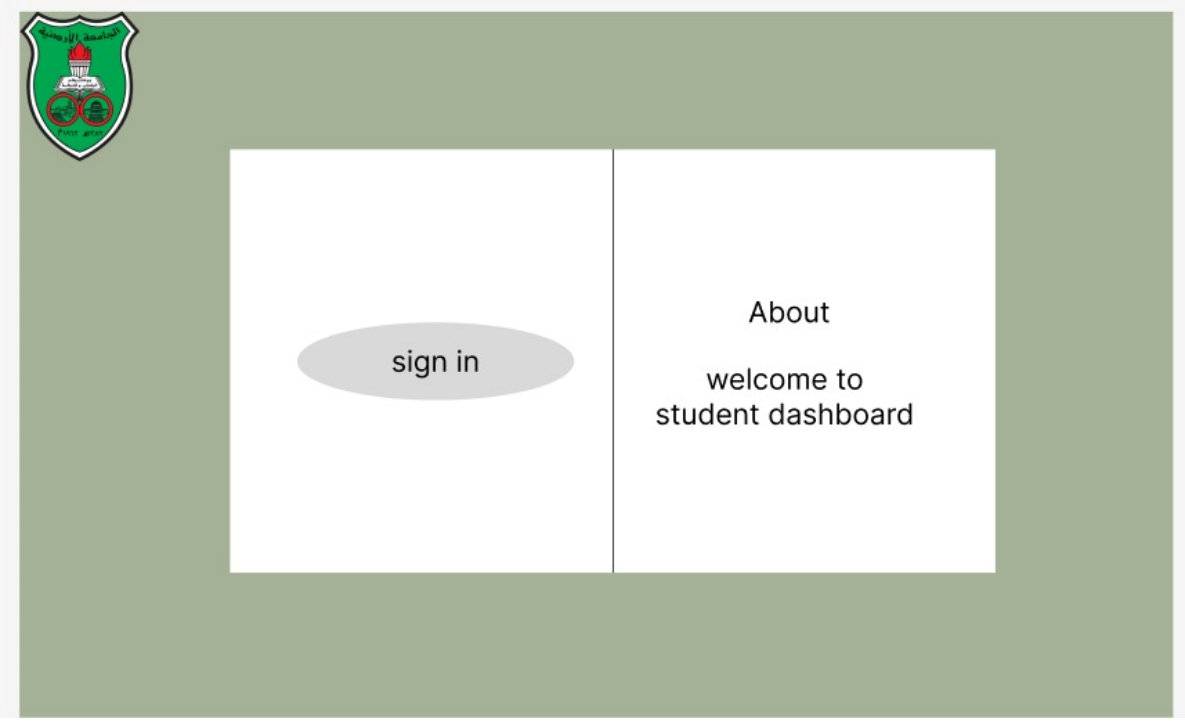

Figure 7: About Medium-Fidelity Prototyping

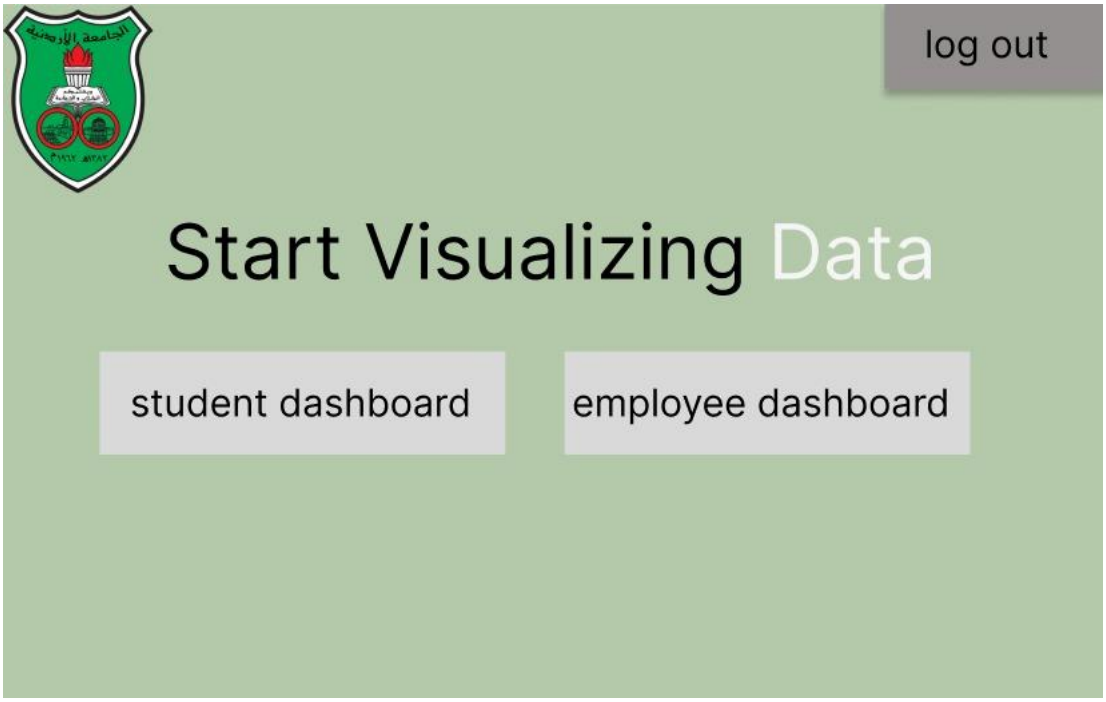

Figure 8: Home page Medium-Fidelity Prototyping

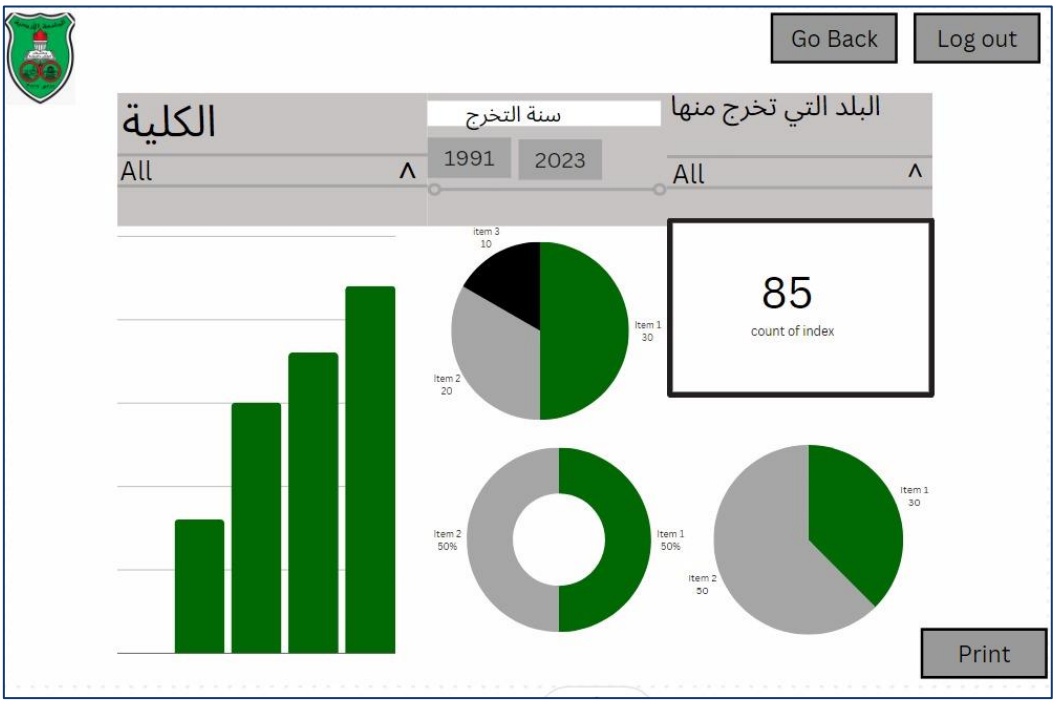

Figure 9: Employee Medium-Fidelity Prototyping

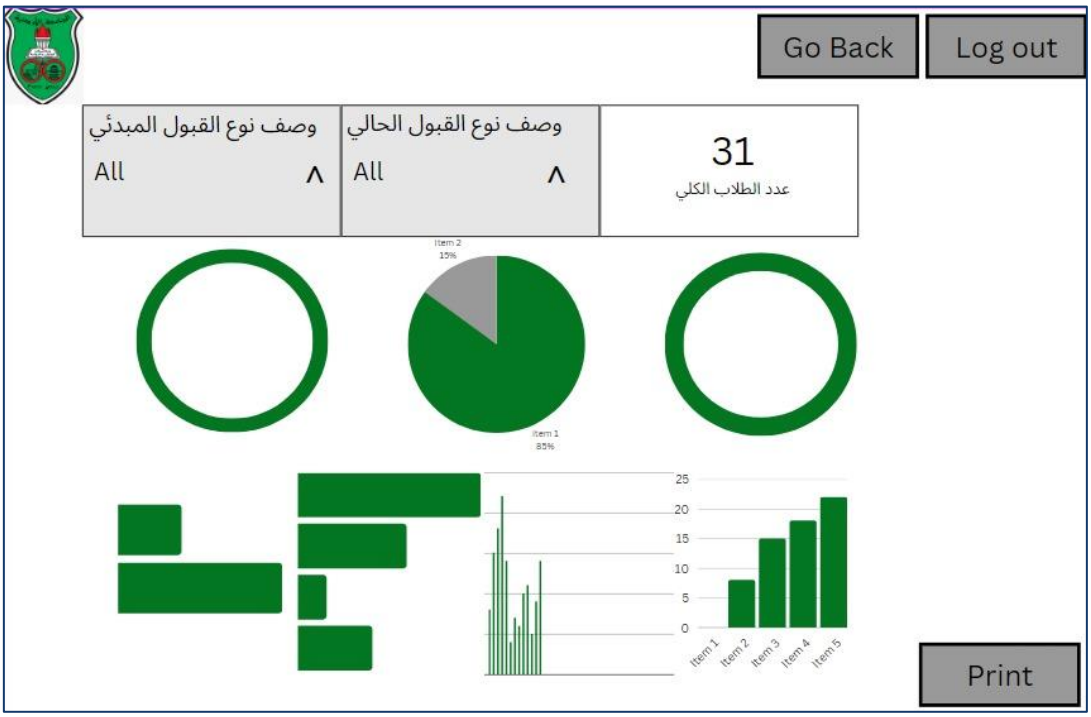

Figure 10: Student Medium-Fidelity Prototyping

5.0 High Fidelity

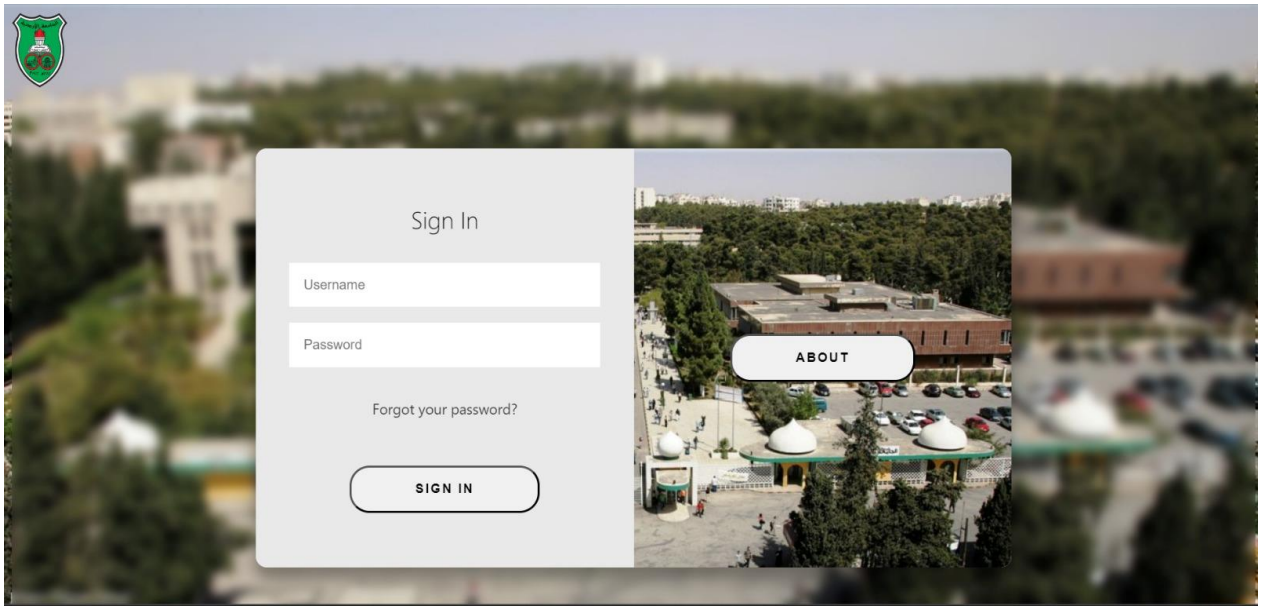

Figure 11: Sign in High Fidelity Prototyping

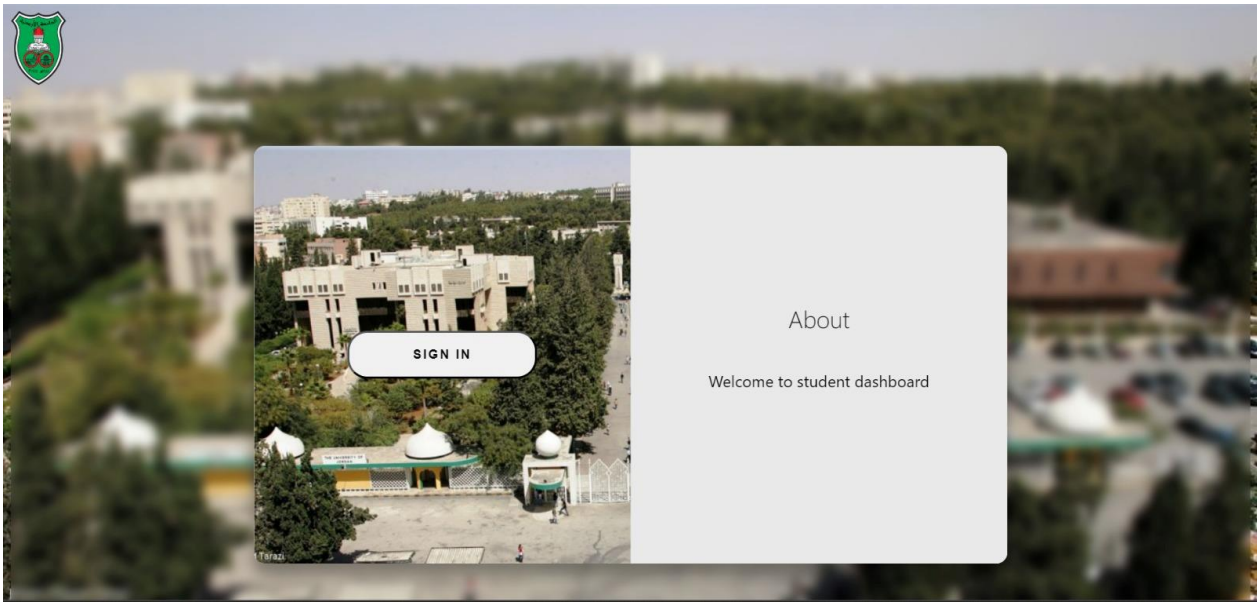

Figure 12: About High Fidelity Prototyping

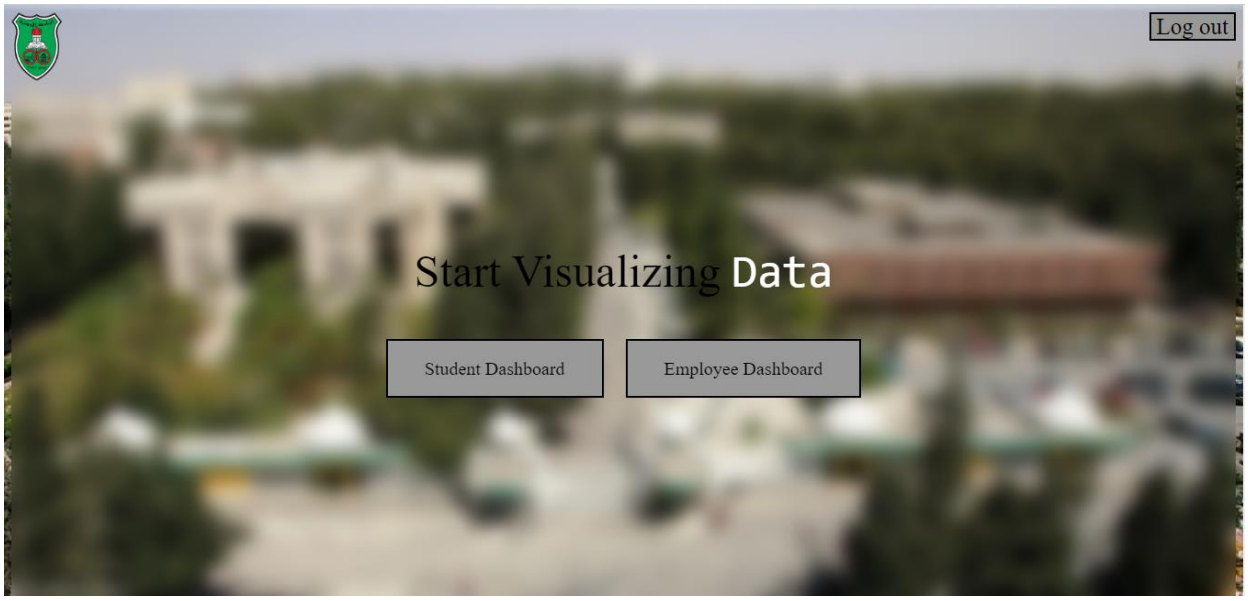

Figure 13: Home page High Fidelity Prototyping

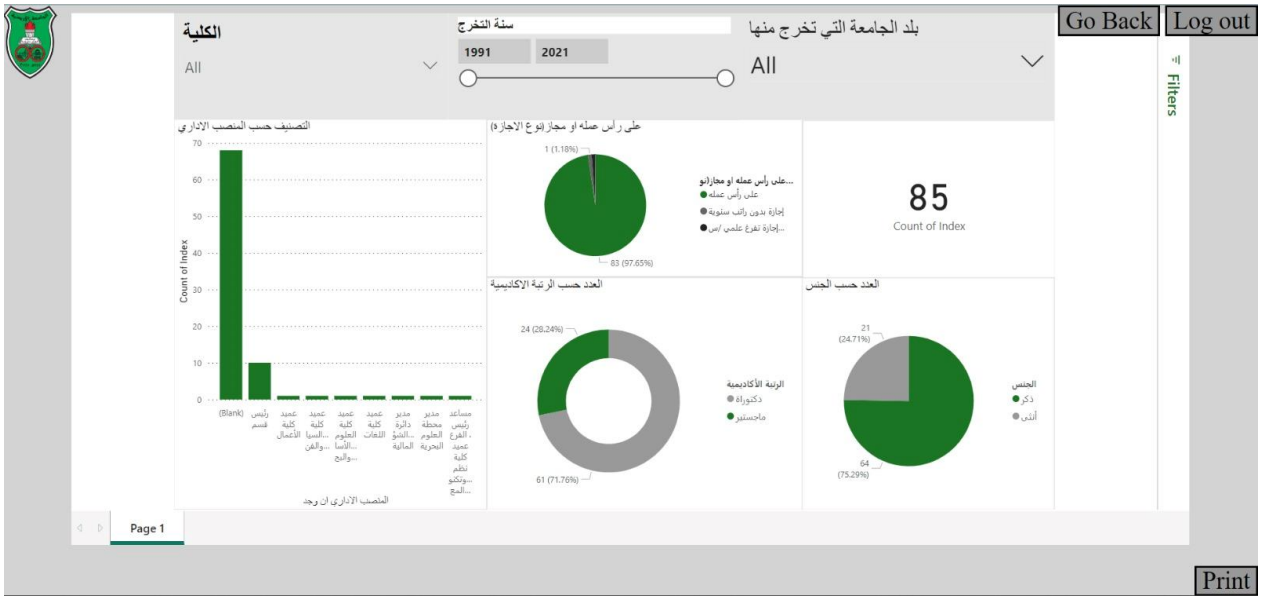

Figure 14: Employee High Fidelity Prototyping

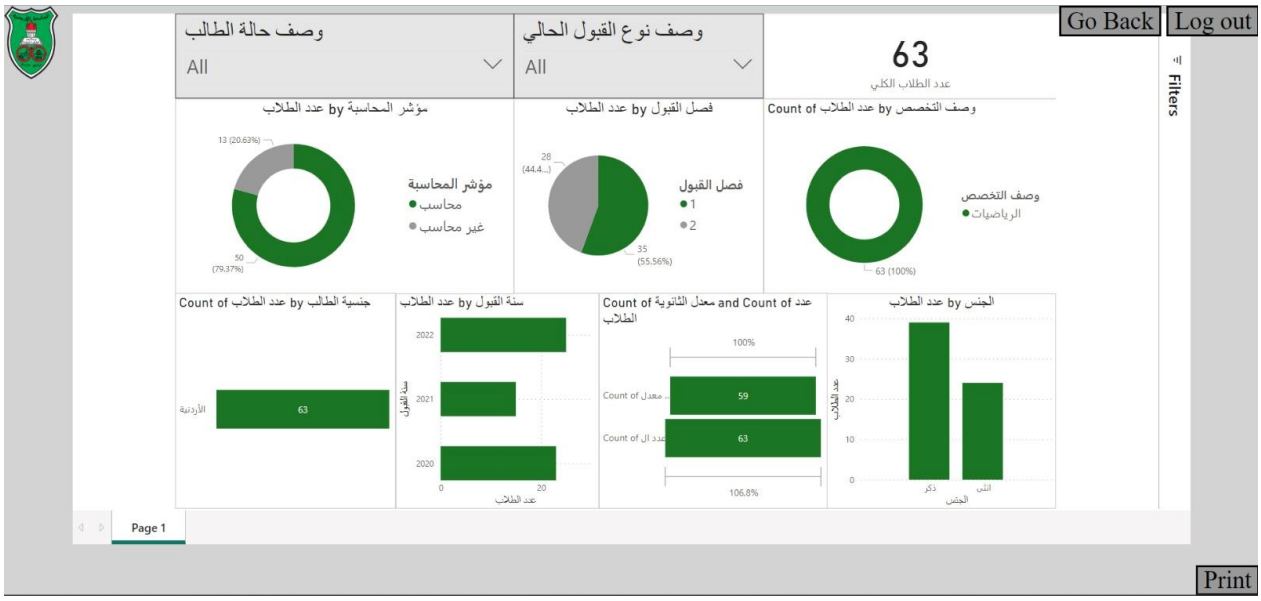

Figure 15:Student High Fidelity Prototyping

6.0 System Testing and Installation

6.1 Heuristic Evaluation

Table 2-List of Heuristics of Usability Evaluation and their Descriptions

Numbering Scheme	Heuristics	Description
H1	Help and documentation	Provide easily accessible documentation and instructions for users.
H2	Minimalist design	Keep the interface clean and uncluttered to present information clearly.
H3	User freedom	Allow users to easily navigate freely within the system.
H4	Consistency and standards	Maintain a consistent design, layout, and terminology throughout the database system.
H5	Error prevention	Implement measures to prevent data entry errors and provide clear error messages.
H6	Efficiency and flexibility	Cater to both novice and expert users by offering shortcuts and customizable options.

Heuristic evaluation helps identify usability issues in user interface (UI) design. This evaluation was performed by information technology (IT) experts who primarily examined the interface and ensured that it complied with recognized usability principles known as heuristics.

Table 3-everity Ratings and their Descriptions

Severity Rating	Description
0	**I don't agree that this is a usability problem at all.**
1	**Cosmetic problem only: need not be fixed unless extra time is available on project.**
2	**Minor usability problem: fixing this should be given low priority.**
3	**Major usability problem: important to fix, so should be given high priority.**
4	**Usability catastrophe: imperative to fix this before product can be released.**

Table 4-Summary of Heuristic Evaluation and Analysis

Location	**Heuristic Violated**	**Description of the Problem**	**Severity Rating**
Login	H5	A problem with verifying the database correctly and showing an unclear error message.	4
Student info page	H2&H6	Displaying too much information distracts the user. Shortcuts and customizable options when searching in a specific field may not be obvious.	2
Employee info page	H2&H6	Displaying too much information distracts the user. Shortcuts and customizable options when searching in a specific field may not be obvious.	2
Update dashboards	H4	Using some inconsistent terminology in the database system, which causes errors in data entry.	3

Table 5-Summary of violations by heuristics

Numbering Scheme	Frequency	Ratio (%)
H1	0	00.00
H2	6	30.00
H3	0	00.00
H4	7	30.00
H5	10	18.00
H6	7	22.00
Total	**30**	**100%**

Table 6-Summary of violations by heuristics

Severity Rating	**Frequency**	**Ratio (%)**
0	**0**	**0**
1	**0**	**0**
2	**5**	**25.5**
3	**3**	**20**
4	**3**	**30**
Total	**11**	**75.5%**

6.2 Cooperative Evaluation

6.2.1 Heuristic Evaluation

Collaborative evaluation includes the user as an active participant in the evaluation process. Revealing as many potential systemic problems as possible is not the goal of this assessment. Instead, they help designers identify the most important improvements to consider with the least time and effort.

For the collaborative evaluation of Included, four participants were randomly selected. Since our target audience is the students and staff of the University of Jordan, all participants were from the University of Jordan.

Table 7-Task Completion Times in Minutes and Seconds

Task No.		Default	Participant 1	Participant 2	Participant 3
1.	**Log in**	00:25	00:30	00:20	00:25
2.	**Read about**	00:05	00:10	00:10	00:05
3.	**View student dashboard**	01:05	01:00	01:00	00:55
4.	**View employee dashboard**	01:05	00:20	00:45	01:00
5.	**filter the student's data**	00:25	00:25	00:10	00:05
6.	**filter the employee's data**	00:25	00:35	00:10	00:05
Total Completion Time		**03:30**	**02:30**	**02:40**	**02:35**

6.2.2 Pre-Evaluation Procedures

Going through the following actions was a must for the Collaboration Assessment to begin.
1) The collaborative evaluation form and post-test questionnaire should be carefully prepared with the consensus of all group members.

2) The next step was to find students from the University of Jordan who would not mind doing this assessment. By touring the university, we also came across a portion of the university staff who might benefit from the site, and many of them were asked to do the evaluation.

3) Participants were given a brief introduction to “Included” before starting the assessment.

4) Participants were given instructions and a brief description of the assessment procedure.

6.2.3 Post-Evaluation Procedures

During the evaluation session, participants were accompanied to help them when they faced problems in performing a specific task. Figure 6.1 shows the Cooperative Evaluation tasks that were tested by the participants.

Table 8-Participants Responses to the Post-Test Questionnaire

No.	Statement	Participant 1	Participant 2	Participant 3	Average
1	Included is easy to use.	4	2	2	**2.6**
2	Included has accomplished its goals.	5	5	3	**4.3**
3	Included Interface is Interactive.	3	2	2	**2.3**
4	It is easy to understand the Functionality of the website without prior experience.	4	4	4	**5.3**
5	Included is an enjoyable website.	3	2	1	**2**
6	The Concept of Included was difficult to understand.	3	5	2	**3.33**
7	Included felt complete.	3	3	4	**3.33**
8	I felt that the tasks were difficult to complete using the website.	5	5	2	**4**
Average		**3.75**	**3.5**	**2.5**	**3.395**

7.0 Conclusion and Future Work

7.1 Overall Weaknesses

1. Feedback from users is not available

2. Lack of error prevention measures

3. Lack of user training and support: Insufficient training materials and support resources to assist users in the effective use of the database system.

4. We did not work on large samples of the data

It is important to note that these weaknesses can be addressed through user feedback, frequent improvements, and a user-centered approach to system design and development.

7.2 Overall Strengths

Overall strengths in documenting students and faculty members' data on the database of the Accreditation and Quality Assurance Center may include:

1. Centralized data management: The database system allows for centralized storage and management of students' and faculty members' data, facilitating efficient access and retrieval.

2. Streamlined data entry: The system provides an organized and structured interface for entering and updating data, ensuring accuracy and consistency.

3. Reporting capabilities: The database system offers robust reporting functionalities, allowing for the generation of comprehensive reports and analysis of accreditation and quality assurance data.

4. Customizability: The system can be tailored to accommodate specific institutional requirements, allowing for flexibility in data organization and management.

5. User permissions and access controls: The system provides role-based access controls, ensuring that only authorized personnel can access and modify sensitive data.

6. Integration with other systems: The database system seamlessly integrates with other institutional systems, facilitating data sharing and improving overall efficiency.

7. Compliance with data privacy regulations: The system adheres to data privacy regulations and security best practices, protecting the confidentiality and privacy of student and faculty data.

8. User-friendly interface: The system offers a user-friendly interface, making it intuitive and easy to use for both novice and experienced users.

9. sufficient administrators number

These strengths contribute to efficient data management, enhanced data quality, and improved decision-making processes within the Accreditation and Quality Assurance Center.

7.3 Future Work

Efforts will be made to document all relevant data for students and faculty members, ensuring its accessibility to university administrators. Additionally, there will be a focus on expanding the documentation to include widespread student activities, community services, and other essential matters, aiming for an easily accessible and manageable format for officials. We seek to provide the ability for the administrator to modify, add and control the data and add a label to display the date of the last update of the data.

Appendix A

Form provided for intended users to take feedback:

Do you feel that the system meets your needs as a student/faculty/administrative staff member? *

- ○ Yes
- ○ No

if you have any extra notes please tell us

Your answer

How would you rate the speed of the system? *

- 1 ○
- 2 ○
- 3 ○
- 4 ○
- 5 ○
- 6 ○
- 7 ○
- 8 ○
- 9 ○
- 10 ○

Do you find the system easy to navigate? *

- ○ Yes
- ○ No

Have you encountered any challenges while using the system? If so, please describe. *

Your answer

Which modules of the system do you use most frequently? *

- ○ Bar chart
- ○ columnar
- ○ percentage

How frequently do you use the Students, Faculty, and Administrative Staff data system? *

- 1 ○
- 2 ○
- 3 ○
- 4 ○
- 5 ○
- 6 ○
- 7 ○
- 8 ○
- 9 ○
- 10 ○