Childcare System

Subject : Project 326S
Assessment : Term 1 Group Submission
Group : Group 18
Group Members :

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Communication Methods

Blackboard Collaborate:

When it comes to meetings, we use Blackboard as our main method to discuss possible adjustments and future stages in the project as well as examine certain portions of the project as a group. By utilizing Blackboard, we ensure that all members are up to date on what is currently happening in the project and its development.

Microsoft Teams:

We use Microsoft Teams to collaborate on document updates, new document creation, and document report evaluation since it allows multiple people to work on the same document at the same time while also storing it in a safe online folder.

Microsoft Outlook (E-mail):

Outlook is one of our formal methods of communication where we interact with our supervisor through an email thread gaining useful feedback regarding our project, the next steps, and possible improvements in certain sections. The advantage is the recordkeeping that the e-mail provides since messages and their attachments are stored in a chronologically accessible way.

WhatsApp:

WhatsApp is not a formal method of communication like Blackboard Collaborate or Outlook; rather, it is an informal method of communication that we use for project announcements and urgent matters such as informing group members of deadlines, meeting scheduling reminders, and any other announcements that may arise.

GitHub:

We utilize GitHub for version control, which enables coding collaboration, setting up milestones to track tasks that need to be completed or are completed, and allowing the technical lead to approve code submitted by a group member that needs to be merged with the main project.

Strategies for effective communication:

- **Respect members' opinions, ideas, and points of view.**
  This will allow members to feel comfortable communicating and collaborating with each other, allowing the project to progress smoothly and reduce possible conflicts.
- **Focus on ideas and not conflicts between group members.**
  This will ensure that the group stays on track and does not divert to irrelevant topics that are not in line with the goals of the project.
- **Group leaders should ensure that communication between members is effective and consistent.**
  This is to ensure that each member gets their idea across effectively.

- **Group members should ask questions.**
  If a group member is confused about a certain topic they should ask questions, this is to ensure that they understand what is needed to move forward and to complete the current phase of the project.
- **Group members should use affirming responses.**
  This is to ensure that there is no confusion amongst each other and that their opinion is clear and direct.
- **Be genuine rather than manipulative.**
  Be honest with yourself and the other members of the group, and make sure that no one steals an idea from another group member without giving credit. This will reduce any potential dispute amongst members.

Tasks (WBS)

A. Meeting and Time Management (Mponenge, Trevor)
    a. Take meeting minutes
    b. Proofread, convert to pdf, upload to Bb Journal
B. Back-end Development (Program logic)
    a. Code all domains with the correct attributes (Karl, Trevor)
        i. Write Child domains
        ii. Program Parent domain
        iii. Program Driver domain iv.Program Teacher domain
        v. Program Medical Details domain
        vi. Program School Class domain
        vii. Program Meal Details domain
        viii. Program Emergency Details domain
        ix. Program Absence Details domain
    b. Design and code design patterns (Karl)
        i. Builder Pattern
        ii. Singleton Pattern
        iii. Factory Method Pattern
        iv. iv.State Pattern
    c. Design and code Helper packages and populate it with required helper classes (Karl)
        i. Validate Logic
        ii. Error Handling
    d. System functionality (Trevor, Mike, Karl, Mponenge, Josh, Charles)
        i. CRUD operations teachers, children, drivers, parents, medical details, school details, meal details, emergency details, absence details
        ii. Analytics
        iii. Login teacher iv.Register teacher
        v.Loading screen vi.Teacher, parents,

children's details C.Database Design:

    a.Design and normalize tables (Trevor, Mike, Karl, Mponenge, Josh, Charles)
        i.Teacher
        ii. Child
        iii. Driver iv.Meal
        v. Medical
        vi. Emergency details

vii. School Class
viii. Absence
ix. Analytics

b. Design data model (ERD) and specify attribute dependencies (Trevor, Mike, Karl, Mponenge, Josh, Charles)
c. Code all entities and their attributes as database tables (Trevor, Mike, Karl)

D. Front-End Development
a. Design the flow diagram
b. Design the wireframes ()
i. Login wireframes
ii. Register wireframes
iii. Manage Teacher wireframe iv.Manage Children wireframe
v. Manage Parents wireframe
vi. Manage Drivers wireframe
vii. Capture registration (absence) wireframe
viii. Emergency Details wireframe
ix. Loading screen wireframe
x. View Children, Teachers Details wireframe
xi. Manage Class wireframe
xii. Analytics wireframe
xiii. View meal deals wireframe
c. Develop the GUI based on the wireframes (Karl , Charles)

E. Testing
a. Write unit tests (Development team)

Group Organization – Roles

Team Lead/ Project Manager – Ensures that the project proceeds within the constraints of time, budget, scope and quality, while ensuring sustainable stakeholder relations.

Trevor Ngcobo

Technical Lead/System Analyst – Manages a team of developers to ensure that the system is align the stakeholder(s) requirements and the system works flawlessly.

Karl Haupt

Secretary – Manages the meetings and ensures that the vital information is recorded clearly and accurately.

Mponenge Zikhona Ratego

Front-end Developer – Creatively designs and creates the User Interface (UI) for the system.

Karl Haupt
Charles Lemmert

Back-end Developer – Develop the programming logic to accommodate the User Interfaces.

Karl Haupt
Trevor Ngcobo
Mike Tyolani
Charles Lemmert
Mponenge Zikhona Ratego
Joshua Daniel Jonkers

Database Designer – Design and construct databases in a way to ensure optimization and prevention of security flaws.

Trevor Ngcobo
Mike Tyolani

Testers – Test the application and components of the application to ensure that the system meets the requirements

Karl Haupt
Trevor Ngcobo
Mike Tyolani
Charles Lemmert
Mponenge Zikhona Ratego
Joshua Daniel Jonkers

Problem Definition

In rural areas and informal settlements only 30% of children attend day-care before the age of two, and only 69% percent of children attend day-care between the ages of three to five, leaving 1 086 000 children unable to attend any form of preschool(s) UCT (2019).

This leads to children who reside in rural areas to be disproportionately disadvantaged in terms of services and safety. According to Theirworld (2017), the main causes for children suffering in rural areas with these difficulties are safety, lack of nutrition and health.

Townships and informal settlements provide many opportunities for childhood care centres to thrive so that children are kept off the streets and can have a better learning foundation for their futures. This is partly due to large number of people that live in these non-established spaces and environments in South Africa. However, a notable challenge in such day-cares is that important information about these children is often stored in unreliable paper-based systems that are kept in safes or drawers. There are few notable points with regards to this:

- Taking care of children is very serious and leaves no room for errors. Children need to have all details recorded to enable the day-care guardians to effortlessly contact parents in times of emergencies.
- Children get sick often and may need treatment. The information of parents needs to be stored in a reliable manner so that it is easy and quick to access.
- To register as an ECD provider accurate records need to be kept about the organisation.

Our approach will be geared at assisting pre-primary schooling to promote a more safe, nutritious environment for children. The system will achieve this by eliminating the inefficient, old-fashioned paper-based system. The elimination of the paper-based method would allow educational institutions to advance a more secure environment for children; this will be accomplished by tracking daily registration of all the children per class, reasons for being absent and emergency contact details including the parent's details.

Scope of the Day-care System

Project Objective

The purpose of this project is to create a system that fully automates data capturing for informal and township day-care centres. The system will be designed in such a way that is gets rid of the old-fashioned paper-based data capturing method due to data safety and efficiency. The system will use a computer-based application to benefit the welfare of children by properly storing and managing data about stakeholders of day-cares, creches and pre-schools. The system will manage state emergency numbers in cases of unforeseen incidents that happen in these organisations and to generally improve medical responsiveness. It is also aimed at capturing the meal details that children get to eat on a daily basis. This is to reduce child related incidents related to meals served at day-cares and creches. It will also manage the different driver details of the day-cares. This is to reduce child transport accidents that occur due to overloads, as children's safety comes first.

Deliverables

In term 1, the deliverables that would need to be collected are an official document that outlines the role(s) and task(s) that each member of this group will be responsible for throughout the project lifecycle. It would also include a problem definition as well as the project's scope.

In addition, each member would yield a LinkedIn Learn Certificate and another document detailing their role(s), task(s), and potential improvements in Term 1.

The second term would be a reflection on the general status of the project as well as the progression of constructing the system that was outlined in the scope of this document.

User interface designs, database designs, coding evidence, and system testing would all fall under the third phrase. The system should be able to shift from a development to a production environment at this point.

The 4th term's deliverables will be system and user documentation. The fourth term would also contain an individual report in which each team member would explain what they had learned, what their responsibilities were, and what improvements they would make.

The group will deploy the system in a production environment and present the system to our project supervisor for approval at the end of the project lifespan.

Constraints

Projects have constraints that may have a restrictive impact on the system. As the project team, we should accommodate for these constraints.

The first important limitation is time; generally, the development team informs the client of the expected completion date for this system. Management defined the time range for this project to be from January 31, 2022, to November 28, 2022.

Another significant constraint is security, which arises from the fact that the system will store medical information about children as well as other sensitive information that must conform with the Medical Protection Society and the POPI Act.

To ensure the integrity of the system, the development team would need to have specialist knowledge to design and construct the system in accordance with the POPI Act and the Medical Protection Society.

Another constraint is performance and scalability; as the system grows, so does its performance, which affects response time and the number of processes that occur each minute. Effective design and development would be necessary to address this issue.

Assumptions

Resources
All members who are participating at the start of the project will continue to be involved until the project is completed. Project team members should have access to the resources they require, including modern equipment and software, to complete their jobs on time.

Cost
The overall cost of everyday operations will stay the same. However, depending on the economy, the price may change over time in some circumstances. The cost of purchasing and maintaining the resources will be kept within the project manager's budget. If the resources deteriorate or malfunction, however, the budget may exceed the actual cost projections because the resources must be repaired.

Schedule-base
Each member of the team can execute their project's allocated obligations on time and on budget. The project's scheduled completion date can be met, and it will be completed on time. As expected, all the essential equipment and materials are on hand when they are needed.

Specification
When the project is in progress the scope and requirements of the project will remain unchanged. However, there may be times when the scope and specifications of the project need to be adjusted to meet the project's goals and demands.

Stakeholders

The Children who are too young to take care of themselves and are often vulnerable to a host of incidents (going missing, food-related hazards etc.). Toddlers are infirm by nature and thus need continuous care. In addition to the regular demand for attention in day-cares, children need support from a system that stores their data for the interest of responsiveness in case of the aforementioned incidents.

The Childcare management who operate businesses and schools that look after young children. The management of these organisations need this system to store data accurately for business management, archival, emergency, and regulatory purposes.

The Teachers who directly look after young children in day-care and pre-schooling environments. Teachers and caretakers are those who directly interact with the system daily. As the most immediate actor to the system, these stakeholders must have an accessible interface that allows them to capture data and recognise matters of concern timely (e.g., A missing child during roll call).

The Minibus Drivers who hold the responsibilities to transport toddlers to day-cares centres. In townships and informal settlements, transport businesses often use minibuses to collect children from their homes. These drivers and businesspersons are also a vital stakeholder because of their custodial nature. This means their details and their vehicle details must also be stored.

The Parents who entrust day-cares and Early Childhood Development Centres with their young children. The parents need the system to store all reliable data when they leave their children in the custody of day-care centres. This provides peace of mind as they are not always nearby to respond to the needs of their children.

The System Developers who create the system (*see* Roles).

The Government agencies who need organised information to grant accreditation to day-care centres. Day-care providers might hope to attain regulatory certificates and government recognition as safe and reliable services providers.

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