



School of Arts and Sciences

CSC 490: Software Engineering

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Little Angels Nursery

By

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Instructor's Evaluation

Dear Professor Haraty,

Thank you for taking the time to fill our evaluation feedback form, we take feedback extremely seriously. Feel free to write any type of comments you wish.

Grade:

PDF Report:

- ☒ Phase I (48.5/50)
- ☒ Phase II (48.5/50)
- ☒ Phase III (45/50)
- ☒ Phase IV

General Comments:

Yours sincerely,
Titan-Tech Solutions.



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I. Preface

This document aims to provide the groundwork for the development of an integrated information system of a nursery, outlining the general needs and providing an overview of the system's structure. Its main objective is to specify the precise features that will be incorporated into the final program, necessitating agreement from the contractor and the client. Additionally, it helps system designers identify pertinent restrictions and clarify implementation specifics. This is the fourth and last version document that all stakeholders are strongly urged to evaluate. This phase consists of the complete project. The focus is shifted towards implementing what the document entails.

II. Introduction



As enterprises across different fields adapt to the advancing digital world, the demand for efficient tech solutions has skyrocketed through the years. However, with the competitiveness and fast-paced nature of the tech industry, more and more software engineering companies are opting to quickly deliver solutions at the cost of the quality and longevity of the software. That is why our team at Titan-Tech Solutions has dedicated itself to providing innovative software solutions measuring up in terms of speed and advancement while also prioritizing the standards and specialized needs of our valuable customers.

Thus, when “Little Angels Nursery” approached us to create a website for their nursery, our first step was to assess their needs and understand their establishment.

As a startup newly entering the childcare field, “Little Angels Nursery” established the need to adopt a technological solution to manage its operations and provide efficient services to parents and children. With aspirations to expand over the coming months, the nursery anticipates managing a substantial amount of data and a staff of employees with different roles and skills and aims to create a notable online presence. To accommodate these goals, we pinpointed the need for a website that:

- properly introduces the mission of our client to its visitors,
- is easily accessible to parents,
- serves as a centralized platform for employee operations,
- efficiently connects the establishment with its customers, and
- organizes and maintains the data of the nursery.

With these taken into consideration, the system design shall encompass the following primary functions:

1. A well-structured web page containing different sections of information about the nursery that visitors can easily recognize and navigate through.
2. The resources needed for parents to contact the nursery and register their children, with easily accessible forms to fill out the needed data.
3. The resources needed for parents to keep up with their children’s education and experiences at the nursery.
4. Scheduling and organizing features needed by the employees to efficiently manage the nursery and handle its data.
5. Features for easy communication between parents and faculty members

Through these functionalities, we ensure the satisfaction of users on different ends of the system, allowing maximal productivity for employees and smooth operations between the customers and the nursery.



III. Glossary

In this glossary, we list major technical and non-technical terms and/or words found with explanations and a brief dictionary.

A. Non-Technical Glossary

1- Digital Literacy

An individual's ability to find, evaluate, and communicate information using typing or digital media platforms. It is a combination of both technical and cognitive abilities in using information and communication technologies to create, evaluate, and share information.

2- WCAG guidelines

The Web Content Accessibility Guidelines are part of a series of web accessibility guidelines published by the Web Accessibility Initiative of the World Wide Web Consortium, the main international standards organization for the Internet. It is organized by four main principles, which state that content must be POUR: Perceivable, Operable, Understandable, and Robust. WCAG guidelines cover a wide range of recommendations for making Web content more accessible for everyone.

3- Student

Any child registered in the nursery.

4- Faculty

Any employee that works at the nursery.

5- Navigation Bar

Element of a website that provides a set of links or buttons for users to navigate and access different sections or pages of the website.

6- Careers

The section of the website where all job listings will be previewed.



7- Curriculum

A structured set of educational experiences designed to facilitate learning and development.

8- Student Progress report

A document summarizing a student's academic performance, including grades, attendance, and comments from teachers or mentors,

9- Account

A personalized profile associated with the student/parent/employee. It involves the email and password in order to log in.

10- Guardian

A guardian is an individual who is legally appointed to make decisions on behalf of another person. In the document, guardian and parent are used interchangeably.

11- Disability Learning

Learning practices that accommodate people with disabilities and may face challenges in an academic setting with the appropriate support.

12- Virtual Learning

It is the use of technology in education.

13- Startup Company

A newly formed business with particular momentum behind it based on perceived demand for its product or service.

14- Centralized Platform

A platform with the ability to connect everyone in a supply chain to one another over a common area of resources, allowing the same information to be accessible by different parties.

15- Technological/Software Solution



A solution that holistically addresses the customer's business needs or problem statement with a set of technology components that are designed, configured, and developed to work in tandem with one another.

B. Technical Glossary

16- Role-based Access Control

A model for controlling access to resources where permitted actions on resources are identified with roles rather than with individual subject identities. [1]

17- Encryption Protocols

It is the process of converting human-readable plaintext to incomprehensible text, also known as ciphertext. [2]

18- Secure Tokenization Methods

Security tokens contain regulatory protocol directly within their coding. This self-contained script is perfect for use in tokenization scenarios. When a token represents ownership rights to a piece of property, revenue sharing, security or other regulated item, security tokens are the only option. [3]

19- User Traffic

Refers to the number of unique individuals who visit a website over a specific period.[4]

20- Customer Satisfaction Score (CSAT)

Indicates how satisfied customers are with a company's products or services.[5]

21- Internet Protocol (IP) Camera

A digital video camera which transmits and receives data over a network or the internet. It is a standalone unit with its own IP address that requires nothing more than a network connection in order to transfer images.[6]

22- .JPG Image Format

Widely used image format that is categorized as “lossy”. It has good compression but no transparency. [7]

23- .PNG Image Format



Widely used image format that is categorized as “lossless”. It has poor compression but can have transparency. [7]

24- IT Support

IT support is about offering assistance to users and the wider organization for technical issues. This will ensure a smooth operation of IT infrastructure. [7]

25- Relational Model

The relational model uses a collection of tables to represent both data and the relationships among those data in. It provides a logical and structured way to manage query data. [8]

26- Primary Key

Used to ensure that data in the specific column is unique and not null. [9]

27- Foreign Key

A column or group of columns in a relational database table that provides a link between data in two tables. [9]

28- Cisco WebEx

A multi-functional desktop video/audio conference call application. [10]

29- Adobe Connect

Adobe Connect preserves the interactive design of your live meetings into recordings. It allows viewers to access web links, download files, and participate in polls, quizzes, and simulations, just like in a live session. [11]

30- Router

A device that connects two or more subnetworks.[12]

31- Data Confidentiality

The protection of data from unauthorized access and disclosure, including means for protecting personal privacy and proprietary information. [13]

32- Data Integrity



A concept and process that ensures the accuracy, completeness, consistency, and validity of an organization's data. [14]

33- Data Availability

Data availability is when an organization ensures that all its business-related data is available to the organization, partners, or end-users at any time of the day, whenever and wherever required. [15]

34- User Authentication

The process of verifying a person's identity before allowing access to a system, application, or network. It requires the user to provide credentials, like username and password, before allowing it access to sensitive data. [16]

35- User Authorization

The mechanism of granting specific permissions to users for accessing resources or functions.
[17]

36- Login Credentials

A set of unique identifiers—such as a username and password—that enables a user to verify identity in order to log in to an online account. [18]

37- Access/Administrator Privileges

The rights and abilities assigned to a specific Authorized User account. [19]

38- Website Administrator

Professional responsible for the design, development, maintenance, and troubleshooting of websites. They ensure a safe and efficient user experience. Responsibilities include implementing security protocols, modifying programs, creating backups, resolving software problems, updating content, and more. [20]

39- CPU



Primary component of a computer that acts as its “control center”. It interprets, processes and executes instructions, most often from the hardware and software programs running on the device. [21]

40- Client-Server Architecture

Architecture of a computer network in which many clients (remote processors) request and receive service from a centralized server (host computer). [22]

41- Layered Architecture

A computer network is defined as a model where a whole network process is divided into various smaller sub-tasks. These divided sub-tasks are then assigned to a specific layer to perform only the dedicated tasks. A single layer performs only a specific type of task. [23]

42- Repository Architecture

A software tool that stores the important architectural input and output, including Architectures themselves. [24]

43- Model View Controller Architecture Design Pattern (MVC)

Architectural design pattern that organizes an application's logic into distinct layers, each of which carries out a specific set of tasks. [25]

44- Use Case Diagram

A use case diagram consists of the system, the related use cases and actors and relates these to each other to visualize: what is being described? (system), who is using the system? (actors) and what do the actors want to achieve? (use cases). [26]

45- Activity Diagram

It is an important behavioral diagram in UML diagram to describe dynamic aspects of the system. Activity diagram is essentially an advanced version of flow chart that modeling the flow from one activity to another activity. [27]

IV. System Architecture

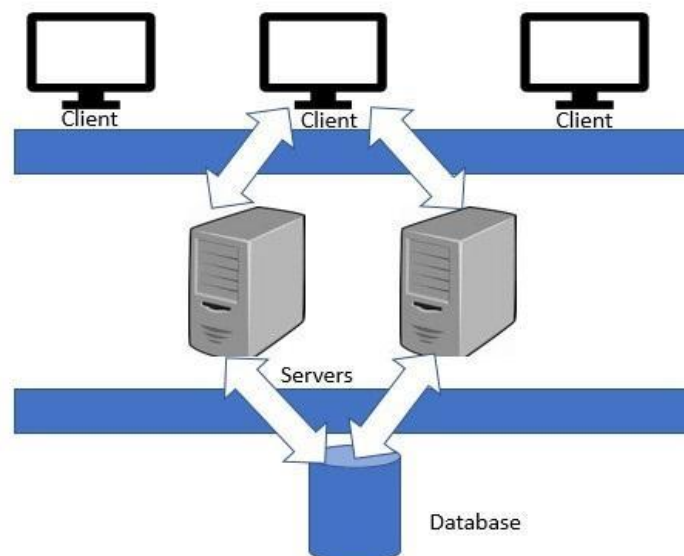


The system architecture of a software provides a high-level overview of the system, the organization of its components, and their interaction with one another. It is one of the first stages of the software design process, where crucial decisions are made about the structure, interfaces, and behavior of the system. It allows stakeholders to have a focus of discussion and analysis of whether the system can meet certain non-functional requirements or not.

A. Client-Server Architecture:

Because our system is a web-based application, we will adopt a client-server architecture.

In client-server systems, the user interacts with a program running on their personal device. This is the client side of the architecture. The interactions lead to requests for resources or services to another program running on a remote computer. This is the server side of the architecture. The server then responds to these requests by providing these resources or services. The communication between the client and server takes place over a network.



In the context of our web-based application, the client-server architecture is as follows:

1. Client Side: The client side consists of web browsers used by general visitors, parents, employees, and the admin to interact with the nursery website on their personal devices.
2. Server Side: The server side consists of a web server that responds to client requests and provides the user with access to the webpage.

Client-server communication takes place as follows:

- General Visitors:



- When a general visitor accesses the main webpage, their web browser sends an HTTP request to the web server.
 - The web server processes this request and retrieves the respective HTML, CSS, and JavaScript files to render the webpage.
 - The web server sends back an HTTP response containing the requested webpage to the visitor's web browser.
 - The web browser receives the response and renders the web page for the user to view.
- Parent/Employee Accounts:
 - Parents and employees can log in to their respective accounts on the nursery website.
 - When the login credentials are entered, their web browser sends the HTTP request containing the credentials to the web server.
 - The web server verifies the credentials against the database.
 - The server authenticates the user and authorizes access to the respective webpage.
 - The server may query the database to retrieve specific data related to the parent's or employee's account, such as student profiles, daily schedules, etc...
 - The server sends back an HTTP response containing the requested data or webpage to the user's web browser.

B. Layered Architecture:

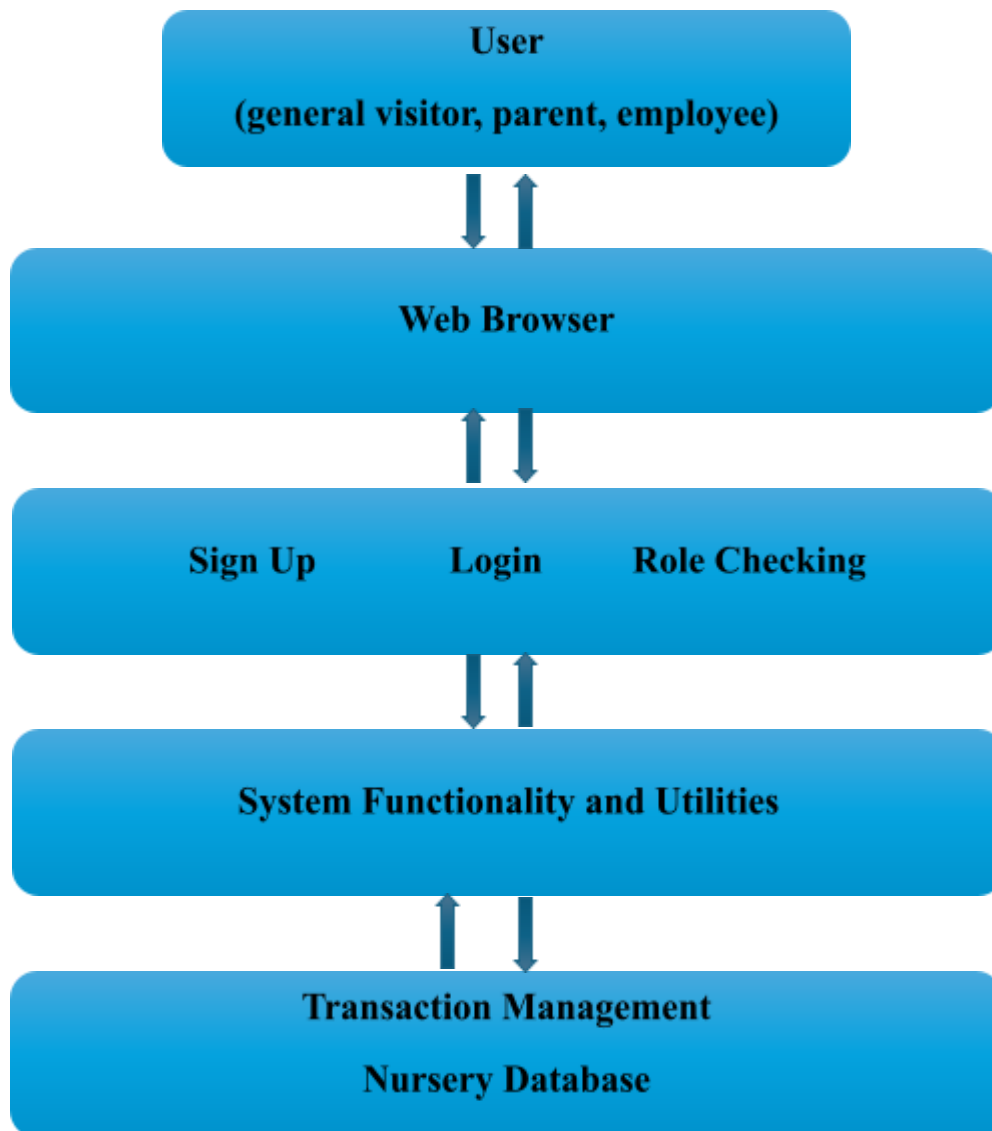
The layered architecture ensures the organization of the system into separate layers, each providing specific functionality, with higher-tier layers making use of the functionalities of lower tiers. The separation of the layers allows independent development and updates happening to an individual layer without affecting other layers, making incremental development of the system possible.

In the context of our web-based application, a multi-tier architecture will be adopted as follows:

- Presentation Layer:
 - It is the outermost layer of the system, accessible to the user through a browser. It is responsible for presenting the user interface for display of information and interaction with the application. It encompasses the visual elements users see and interact with on the webpage. It is primarily concerned with the layout, design, and usability of the application, ensuring an intuitive and engaging user experience for visitors of the website. This layer is developed using HTML, CSS, and JavaScript.
- Authentication and Authorization layer:
 - The second layer of the system ensures the security of the data in the system by managing user authentication and authorization, ensuring that only authorized users can access certain data or tools within the system. It employs role-based access control by verifying the identity of users through their login credentials.
- Business Logic Layer:
 - The third layer encompasses the core functionalities of the system. It manages the various services of the application as well as the presentation and interaction with users, handling tasks such as retrieving and displaying information, processing user requests, and facilitating user engagement. The layer provides access to relevant tools and information based on user roles (parent, employee, admin, etc...)



- **Data Storage Layer:**
 - The lowest layer of the system stores all the data necessary for the system to operate. It encompasses the nursery's database where information related to different user roles, such as login credentials, student information, schedules, etc.... is stored and managed. This layer ensures the integrity and consistency of data, handling tasks such as storage and transactions for retrieval, update, and deletion. The storage layer employs data access methods and queries to facilitate manipulation of information across the website.



- **General Visitor:**



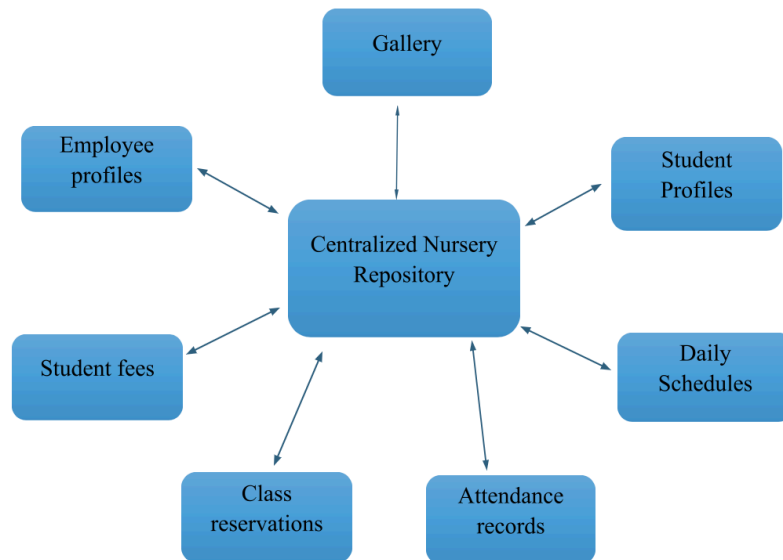
- Presentation Layer: The visitor interacts with the main webpage, viewing information about the nursery, its curriculum, gallery, events and contact details.
- Authentication Layer: authentication is not required for general visitors as they are accessing the main webpage only.
- Business Logic Layer: Handles the rendering of the main webpage, displaying information from the database.
- Data Storage Layer: Stores data related to the nursery's programs, facilities, and other public information accessible to all visitors.
- Parent:
 - Presentation Layer: parents can view the main webpage as well as log in to or sign up for accounts.
 - Authentication Layer: parents enter the credentials (email/password) to access their accounts and view their children's data.
 - Business Logic Layer: After authentication, parents can access profiles of their enrolled children, view updates, check their fees, get access to live footage of the nursery, and book meetings with teachers.
 - Data Storage Layer: Stores parent account information, students' profiles, daily schedules, attendance records, fees, etc...
- Employee:
 - Presentation Layer: employees can access the main webpage and log in to their accounts.
 - Authentication Layer: employees authenticate themselves using credentials provided by the nursery (email/password).
 - Business Logic Layer: employees can access scheduling tools, attendance records, student profiles, reserve classes, etc...
 - Data Storage Layer: Stores employee account information, scheduling data, attendance records, student profiles and other employee-related data.
- Admin:
 - Presentation Layer: the admin can access the main webpage as well as log into their account.
 - Authentication Layer: Admins authenticate themselves using special admin credentials.
 - Business Logic Layer: Admins have access to tools for managing user accounts, updating website content, monitoring activities.
 - Data Storage Layer: Contains all employee and student related data, credentials, admin account information, audit logs, website configuration data, etc...

C. Repository Architecture:



In Repository Architecture, large volumes of data are centralized in a repository which is accessed by different components of the system, which interact indirectly with one another through the repository.

In the context of our web-based application, the repository architecture shall be implemented as follows:



D. Model View Controller Architecture Design Pattern:

For this system, a model view controller (MVC) system is used. This partitions the system into the following:

1. Model:

a. Database:

This section will handle the querying of the database, whether it be a Select, Update or Delete operation. This will be accessed through:

- Student's profiles where their information is stored.
- Employee's profiles where their information is stored.
- Finances of the parents through the accounts.
- Student attendance records.
- Meeting slots for parents and teachers on a calendar system.

b. Business Logic:

This section will handle the logic of the data. Meaning, the validation of the data will be assessed here. For example, this section will be ensuring the finances are handled accordingly and by deadlines.

2. View:



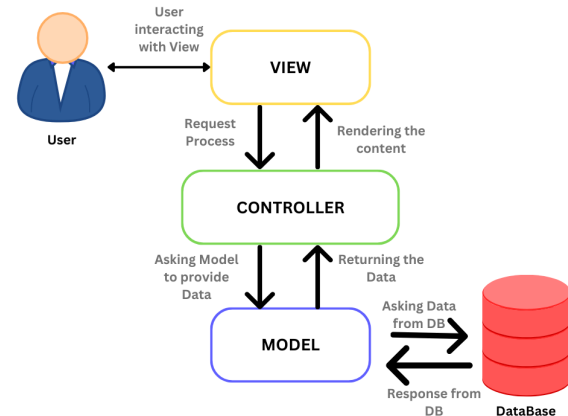
This section will handle the presentation of the data found in the model and is seen by the user. This will be using Hyper Text Markup Language (HTML), Cascading Style Sheets (CSS), and JavaScript (JS). The user interface will include:

- A sign in/up page,
- A homepage with all the information about the nursery,
- A careers page with all the vacancies,
- An account for the student which tracks their progress,
- An account for the teacher where they input the student's progress,
- A calendar with time slots to book meetings with teachers,
- A live feed of the classroom accessed through the accounts of the parents,

3. Control:

As in the figure below, the controller acts as an intermediate layer between the view and the model, translating instructions. The controller seemingly “understands” what the user is inputting and translating it to the model. This is seen through:

- The various links that redirect to different pages (e.g. Sign in/up or Contact Us),
- Buttons that submit information when enrolling a student.



V. User Requirement Definition

- The system shall have a navigation bar that links to the sections of “About Us”, “Contact Us”, “Gallery”, “Curriculum”, “Events”, and “Careers”.
- The system shall have a “Sign In/Up” link that redirects the user to a different page.
- The system shall have different sign in menus for employees and students.
- The system shall provide information about the faculty on the homepage.
- For enrolled children, the system shall allow parents to check progress and access the child's information.
- The system shall have a tool for teachers to display the progress of their children.
- The system shall have an attendance tracking system accessed by teachers and parents.
- The system shall allow the parent to book meetings with the teachers.
- The system shall allow the parents to receive IT support in case of an issue.
- The system shall allow the parents to monitor their children through a live feed.
- The system shall allow the parents to access the tuition fees through the student account.
- The system shall allow administrators to upload images to the website.
- The system shall have a tool for teachers to schedule classes and rooms for activities.



VI. System Requirements Specification

A. Functional Requirements:

Homepage functionality:

- The homepage shall display a navigation bar at the top which will lead to different sections of the **same** page. The options include:
 1. About us: A brief history of the nursery and a “Meet the Faculty” section shall be previewed here.
 2. Sign Up/Sign In: An account shall be created/accessed by the parent.
 3. Gallery: Images shall be uploaded by the administrator here.
 4. Careers: Available jobs shall be listed here. Applying shall redirect the applicant to the HR email.
 5. Contact us: All contact information and the location shall be listed here.
 6. Curriculum: Detailed information about the nursery’s curriculum shall be provided here. This includes teaching methods and learning objectives.
 7. Events: Employees shall have the ability to manage events hosted by the nursery. Users shall be able to view a calendar of upcoming events and register for participation if applicable.

Parent/Student Requirements:

- The system shall allow the parent to register for an account with a valid email and password. If an account already exists, the parent can use the credentials to log in.
- The password shall consist of eight characters.
- The system shall allow the parent to access the statement of fees of enrollment and tuition. The system shall allow the parent to print this.
- The system shall display available meeting hours for teachers. Parents shall be able to request and will be notified of the request status.
- The system shall display their child(ren)’s schedule and progress reports.
- The system shall allow the parent to contact IT support in case of a technical issue.
- The parent shall be able to access live footage of the classes during working hours (8:00AM-2:00PM).



Teacher Requirements:

- The system shall allow the teacher to update the student profile according to progress.
- The system shall allow the teacher to mark attendance to classes.
- The system shall allow teachers to produce daily schedules of classes and activities for students and post them for parents to view. The layout of the schedule shall be segmented according to the working hours of the nursery (8:00AM-2:00PM, including breaks between classes) where teachers will be able to insert data about classes and activities into the time slots.
- The system shall allow teachers to reserve rooms and outdoor areas for activities.
- Once the area is reserved, it shall be displayed as reserved on the schedule for the assigned period of time.
- The teacher shall be identified with a unique ID of eight digits.
- The teacher shall submit daily reports of the progress of each child and the criteria is:
 - Excellent
 - Very Good
 - Good
 - Needs Improvement

Administrator Requirements:

- The system shall allow the administrator full access to all of the following:
 - Add/Delete user accounts.
 - Reset passwords.
 - Edit website content.
 - Upload images to the gallery.
 - View all employee profiles.
 - Full Name
 - Photograph
 - Date of Birth
 - Address
 - Phone Number
 - Email
 - Emergency Contact



- Position
- Holding Degree
- View all student profiles:
 - Full Name
 - Photograph
 - Date of Birth
 - Address
 - Emergency Contact
 - Class
 - Health Record
 - Enrollment Status
 - Transportation
- The administrator shall be identified with a unique ID of eight digits.

Gallery Management:

- Administrators shall be able to upload, organize, and manage photos in the gallery section of the website.
- Employees shall be able to submit media content to the administrators to post to the gallery section.
- Users shall have the ability to browse through the gallery and view all uploaded photos, videos, and documents.
- The format of the images shall be .PNG or .JPG.
- The user shall have the option to click on an image to display in full view.

Contact Information:

- The system shall display contact information of the nursery:
 - Email Address
 - Phone Number
- The system shall display the location through Google Maps.



B. Non-Functional Requirements:

Performance:

- The system shall react to user requests within three seconds or less, allowing them to easily obtain information and complete tasks easily.
- The system shall be able to handle at least 500 users simultaneously without experiencing any performance reduction.
- The system shall refresh and display updated analytics of its content within 10 seconds of receiving new data.

Security:

- The system shall abide by the nursery's data protection regulations and policies and guarantee the confidentiality, integrity, and availability of user data.
- The system shall implement role-based access control to guarantee that users can access information and services pertinent to their roles.
- The system shall ensure that the user authentication and authorization processes are secure and shall make use of encryption protocols and secure tokenization methods to protect user credentials and sensitive information.
- The system shall assign data access privileges to administrators only.

Portability:

- The system shall function with a variety of web browsers, including the most recent iterations of Apple Safari, Microsoft Edge, Firefox, and Google Chrome.
- The system shall be capable of running on different operating systems such as Windows, macOS and Linux without any modifications.
- The system shall be usable and accessible from a variety of devices, including desktop computers and mobile devices, using the platform of their choice.

Scalability:

- The system shall be able to handle a 30 percent increase in user traffic during the back-to-school period without any degradation in response time or service availability.
- The system shall scale horizontally to handle 30 percent of users increase within 20 minutes.

Reliability:



- Financial transactions shall be processed with 100 percent accuracy.
- The system shall be capable of handling and recovering from errors with data loss or faulty data processing.
- The system shall function without failure in 95 percent of use cases during a month.

Usability:

- The staff shall be trained in using the system's resources and features effectively in a short period of time.
- The website shall comply with the WCAG guidelines to accommodate users with different disabilities to be able to equally perceive, navigate, and interact with the website and its features.

Size:

- The website should have sufficient storage capacity to accommodate all requirements and features, ranging between 500 MBs and 1 GB

Development:

- The website shall be developed using HTML, CSS, and JavaScript for the front end.

Structure and Design:

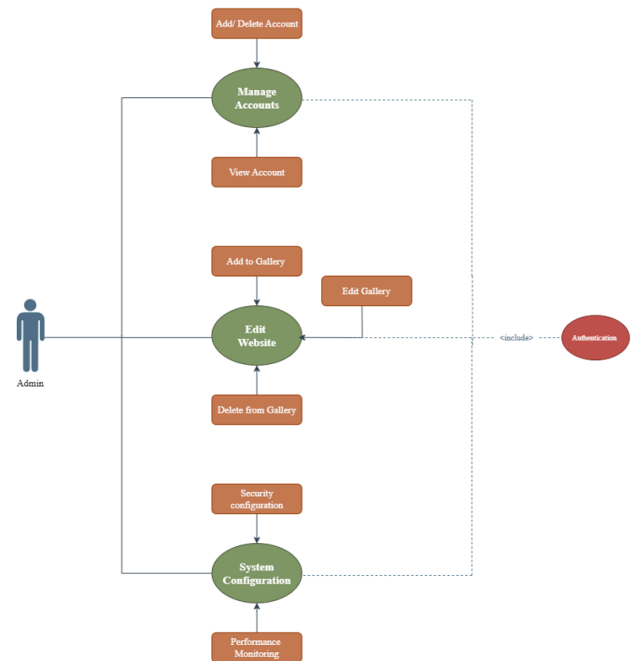
- The website shall emulate the nursery's brand identity and vibrant friendly aesthetic within its visual theme using appealing icons, multimedia, and color scheme.
- The website shall be designed with the following features to accommodate varying levels of digital literacy for users, especially for tools to be used by employees for daily tasks:
 - Navigation menus shall be straightforward, with easily recognizable links. Users should be able to find target sections quickly.
 - A consistent layout shall be maintained across pages. Elements such as headers, footers, and sidebars should appear predictably.
 - Advanced options shall be displayed through navigation menus such as drop down menus to avoid overwhelming users with too many choices upfront.
- The structure of the scheduling features of the system should align with the nursery's working hours and daily/weekly schedule for classes and activities. Staff shall be able to upload and update schedules, events, and holiday closures ensuring parents have real-time access to the latest information



VII. System Models

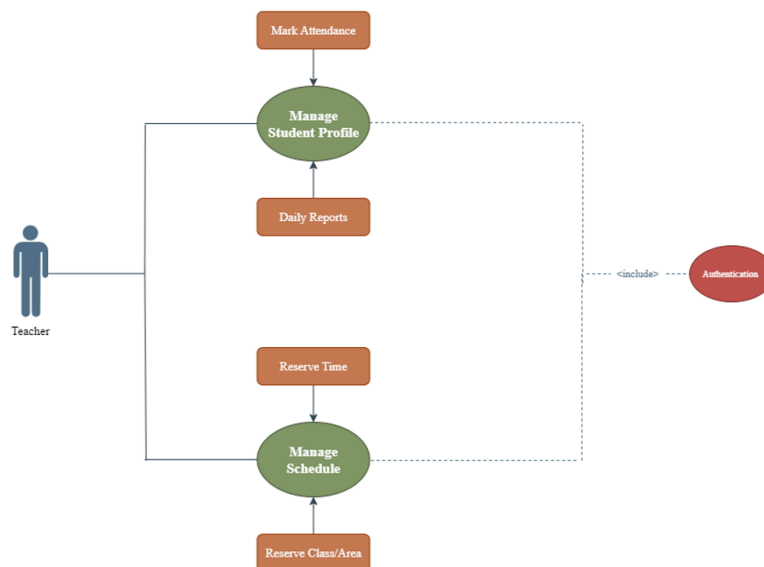
A. Use Case Diagram of Administrator

Administrators can manage accounts whether to view the information or edit it. The administrator may also edit the website through adding and deleting images to the gallery. The administrator can configure the system through implementing security measures or monitoring the performance, ensuring no overhead takes place.



B. Use Case Diagram of Teacher

Teachers can manage their students' profiles by marking attendance and submitting daily reports. They may also reserve a place and time for their class or activity. Any of these actions will require authentication.

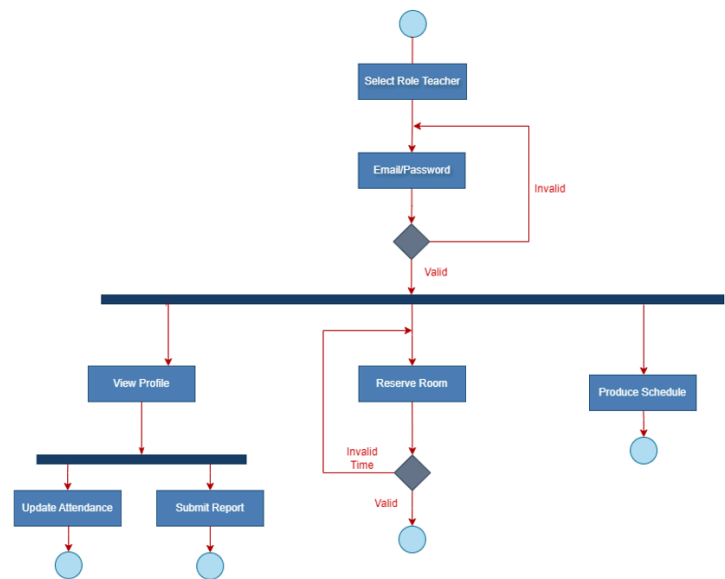




B. Activity Diagram of Teacher

The teacher must choose the “Teacher” role and input their email and password. If they pass authentication, they are able to do the following:

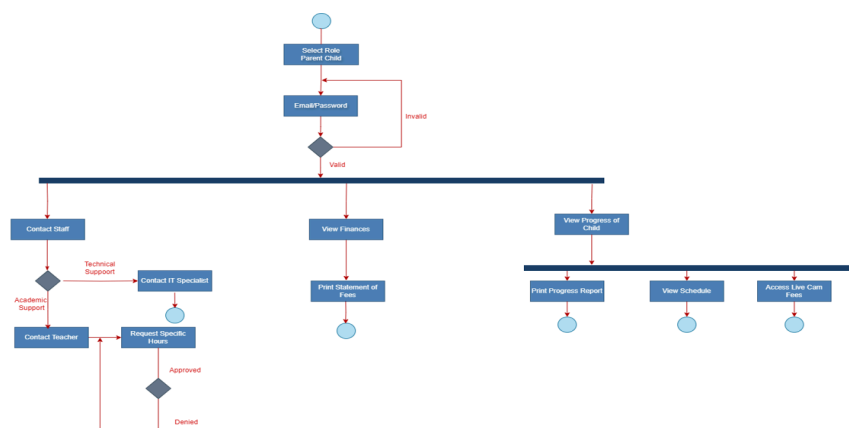
- View Profiles: This is limited to student profiles and not other employees. They are able to update attendance and submit progress reports that are reflected for parents.
- Produce Schedules.
- Reserve Rooms: The time slots must be valid within working hours and not already reserved.



C. Activity Diagram of Parent/Student

The parent/student must choose the “Parent/Student” role and input their email and password. If they pass authentication, they are able to do the following:

- Contact Staff: The parent may contact a teacher where specific hours may be requested for a meeting. If approved the meeting is scheduled, else the parent must request different hours. The parent may also contact IT support in case of a technical issue.
- View Finances: The parent may print the statement of fees of tuition and enrollment.
- View Student Progress: The parent and student may view the progress of the child by printing the progress report shared by the teacher, viewing their schedule and accessing the live camera feed provided by the nursery.





VIII. System Evolution

Titan-Tech Solutions has been pioneering the software development field today. At Titan-Tech Solutions, it is with great pleasure that we share that our Customer Satisfaction Score (CSAT) has been higher than ever due the cutting edge technology produced here. That being said, in order to keep our products reliable, we must understand that yesterday's technology is not the same as today's. Due to our commitment to a reliable and long-lasting product, we must discuss the possible plans we may set for this system.

The nursery business may expand into a kindergarten or possibly a school eventually. For this reason, the design must leave room for expansion. Accordingly, we may have more roles with different functionalities. This would mean different admins would be in charge of different departments of the business. In return, this would broaden the careers section on the website where a filter section may be implemented to make job hunting easier. The system may also expand to accommodate for disability learning. This will also play a hand in the website as the registration will be much more specific. The system must be ready to ask and store more details for students with disabilities.

Due to the rise of virtual learning, the system must be ready to implement all distance learning approaches into the website. This could be through third party applications such as Cisco WebEx or Adobe Connect. Accordingly, the teachers will need direct communication with parents and increased monitoring on the skills. Due to this, the system must be ready to implement a direct communication channel within the website, connecting the accounts of the students/parents with the teacher. Along with virtualized learning, we must approach virtualized tours. All processes may be digitized eventually with an increasingly technology reliant world, all of which the system must take into consideration.

Promotion of various topics and events will take up a great deal of the evolving software. With time, different topics are covered with children at that age and the software must be ready to have the theme altered. For example, if the nursery is approaching the year with a "Go Green" motto, the events and theme of the website must match accordingly.

Just like the system, the curriculum will be evolving just as fast. This means the system must be equipped and organized in a manner that the description of the curriculum on the website must be changed and reflected. Along with this, the teachers' access to the curriculum through their accounts must be reflected accordingly.

With ever-evolving technology, Titan-Tech Solutions have been able to provide ever-evolving solutions. This ensures a long life-span of the product and a pleased customer.



IX. Appendix

A. Database Requirements:

The relational model outlined in this section is integral to the architecture of our nursery management system, addressing the diverse needs of parents, students, employees, and administrators. This model is designed to organize and manage vast amounts of data efficiently, ensuring seamless interaction and data retrieval within the nursery's digital infrastructure. In a nursery setting, the complexities of managing student records, parent communications, financial transactions, employee information, and class schedules demand a structured database system. Below, we present the relational model that underpins our database.





Parent (ParentID, Fname, Lname, Email, Password, PhoneNum, Address)

Finances (ReceiptID, Statement, Total, ParentID)

Student (StudentID, ParentID, Fname, Lname, Photograph, DOB, Gender, EnrollmentStatus, ClassNum, EmergencyContact, Transportation)

Health_Records (RecordID, StudentID, Allergies, Conditions, InsuranceProvider, Medication)

Employee (EmployeeID, Fname, Lname, Photograph, DOB, Address, PhoneNum, Email, Password, Position, EmergencyContact, Salary, HoldingDegree)

Class (ClassNum, Name, EmployeeID)

Reservation (ReserveID, EmployeeID, ParentID, StudentID, ClassNum, StartTime, Status)

Attendance (Date, StudentID, Binary)

Relational Model:

1. Parent: Stores data about the primary key ("ParentID"), full name ("Fname" and "Lname"), the email and password used on registration ("Email" and "Password"), the contact number ("PhoneNum"), and the address ("Address").
2. Finances: Stores data about the primary key ("ReceiptID"), the statement of fees indicating how much is owed to the nursery ("Statement"), and the initial total tuition ("Total"). A foreign key attribute is found that links the parent to the finances entity (through "ParentID").
3. Student: Stores data about the primary key ("StudentID"), the full name ("Fname" and "Lname"), a photograph of the student ("Photograph"), date of birth ("DOB"), gender ("Gender"), the status of enrollment (In Progress or Student) ("EnrollmentStatus"), Transportation (Bus or Guardian) ("Transportation"). Foreign key attributes that link the student to the parent (through "ParentID"), the student to the class (through "ClassNum"), and the student to the parent's phone number (through "EmergencyContact").

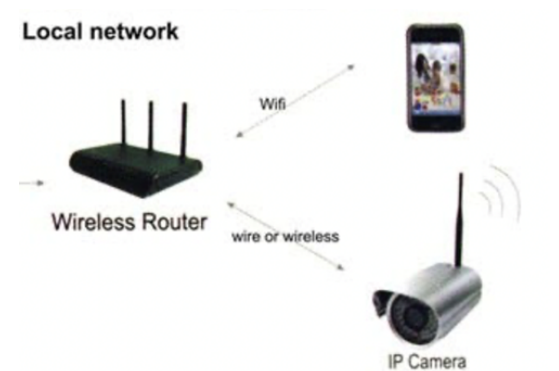


4. Health_Records: Stores data about the primary key (“RecordID”), allergies, conditions, insurance provider, and medication if any (“Allergies”, “Conditions”, “InsuranceProvider”, and “medication” respectively). A foreign key attribute is found that links the health record to the student (through “StudentID”).
5. Employee: Stores data about the primary key (“EmployeeID”), the full name (“Fname” and “Lname”), a photograph of the employee (“Photograph”), the date of birth (“DOB”), the address (“Address”), the contact information (“PhoneNum” and “Email), a password for registration (“Password”), the position (admin or teacher) (“Position”), an emergency contact (“EmergencyContact”), the salary (“Salary”), and the last degree acquired (“HoldingDegree”).
6. Class: Stores data about the primary key (“ClassNum”) and the name of the class (“Name”). A foreign key attribute is found that links the class to the teacher present in it (through “EmployeeID”).
7. Reservation: Stores data about the primary key (“ReserveID”), the start time of the meeting (“StartTime”), and the status of the meeting confirmation (Approved or Not Approved) (“Status”). Foreign key attributes that link the meeting reservation to the teacher, parent, and student (through “EmployeeID”, “ParentID”, and “StudentID” respectively) and the meeting reservation to the location (through “ClassNum”).
8. Attendance: is a weak entity type that stores data about the combination of a partial key (“Date”) and the primary key of Student (“StudentID”) that also serve as the primary key of Attendance, the attribute (“Binary”) mark if the student is present or not (1 for present and 0 for absent).



B. Hardware Requirements:

The system shall be ready to implement camera footage of the live feed of the nursery during working hours. For this, an internet protocol (IP) camera will be used. The IP camera will be transmitting surveillance video signals. It is connected to a router which will display the video on the website over the network. This will be done using an IP camera simulator.



C. Codes:

The code files can be found in the following link:
<https://github.com/kamaldbouk/NurserySystem>

X. Test Cases

Test Case Template	
Test Case ID: 001	Test Designed by: Kamal Dbouk
Test Priority (Low/Medium/High): Medium	Test Designed Date: 05/05/2024
Module Name: Navigation Bar	Test Executed by:
Test Title: About Us User View Test	Test Execution Date:
Description: The user must be able to access the “About Us” to learn about the history of the organization.	
Pre-conditions: <ul style="list-style-type: none">The appropriate information must be provided by the organization. The system must ensure all details are present.	



Dependencies:						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Navigate to the “About Us” link.		The page jumps to the “About Us” section where the appropriate information is found.			
Post-conditions:						

Test Case Template						
Test Case ID: 002			Test Designed by: Kamal Dbouk			
Test Priority (Low/Medium/High): Medium			Test Designed Date: 05/05/2024			
Module Name: Navigation Bar			Test Executed by:			
Test Title: Gallery User View Test			Test Execution Date:			
Description: Ensure that users are able to view the images in a grid view and click on the image they desire to expand to see in full view.						
Pre-conditions: Administrator must upload the images that they wish to be reflected on the website.						
Dependencies: <ul style="list-style-type: none">● The system is preloaded with the images.						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Navigate to the “Gallery” Section	Pre-loaded images into the website.	The page jumps to the “Gallery” section			



			where a grid view of the images is found.			
2	Click on any image.	Any image from the grid view.	The image will enlarge and cover the page.			
3	Click on the image again.	The image that was clicked on.	The page will return to grid view.			
Post-conditions:						

Test Case Template						
Test Case ID: 003				Test Designed by: Kamal Dbouk		
Test Priority (Low/Medium/High): High				Test Designed Date: 05/05/2024		
Module Name: Navigation Bar				Test Executed by:		
Test Title: Correct Careers User View Test				Test Execution Date:		
Description: The organization will collect applications for job opportunities here.						
Pre-conditions: <ul style="list-style-type: none">The system is preloaded with job vacancies. If none, an email may be sent.						
Dependencies: Database connectivity for resume storage.						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Navigate to the “Careers” section.	Pre-loaded job vacancies.	The page will jump to the “Careers” section where job vacancies			



			are listed.			
2	Select from the drop down menu to which vacancy they wish to apply to.	Drop down menu with all vacancies.	The vacancy is selected and the rest of the fields are ready to be filled.			
3	Add the information.	Users provide their full name in letters only, their valid email address, and a .PDF or .DOCX scan of their resume.	The application is successfully received.			
Post-conditions: The applicant's resume is received by the company.						

Test Case Template						
Test Case ID: 004			Test Designed by: Kamal Dbouk			
Test Priority (Low/Medium/High): High			Test Designed Date: 05/05/2024			
Module Name: Navigation Bar			Test Executed by:			
Test Title: Incorrect Careers User View Test #1			Test Execution Date:			
Description: The organization will collect applications for job opportunities here. We are testing for an incorrect input of name in this case.						
Pre-conditions: <ul style="list-style-type: none">The system is preloaded with job vacancies. If none, an email may be sent.						
Dependencies: Backend connectivity for resume storage.						
Step	Test Steps	Test Data	Expected	Actual	Status	Notes



			Result	Result	(P/F)	
1	Navigate to the “Careers” section.	Pre-loaded job vacancies.	The page will jump to the “Careers” section where job vacancies are listed.			
2	Select from the drop down menu to which vacancy they wish to apply to.	Drop down menu with all vacancies.	The vacancy is selected and the rest of the fields are ready to be filled.			
3	Add the information.	Users provide their full name, adding a number in their name, their valid email address, and a .PDF or .DOCX scan of their resume.	The application is not received. The user is met with an error message that indicates to enter a valid name.			
Post-conditions:						

Test Case Template	
Test Case ID: 005	Test Designed by: Kamal Dbouk
Test Priority (Low/Medium/High): High	Test Designed Date: 05/05/2024
Module Name: Navigation Bar	Test Executed by:
Test Title: Incorrect Careers User View Test #2	Test Execution Date:
Description: The organization will collect applications for job opportunities here. We are testing for an incorrect input of email in this case.	



Pre-conditions: <ul style="list-style-type: none">• The system is preloaded with job vacancies. If none, an email may be sent.						
Dependencies: Backend connectivity for resume storage.						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Navigate to the “Careers” section.	Pre-loaded job vacancies.	The page will jump to the “Careers” section where job vacancies are listed.			
2	Select from the drop down menu to which vacancy they wish to apply to.	Drop down menu with all vacancies.	The vacancy is selected and the rest of the fields are ready to be filled.			
3	Add the information.	Users provide their full name, in letters only, an invalid email address that does not contain a “@”, and a .PDF or .DOCX scan of their resume.	The application is not received. The user is met with an error message that indicates to enter a valid email.			
Post-conditions:						



Test Case Template						
Test Case ID: 006			Test Designed by: Kamal Dbouk			
Test Priority (Low/Medium/High): High			Test Designed Date: 05/05/2024			
Module Name: Navigation Bar			Test Executed by:			
Test Title: Incorrect Careers User View Test #3			Test Execution Date:			
Description: The organization will collect applications for job opportunities here. We are testing for an incorrect input of a resume in this case.						
Pre-conditions: <ul style="list-style-type: none">• The system is preloaded with job vacancies. If none, an email may be sent.						
Dependencies: Backend connectivity for resume storage.						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Navigate to the "Careers" section.	Pre-loaded job vacancies.	The page will jump to the "Careers" section where job vacancies are listed.			
2	Select from the drop down menu to which vacancy they wish to apply to.	Drop down menu with all vacancies.	The vacancy is selected and the rest of the fields are ready to be filled.			
3	Add the information.	Users provide their full name, adding a number in their name,	The application is not received. The user is met with an			



		their valid email address, and a scan other than .PDF or .DOCX of their resume.	error message that indicates to enter a resume with the format PDF or DOCX.			
Post-conditions:						

Test Case Template						
Test Case ID: 007			Test Designed by: Kamal Dbouk			
Test Priority (Low/Medium/High): High			Test Designed Date: 05/05/2024			
Module Name: Navigation Bar			Test Executed by:			
Test Title: Correct Contact User View Test			Test Execution Date:			
Description: The user must be able to find all contact details and locations in this section.						
Pre-conditions: <ul style="list-style-type: none">System is preloaded with appropriate information.						
Dependencies:						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Navigate to the “Contact Us” section.		The page will jump to the “Contact Us” section where a form to input your email and message is found. Along with the location			



			of the organization			
2	Input the message and a valid email address.	Users will provide an email address and their message.	The message is successfully sent as an email.			
Post-conditions: The user will have their message delivered to the company provided email address.						

Test Case Template						
Test Case ID: 008			Test Designed by: Kamal Dbouk			
Test Priority (Low/Medium/High): High			Test Designed Date: 05/05/20204			
Module Name: Navigation Bar			Test Executed by:			
Test Title: Incorrect Contact User View Test #1			Test Execution Date:			
Description: The user must be able to find all contact details and locations in this section. In this case, we are testing for an invalid email address.						
Pre-conditions: <ul style="list-style-type: none">System is preloaded with appropriate information.						
Dependencies:						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Navigate to the “Contact Us” section.		The page will jump to the “Contact Us” section where a form to input your email and message is			



			found. Along with the location of the organization .			
2	Input the message and an invalid email address.	Users will provide an invalid email address.	The system will display an error message and it will not be sent.			
Post-conditions:						

Test Case Template						
Test Case ID: 009			Test Designed by: Kamal Dbouk			
Test Priority (Low/Medium/High): High			Test Designed Date: 05/05/20204			
Module Name: Navigation Bar			Test Executed by:			
Test Title: Incorrect Contact User View Test #2			Test Execution Date:			
Description: The user must be able to find all contact details and locations in this section. In this case, we are checking for an empty message.						
Pre-conditions: <ul style="list-style-type: none">• System is preloaded with appropriate information.						
Dependencies:						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Navigate to the “Contact Us” section.		The page will jump to the “Contact Us” section where a form to			



			input your email and message is found. Along with the location of the organization .			
2	Input a valid email address and no message.	Users will provide an email address.	The system will display an error message and it will not be sent.			
Post-conditions:						

Test Case Template						
Test Case ID: 010				Test Designed by: Kamal Dbouk		
Test Priority (Low/Medium/High): Medium				Test Designed Date: 05/05/2024		
Module Name: Navigation Bar				Test Executed by:		
Test Title: Curriculum User View Test				Test Execution Date:		
Description: This page will only provide information about the curriculum of the organization.						
Pre-conditions: <ul style="list-style-type: none">The system is preloaded with the appropriate information.						
Dependencies:						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Navigate to the “Curriculum” section.		The page will jump to the “Curriculum			



			” section where all the information revolving the method of teaching is found.			
Post-conditions:						

Test Case Template						
Test Case ID: 011			Test Designed by: Kamal Dbouk			
Test Priority (Low/Medium/High): Medium			Test Designed Date: 05/05/2024			
Module Name: Navigation Bar			Test Executed by:			
Test Title: Events User View Test			Test Execution Date:			
Description: Ensure that the system displays all events on a calendar in a clear interface.						
Pre-conditions: <ul style="list-style-type: none">All information about a certain event is preloaded into the system.						
Dependencies:						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Navigate to the “Events” section.		The page will jump to the “Events” section where a calendar with the events on it can be found.			
2	Select an event.	The event selected by	More details shall be			



		the user.	shown in full view.			
3	Click on the event again.	The event in full view.	The details will disappear and the calendar view returns.			
Post-conditions:						

Test Case Template						
Test Case ID: 012			Test Designed by: Kamal Dbouk			
Test Priority (Low/Medium/High): High			Test Designed Date: 05/05/2024			
Module Name: User Authentication			Test Executed by:			
Test Title: Correct Parent/Student Sign In Authentication			Test Execution Date:			
Description: The parents must be able to sign in/up into their student’s account.						
Pre-conditions: <ul style="list-style-type: none">To sign in, the credentials must be valid.						
Dependencies:						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Navigate to the “Sign In/Up” section.		The page will redirect to a page that lists the options of “I am a: Student/Parent, Teacher, and			



			Administrator”.			
2	Click on the “Student/Parent” icon.		The page will allow them to have two options, “Sign In” or “Sign Up”, with the “Sign In” being the default.			
3	Enter the valid credentials.	User will input a valid email that is registered in the system with the corresponding password.	The page will successfully log into the student profile where all information can be accessed.			
Post-conditions: The parent/student now has full access to the student’s account and information.						

Test Case Template	
Test Case ID: 013	Test Designed by: Kamal Dbouk
Test Priority (Low/Medium/High): High	Test Designed Date: 05/05/2024
Module Name: User Authentication	Test Executed by:
Test Title: Incorrect Parent/Student Sign In Authentication #1	Test Execution Date:
Description: The parents must be able to sign in/up into their student’s account. In this case, we are testing an unregistered email.	
Pre-conditions: <ul style="list-style-type: none">• To sign in, the credentials must be valid.	
Dependencies:	



Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Navigate to the “Sign In/Up” section.		The page will redirect to a page that lists the options of “I am a: Student/Parent, Teacher, and Administrator”.			
2	Click on the “Student/Parent” icon.		The page will allow them to have two options, “Sign In” or “Sign Up”, with the “Sign In” being the default.			
3	Enter the credentials.	User will input an unregistered email address and a password.	The system will display an error message that this is an invalid email address.			
Post-conditions:						

Test Case Template	
Test Case ID: 014	Test Designed by: Kamal Dbouk



Test Priority (Low/Medium/High): High			Test Designed Date: 05/05/2024			
Module Name: User Authentication			Test Executed by:			
Test Title: Incorrect Parent/Student Sign In Authentication #2			Test Execution Date:			
Description: The parents must be able to sign in/up into their student’s account. In this case, we are testing an invalid password.						
Pre-conditions: <ul style="list-style-type: none">To sign in, the credentials must be valid.						
Dependencies:						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Navigate to the “Sign In/Up” section.		The page will redirect to a page that lists the options of “I am a: Student/Parent, Teacher, and Administrator”.			
2	Click on the “Student/Parent” icon.		The page will allow them to have two options, “Sign In” or “Sign Up”, with the “Sign In” being the default.			
3	Enter the credentials.	User will input an email address that is registered in the	The system will display an error message that this is the incorrect			



		system and an incorrect password.	password.			
Post-conditions:						

Test Case Template						
Test Case ID: 015			Test Designed by: Kamal Dbouk			
Test Priority (Low/Medium/High): High			Test Designed Date: 05/05/2024			
Module Name: Reliability			Test Executed by:			
Test Title: Validating Financial Transactions			Test Execution Date:			
Description: Financial transactions must be handled with 100% accuracy.						
Pre-conditions: The financial transactions done by parents.						
Dependencies:						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	The system will be running 100 financial transactions.	100 financial transactions are done for 100 different students.	100% accuracy in the transactions.			
Post-conditions: Tuitions may be dealt with safely and accurately.						

Test Case Template	
Test Case ID: 016	Test Designed by: Mohammad Hijazi
Test Priority (Low/Medium/High): Medium	Test Designed Date: 10/04/2024



Module Name: Student Profiles				Test Executed by:		
Test Title: Updating Student Profiles				Test Execution Date:		
Description: Test the functionality that allows the teacher to update the student profiles.						
Pre-conditions: <ul style="list-style-type: none"> • The teacher must be successfully logged into the system. • The student must have a profile uploaded to the system. 						
Dependencies:						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Navigate to the student profiles section of the system.	Student Profile.				
2	Select the student profile to be updated					
3	Update the information regarding the student's progress in the nursery.	Student progress reports.	The system allows the teacher to update the information.			
4	Confirm and Save the changes to the system.					
Post-conditions: The system displays the updated information on the student profile and the changes are logged in the database.						

Test Case Template	
Test Case ID: 017	Test Designed by: Mohammad Hijazi
Test Priority (Low/Medium/High): Medium	Test Designed Date: 10/04/2024



Module Name: Attendance Sheets				Test Executed by:		
Test Title: Testing Class Attendance Marking				Test Execution Date:		
Description: Test the functionality that allows the teacher to mark student attendance in classes.						
Pre-conditions: <ul style="list-style-type: none">• The teacher must be successfully logged into the system.• A class must be scheduled at a specific date and time.• Students who are supposed to attend the class must be listed.						
Dependencies:						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Navigate to the attendance marking section of the system.	Scheduled Class date and time.				
2	Select the class based on the respective date and time.					
3	Mark the attendance of the student (present/absent).		The system shall allow the teacher to mark the attendance of the student as present or absent.			
4	Confirm and save the changes to the system.		The status of the attendance is displayed next to the student's name.			
Post-conditions: The system displays the marked attendance of the particular student to the respective						



class date and time, the attendance is logged in the database.

Test Case Template						
Test Case ID: 018			Test Designed by: Mohammad Hijazi			
Test Priority (Low/Medium/High): Medium			Test Designed Date: 10/04/2024			
Module Name: Class Schedules			Test Executed by:			
Test Title: Testing Schedule Creation			Test Execution Date:			
Description: Testing the functionality that allows the teacher to create a class schedule for classes and activities using the system's scheduling tool						
Pre-conditions: The teacher must be successfully logged in to the system.						
Dependencies:						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Navigate to the scheduling tool in the system.					
2	Fill in the data regarding classes and activities into the provided time slots.	The teacher must be able to insert data to the respective time slot of the class/activity.				
3	Confirm and save the changes to the system.					
Post-conditions: The produced schedule is displayed on the system and logged into the database.						



Test Case Template						
Test Case ID: 019			Test Designed by: Mohammad Hijazi			
Test Priority (Low/Medium/High): High			Test Designed Date: 10/04/2024			
Module Name: Class Reservation			Test Executed by:			
Test Title: Testing Class Reservation			Test Execution Date:			
Description: Testing the functionality that allows the teacher to reserve an available class for a specific date and time on the system.						
Pre-conditions: <ul style="list-style-type: none"> The teacher must be successfully logged into the system. The class must be available for reservation on the specified date and time. 						
Dependencies:						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Navigate to the class reservation section of the system.					
2	Select the class/outdoor area to be reserved as well as the date and time of reservation.	The date and time of reservation.	Class must be displayed as available for reservation.			
3	Click on the reservation option and insert the reason for the reservation.		The status of the class must switch from available to reserved.			
4	Confirm and save the changes to the system.					



Post-conditions: The system must display the class as reserved for all teacher accounts at the specified date and time.

Test Case Template						
Test Case ID: 020			Test Designed by: Mohammad Hijazi			
Test Priority (Low/Medium/High): High			Test Designed Date: 10/04/2024			
Module Name: Employee Identification			Test Executed by:			
Test Title: Testing employee identification by employee ID			Test Execution Date:			
Description: Testing the functionality that allows the teacher to log in and be identified by their employee ID.						
Pre-conditions: <ul style="list-style-type: none">• The teacher must be assigned an 8 digit employee ID by the nursery.						
Dependencies: The username and ID of the employee must be logged into the database						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Navigate to the teacher login page					
2	Fill in the username and ID of the employee	Employee username and eight-digit ID				
3	Click on the login button.		The employee is identified and is let through the login page.			



Post-conditions: The system identifies the eight-digit ID and username and the respective page is displayed to the teacher.

Test Case Template						
Test Case ID: 021			Test Designed by: Mohammad Hijazi			
Test Priority (Low/Medium/High): Medium			Test Designed Date: 10/04/2024			
Module Name: Progress Reports			Test Executed by:			
Test Title: Testing Submission of Progress Reports			Test Execution Date:			
Description: Testing the functionality that allows the teacher to submit reports of the students progress to the system.						
Pre-conditions: <ul style="list-style-type: none">• The teacher must successfully be logged into the system.						
Dependencies: The username and ID of the employee must be logged into the database.						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Navigate to the progress reports section of the system.					
2	Insert the progress Report of the student.	A report detailing the progress of the student in the nursery.				
3	Submit the report.		The submission is accepted by the system.			



Post-conditions: The submission is successful, and the system displays the report to other teachers and parents of the student and the report is logged into the database.

Test Case Template						
Test Case ID: 022			Test Designed by: Mohammad Hijazi			
Test Priority (Low/Medium/High): High			Test Designed Date: 10/04/2024			
Module Name: Role Based Access			Test Executed by:			
Test Title: Testing Role Based Account Access			Test Execution Date:			
Description: Testing the functionality of role-based access control implementation in the system to ensure that users can only access information and services respective to their specific roles.						
Pre-conditions:						
<ul style="list-style-type: none"> Different types of user accounts must be set up in the system (teacher, parent, administrator). 						
Dependencies:						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Log into the system from the account of a teacher.	Login in Credentials of the teacher.	Login is successful.			
2	Attempt to access data authorized only to the administrator.		Access is denied.			
3	Verify that access is denied.					
4	Repeat the steps for different types of accounts.	Login Credentials of the account being used.				



Post-conditions: Role-based access control is successfully implemented into the system, ensuring users can only access data or tools authorized to their accounts.

Test Case ID: 023			Test Designed by: Mohammad Hijazi			
Test Priority (Low/Medium/High): High			Test Designed Date: 10/04/2024			
Module Name: Storage Capacity			Test Executed by:			
Test Title: Testing Website Storage Capacity			Test Execution Date:			
Description: Testing that the website has the storage capacity required to accommodate all requirements and features, ranging between 500 MBs and 1 GB.						
Pre-conditions: <ul style="list-style-type: none">All required features and media should be uploaded to the website.						
Dependencies: The Data must be logged into the database.						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Take account of all files, media, and features taking up space on the system.	System storage such as media, files, and tools.				
2	Calculate the total storage capacity needed for the system to accommodate the total storage.					
3	Verify that the storage falls within the required field.		The website storage capacity falls between 500 MBs to 1 GB.			



4	Attempt to add or delete data and carry out regular employee operations.	Data that might be altered on the website or in regular employee operations.	The operations should be carried without exceeding the allocated capacity.			
5	Ensure that the storage still falls within the required range.					
Post-conditions: The website has sufficient storage capacity within the required range to accommodate all requirements and features.						

Test Case Template						
Test Case ID: 024				Test Designed by: Wissam Khaled		
Test Priority (Low/Medium/High): Medium				Test Designed Date: 01/04/2024		
Module Name: User Management				Test Executed by:		
Test Title: Testing Add User Accounts Functionality				Test Execution Date:		
Description: Testing the ability to add user accounts in the system.						
Pre-conditions: <ul style="list-style-type: none">• User has administrative privileges.• The system is accessible and functioning properly.						
Dependencies: Proper database connectivity and functionality.						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Access user management interface.		The user management interface should be			



			accessible to the administrator.			
2	Add a new user account.	Any valid username, password, email, role that complies with the previously mentioned requirements.	New user account is successfully created and added to the system.			
3	Attempt to add a user with existing credentials.	Existing username or email, found already in the database.	System should prompt an error message indicating the duplication.			
Post-conditions: User accounts can be effectively added to the system. Database records are updated accordingly with changes made to user accounts.						

Test Case Template	
Test Case ID: 025	Test Designed by: Wissam Khaled
Test Priority (Low/Medium/High): Medium	Test Designed Date: 01/04/2024
Module Name: User Management	Test Executed by:
Test Title: Testing Delete User Accounts Functionality	Test Execution Date:
Description: Testing the ability to delete user accounts in the system.	
Pre-conditions: <ul style="list-style-type: none">• User has administrative privileges.• The system is accessible and functioning properly.	



Dependencies: Proper database connectivity and functionality.						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Access user management interface.		The user management interface should be accessible to the administrator.			
2	Delete an existing user account.	Username or email of existing user.	Selected user account is successfully deleted from the system.			
3	Attempt to delete a non-existing user account.	Non-existing username or email, that is not present in the database.	System should prompt an error message indicating the absence of the user.			
Post-conditions: User accounts can be effectively deleted from the system. Database records are updated accordingly with changes made to user accounts.						

Test Case Template	
Test Case ID: 026	Test Designed by: Wissam Khaled
Test Priority (Low/Medium/High): Medium	Test Designed Date: 01/04/2024
Module Name: Password Management	Test Executed by:
Test Title: Testing Password Reset Functionality	Test Execution Date:
Description: Testing the ability to reset user passwords in the system.	



Pre-conditions: <ul style="list-style-type: none">• User has administrative privileges.• The system is accessible and functioning properly.						
Dependencies: Proper database connectivity and functionality.						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Access password reset interface.		The password reset interface should be accessible to the administrator.			
2	Select appropriate user for password reset.	Username or email of existing test user.	User is identified for the password reset process.			
3	Initiate password reset.		Password reset link or temporary password is generated and sent to the user's email.			
4	Verify password reset.	Login-in with the new credentials.	User successfully resets the password using the provided link.			
Post-conditions: Users can login with the new password. Passwords in the system database are updated.						



Test Case Template						
Test Case ID: 027			Test Designed by: Wissam Khaled			
Test Priority (Low/Medium/High):			Test Designed Date: 01/04/2024			
Module Name: Image Gallery			Test Executed by:			
Test Title: Testing Image Upload Functionality			Test Execution Date:			
Description: Testing the ability to upload images to the gallery in the system.						
Pre-conditions: <ul style="list-style-type: none">• Users have administrative privileges.• The system is accessible and functioning properly.						
Dependencies: Proper database connectivity and functionality.						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Access image upload interface.		The image upload interface should be accessible to the administrator.			
2	Select image files for upload.	Any image from the sample images file.	Selected images are uploaded successfully.			
3	Verify uploaded images.		Uploaded images are displayed in the gallery section.			
Post-conditions: Images are stored in the system database and accessible for viewing.						



Test Case Template						
Test Case ID: 028			Test Designed by: Wissam Khaled			
Test Priority (Low/Medium/High): Low			Test Designed Date: 01/04/2024			
Module Name: Profiles			Test Executed by:			
Test Title: Testing Profile Viewing Functionality			Test Execution Date:			
Description: Testing the ability to view all profiles in the system.						
Pre-conditions: <ul style="list-style-type: none">• Users have administrative privileges.• The system is accessible and functioning properly.						
Dependencies: Proper database connectivity and functionality.						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Access profiles section.		The profiles section should be accessible to the administrator.			
2	Navigate to view all profiles.		Admin can access a list or grid view displaying all profiles.			
3	Verify displayed profiles.		All profiles are correctly displayed with relevant information			
Post-conditions: Profiles remain accessible for further viewing or editing.						



Test Case Template						
Test Case ID: 029				Test Designed by: Wissam Khaled		
Test Priority (Low/Medium/High): High				Test Designed Date: 01/04/2024		
Module Name: Browser Compatibility				Test Executed by:		
Test Title: Testing Browser Compatibility				Test Execution Date:		
Description: Testing the system's functionality across different web browsers.						
Pre-conditions: The system is deployed and accessible.						
Dependencies: Availability of different web browsers: Apple Safari, Microsoft Edge, Firefox, Google Chrome.						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Access the system using Apple Safari.	Using the latest official version of the software.	The system should load and function correctly without any errors.			
2	Access the system using Microsoft Edge.	Using the latest official version of the software.	The system should load and function correctly without any errors.			
3	Access the system using Firefox.	Using the latest official version of the software.	The system should load and function correctly without any errors.			
4	Access the system using Google Chrome.	Using the latest official version of the software.	The system should load and function correctly without any			



			errors.			
Post-conditions: The system is compatible with a variety of web browsers.						

Test Case Template						
Test Case ID: 030			Test Designed by: Wissam Khaled			
Test Priority (Low/Medium/High): High			Test Designed Date: 01/04/2024			
Module Name: Operating System Compatibility			Test Executed by:			
Test Title: Testing Operating System Compatibility			Test Execution Date:			
Description: Testing the system's functionality across different operating systems.						
Pre-conditions: The system is deployed and accessible.						
Dependencies: Availability of different operating systems: Windows, macOS, Linux.						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Access the system using Windows OS.	Using the latest official version of the software.	The system should load and function correctly without any errors.			
2	Access the system using macOS.	Using the latest official version of the software.	The system should load and function correctly without any errors.			
3	Access the system using Linux OS.	Using the latest official version of the software.	The system should load and function correctly without any errors.			



Post-conditions: The system is compatible with different operating systems.

Test Case Template

Test Case ID: 031

Test Designed by: Wissam Khaled

Test Priority (Low/Medium/High): High

Test Designed Date: 01/04/2024

Module Name: Device Compatibility

Test Executed by:

Test Title: Testing Device Compatibility

Test Execution Date:

Description: Availability of different devices: desktop computers, mobile devices.

Pre-conditions: The system is deployed and accessible.

Dependencies: Website is up and running and device function properly.

Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Access the system from a desktop computer.		The system should load and function correctly without any errors.			
2	Access the system from a mobile device.		The system should load and function correctly without any errors.			
3	Verify usability on different screen sizes.		The system's layout and functionality should adapt to different screen sizes appropriately.			



Post-conditions: The system is compatible and accessible across various devices.

Test Case Template

Test Case ID: 032 Test Designed by: Kamal Dbouk

Test Priority (Low/Medium/High): High Test Designed Date: 15/04/2024

Module Name: Scalability Test Executed by:

Test Title: Verify System Scalability Test Execution Date:

Description: Increase in 30 percent of users is being tested for here.

Pre-conditions:

- A known user traffic. In this case, at least 500 users.

Dependencies:

Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	650 users attempt to access the system.		The system must run smoothly. Scaling horizontally must not take more than 20 minutes.			The system must handle at least 500 users without experiencing performance reduction. An expected 30% increase during “Back-To-School” season means we must test for 650 users.

Post-conditions:

Test Case Template



Test Case ID: 033			Test Designed by: Kamal Dbouk			
Test Priority (Low/Medium/High): Low			Test Designed Date: 15/04/2024			
Module Name: Structure and Design			Test Executed by:			
Test Title: Design and Structure Verifiability			Test Execution Date:			
Description: Users will test out the system to ensure its straightforward and visually pleasing.						
Pre-conditions: <ul style="list-style-type: none">• A working system to establish what the design is missing.						
Dependencies: The system must be complete.						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Navigate through the navigation bar.		Navigation bar is easily found and the elements are straightforward.			
2	Navigate to the events' schedule.		The schedule is easily found and the user is able to easily identify what event takes place on that day.			
Post-conditions:						

Test Case Template	
Test Case ID:034	Test Designed by: Tala Kahil



Test Priority (Low/Medium/High):				Test Designed Date: 15/04/2024		
Module Name: Password Management				Test Executed by:		
Test Title: Password Length Validation #1				Test Execution Date:		
Description: Verify whether the system accepts passwords that consist of only 8 characters						
Pre-conditions: <ul style="list-style-type: none">User authentication interface is accessible.						
Dependencies:						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Navigate to the parent/ student login page					
2	Enter a password consisting of exactly eight characters	Password of 8 characters	The system accepts the password			
Post-conditions: The system allows the user to login.						

Test Case Template	
Test Case ID: 035	Test Designed by: Tala Kahil
Test Priority (Low/Medium/High): High	Test Designed Date:
Module Name: Password Management	Test Executed by:
Test Title: Password Length Validation #2	Test Execution Date:
Description: Verify whether the system rejects passwords that consist of less or more than eight characters.	



Pre-conditions: <ul style="list-style-type: none">User authentication interface is accessible.						
Dependencies:						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Navigate to the parent/ student login page					
2	Enter a password consisting of fewer than eight characters.	Password less or more than eight characters..	System rejects the password and displays an error message.			
Post-conditions: The system does not allow passwords consisting of fewer than eight characters.						

Test Case Template						
Test Case ID: 036			Test Designed by: Tala Kahil			
Test Priority (Low/Medium/High): High			Test Designed Date: 15/04/2024			
Module Name: Financial Access			Test Executed by:			
Test Title: Accessing Statement of Fees.			Test Execution Date:			
Description: Verify whether the system allows the parents to view the statement of fees.						
Pre-conditions: <ul style="list-style-type: none">The parent is logged into the system and the financial information is available in the parents account.						
Dependencies:						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes



1	Navigate to the statement of fees section					
2	Click on the “view” option		The system displays the statement of fees for enrollment and tuition.			
Post-conditions: The parent successfully accesses the statement of fees for enrollment and tuition, ensuring transparency and clarity regarding financial obligations.						

Test Case Template						
Test Case ID: 035				Test Designed by: Tala Kahil		
Test Priority (Low/Medium/High): High				Test Designed Date: 15/04/2024		
Module Name: Financial Access				Test Executed by:		
Test Title: Printing Statement of fees				Test Execution Date:		
Description: Verify whether the parent can print the statement of fees.						
Pre-conditions: <ul style="list-style-type: none">• The parent accesses the financial information available in the parents account.						
Dependencies:						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Navigate to the statement of fees section.					
2	Open the statement of fees.		The statement of fees is			



			displayed on the screen.			
3	Click on the print option.		The system prompts to print the document			
Post-conditions: The parent successfully prints the statement of fees for enrollment and tuition.						

Test Case Template						
Test Case ID: 037			Test Designed by: Tala Kahil			
Test Priority (Low/Medium/High): High			Test Designed Date: 15/04/2024			
Module Name: Scheduling			Test Executed by:			
Test Title: Displaying Available Meeting Hours			Test Execution Date:			
Description: Verify whether the system displays available meeting hours with the teachers.						
Pre-conditions: <ul style="list-style-type: none">The parent is logged into the system and the teachers schedules are configured in the system						
Dependencies:						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Navigate the scheduling section in the parent dashboard.		The system displays options for scheduling meetings			
2	View the available meeting hours with the teachers.		The system displays the available hours for teachers.			
3	Verify that the list		The system			



	is up-to-date and accurate.		shows current and accurate meeting hours for teachers.			
Post-conditions: The parent can view and schedule meetings with teachers based on the displayed available meeting hours.						

Test Case Template						
Test Case ID: 038			Test Designed by: Tala Kahil			
Test Priority (Low/Medium/High): Medium			Test Designed Date: 15/04/2024			
Module Name: Scheduling			Test Executed by:			
Test Title: Notifying Meeting Requests.			Test Execution Date:			
Description: Verify whether the system notifies the parents of the request status.						
Pre-conditions: <ul style="list-style-type: none">The parent is logged into the system and the teachers schedules are configured in the system.						
Dependencies:						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Verify that the parent receives a notification of the request status.		The parent receives a notification indicating whether the request is accepted or declined.			
Post-conditions: The parent receives notifications regarding the status of meeting requests.						



Test Case Template						
Test Case ID: 039			Test Designed by: Tala Kahil			
Test Priority (Low/Medium/High):			Test Designed Date: 15/04/2024			
Module Name: Student Information			Test Executed by:			
Test Title: Displaying Child's Schedule and Progress Reports			Test Execution Date:			
Description: Verify whether the system displays the child's schedule and progress reports.						
Pre-conditions: The parent is logged into the system and the child's schedule and progress reports are available.						
Dependencies:						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Navigate to profile section.		The system displays options for accessing child's information.			
2	View child's schedule and progress reports.		Display the child's schedule and progress reports.			
3	Verify that the information is up-to-date.		The schedule and progress reports reflect the latest information.			
Post-conditions: The parent gains access to their child's schedule and progress reports, allowing them to monitor their child's progress and upcoming activities.						



Test Case Template						
Test Case ID: 040			Test Designed by: Tala Kahil			
Test Priority (Low/Medium/High): Medium			Test Designed Date: 15/04/2024			
Module Name: Support			Test Executed by:			
Test Title: Contacting IT Support			Test Execution Date:			
Description: Verify whether the system allows the parent to contact IT support.						
Pre-conditions: <ul style="list-style-type: none">• The parent is logged into the system.						
Dependencies:						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Navigate to the support system.		The system displays options for contacting support.			
2	Click on the "Contact IT Support" option.		The system provides a form or interface to submit technical issues.			
3	Submit the technical issue.		The system confirms receipt of the request and notifies IT support			
Post-conditions: The parent successfully submits a technical issue to IT support, ensuring timely resolution of technical issues and maintaining system reliability.						



Test Case Template						
Test Case ID: 041			Test Designed by: Tala Kahil			
Test Priority (Low/Medium/High): High			Test Designed Date: 15/04/2024			
Module Name: Live Streaming			Test Executed by:			
Test Title: Accessing Live Footage of Classes			Test Execution Date:			
Description: Verify whether the system allows the parent to access live footage of classes during working hours.						
Pre-conditions: <ul style="list-style-type: none"> The parent is logged into the system and the live streaming feature is enabled during working hours (8:00am - 2:00pm). 						
Dependencies:						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Navigate to the live streaming section of the parent dashboard.		The system displays options for accessing live classes			
2	Check for available live classes during working hours		The system displays live footage of ongoing classes within the specified time frame.			
3	Verify that the live footage is accessible and streaming smoothly.		The parent can view live classes without interruptions.			



Post-conditions: The parent accesses live footage of classes during working hours, facilitating remote observation of classroom activities.

Test Case Template						
Test Case ID: 042			Test Designed by: Tala Kahil			
Test Priority (Low/Medium/High): High			Test Designed Date: 15/04/2024			
Module Name: Performance			Test Executed by:			
Test Title: Reaction To User Requests			Test Execution Date:			
Description: Ensure that the system reacts to user requests in less than 3 minutes.						
Pre-conditions: Standard load conditions are simulated						
Dependencies:						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Simulate standard load conditions.					
2	Perform standard user interactions on the system (login, data retrieval).		Response time is within 3 seconds for each interaction.			
3	Measure and record response time.					
4	Verify system behavior and response time at peak load.					
Post-conditions: The system continues to operate normally with no degradation in performance or response time after the load test. It responds to user interactions in less than or equal to 3 seconds under						



standard load conditions, ensuring optimal performance.

Test Case Template						
Test Case ID: 043			Test Designed by: Tala Kahil			
Test Priority (Low/Medium/High): High			Test Designed Date: 15/04/2024			
Module Name: Performance			Test Executed by:			
Test Title: Handle a Large Number of Users.			Test Execution Date:			
Description: Ensure the system supports at least 500 users simultaneously during peak times without performance degradation						
Pre-conditions: <ul style="list-style-type: none">• 500 simultaneous users are simulated.						
Dependencies:						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Simulate a load of 500 simultaneous users using the system					
2	Monitor system performance metrics (response time, resource utilization...)		System performance remains stable.			
3	Increase the load gradually beyond 500 users to test performance limits.		System performance is within acceptable limits			
4	Verify system behavior and response time at peak load.					



Post-conditions:The system stabilizes back to typical operating levels with a conventional user load after the high-load test . It has been verified that the system can accommodate at least 500 users concurrently during peak hours without experiencing any performance degradation, ensuring continuous functioning.

Test Case Template						
Test Case ID: 044			Test Designed by: Tala Kahil			
Test Priority (Low/Medium/High): High			Test Designed Date: 15/04/2024			
Module Name: Performance			Test Executed by:			
Test Title: Timely Refresh of Analytical Data			Test Execution Date:			
Description: Verify The system refreshes and displays updated analytics of its content in less than 10 seconds after receiving new data.						
Pre-conditions: <ul style="list-style-type: none">Analytical data are functional and new data is available for analysis.						
Dependencies:						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Data is introduced into the system.	Sample dataset.				
2	Initiate the refresh process for analytics data.					
3	Update the analytics display with the latest data.		The updated analytics are displayed within 10 seconds of receiving new data.			
4	Compare between the timestamps of		The difference			



	data arrival and the display of updated analytics		between the timestamps is within 10 seconds.			
5	Collect performance metrics and assess the time taken for the system to refresh and display data.					
Post-conditions: The system successfully refreshes and displays updated analytics of its content in less than or equal to 10 seconds of receiving new analytical data.						

Test Case Template						
Test Case ID: 045				Test Designed by: Tala Kahil		
Test Priority (Low/Medium/High): Medium				Test Designed Date: 15/04/2024		
Module Name: Staff Training				Test Executed by:		
Test Title: Staff Training Effectiveness				Test Execution Date:		
Description: Verify the effectiveness of the staff training process in using the system’s features and resources within a short amount of time.						
Pre-conditions: <ul style="list-style-type: none">● Training material and staff members are available for training sessions.						
Dependencies:						
Step	Test Steps	Test Data	Expected Result	Actual Result	Status (P/F)	Notes
1	Introduce staff to the system's interface and functionalities.					
2	Train staff with all essential features					



	and functionalities of the system.					
3	Expose staff to a simulated scenario.					
4	Test staff through assessment to evaluate their understanding of the system					
5	Gather Feedback from staff.					
Post-conditions: Staff members are adequately trained and proficient in using the system's resources and features within a short period of time.						

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