Design Document

Introduction to Software Engineering

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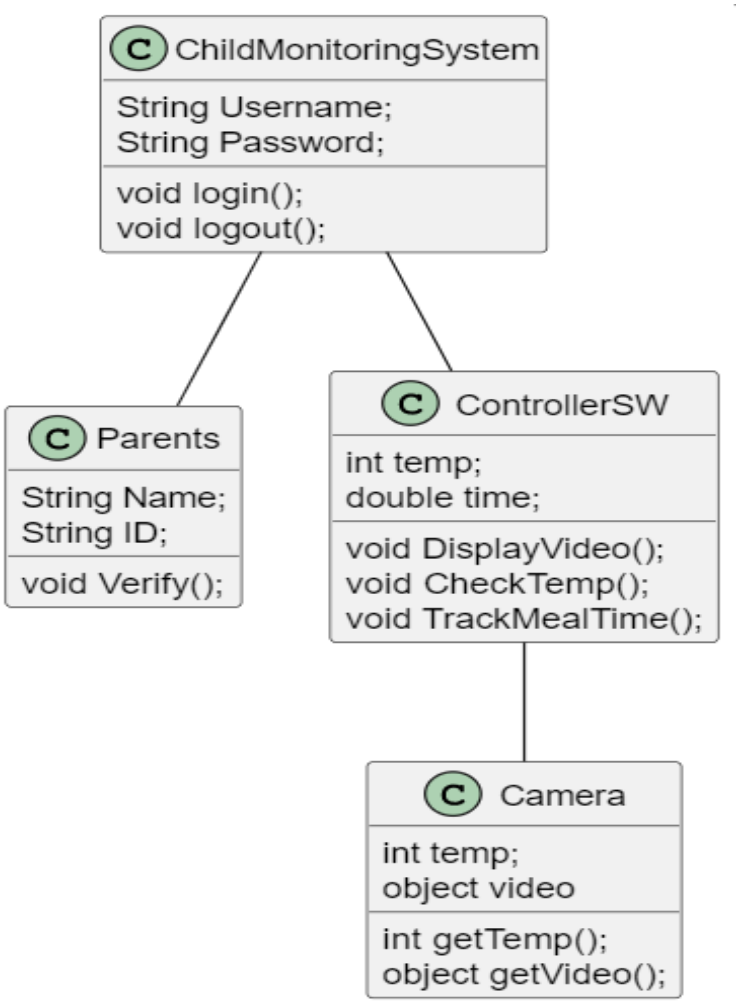
Contents

UML class diagram

The structure of the baby well-being monitoring system can be modelled using the UML class diagram. The behaviour of the system was studied. Then the classes, attributes, operations of the system, and the relationship between the classes were identified. These characteristics and relationships of the system are presented in the UML class diagram, which was obtained using VS code with PlantUML extension.

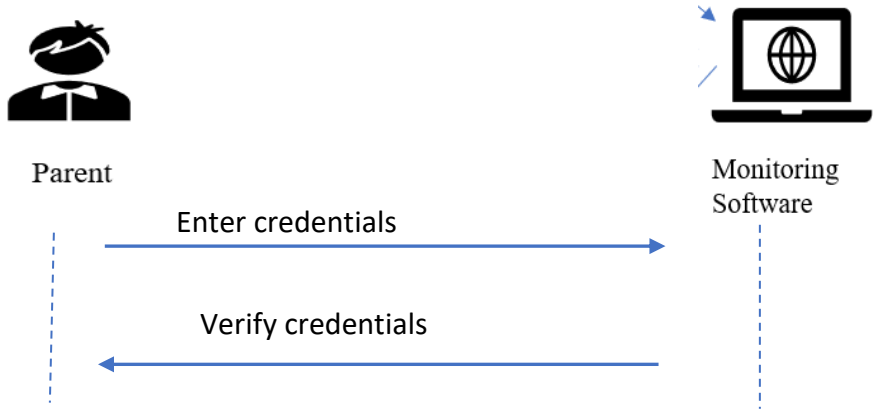


Sequence Diagrams

[We need to show the decomposition of the case diagrams using the UML package notion] After grouping use cases to functional subsystems, a sequence diagram was developed for every use case. This helped to define the subsystems' interfaces. The sequence diagrams of the four use-cases of the baby well-being monitoring system are presented below:

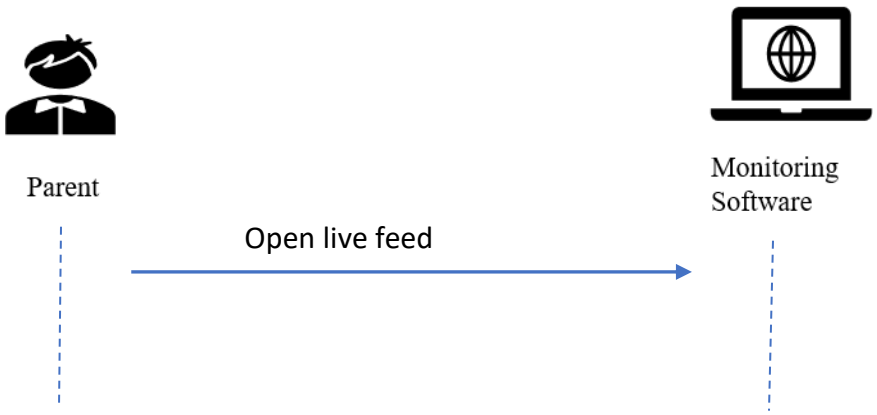
Use case 1: Login to the system

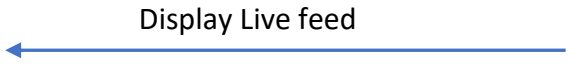
1. The parents provide their username and password
2. The parents click on the Login option
3. The system validates the entered credentials
4. The System directs the parents to the home page



Use case 2: Open live feed

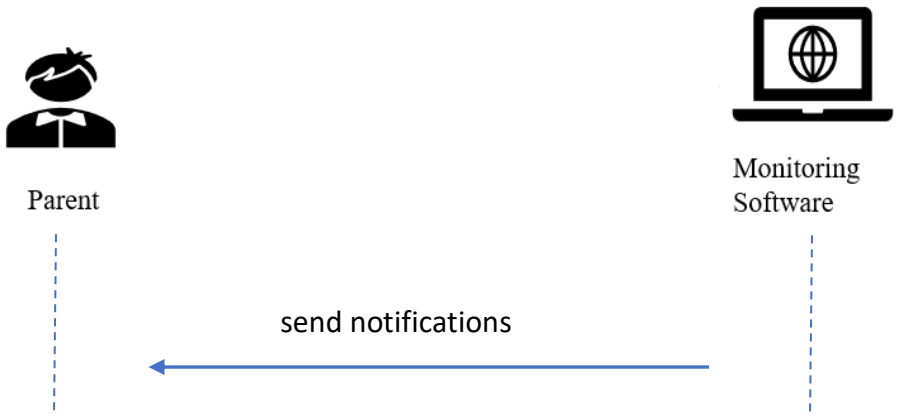
1. The parents click on the option to open live feed from the main page
2. The system displays the video feed





Use case 3: Show Notifications

1. The system sends notification in case of abnormal child's body temperature
2. The system sends alerts of the baby's mealtime to the parents

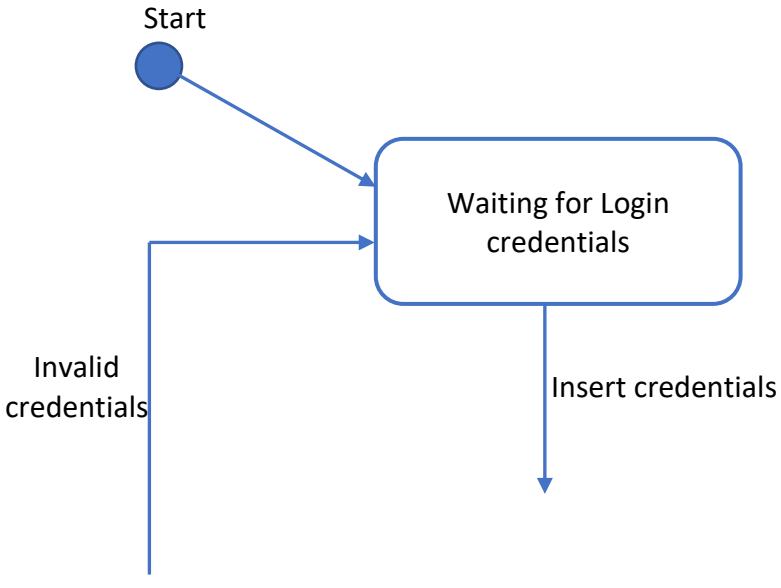


State Diagrams

Since use case 1, log in to the system, logically precedes the other two use cases, we have started building the state diagram by analyzing use case 1.

Use case 1: Login to the system

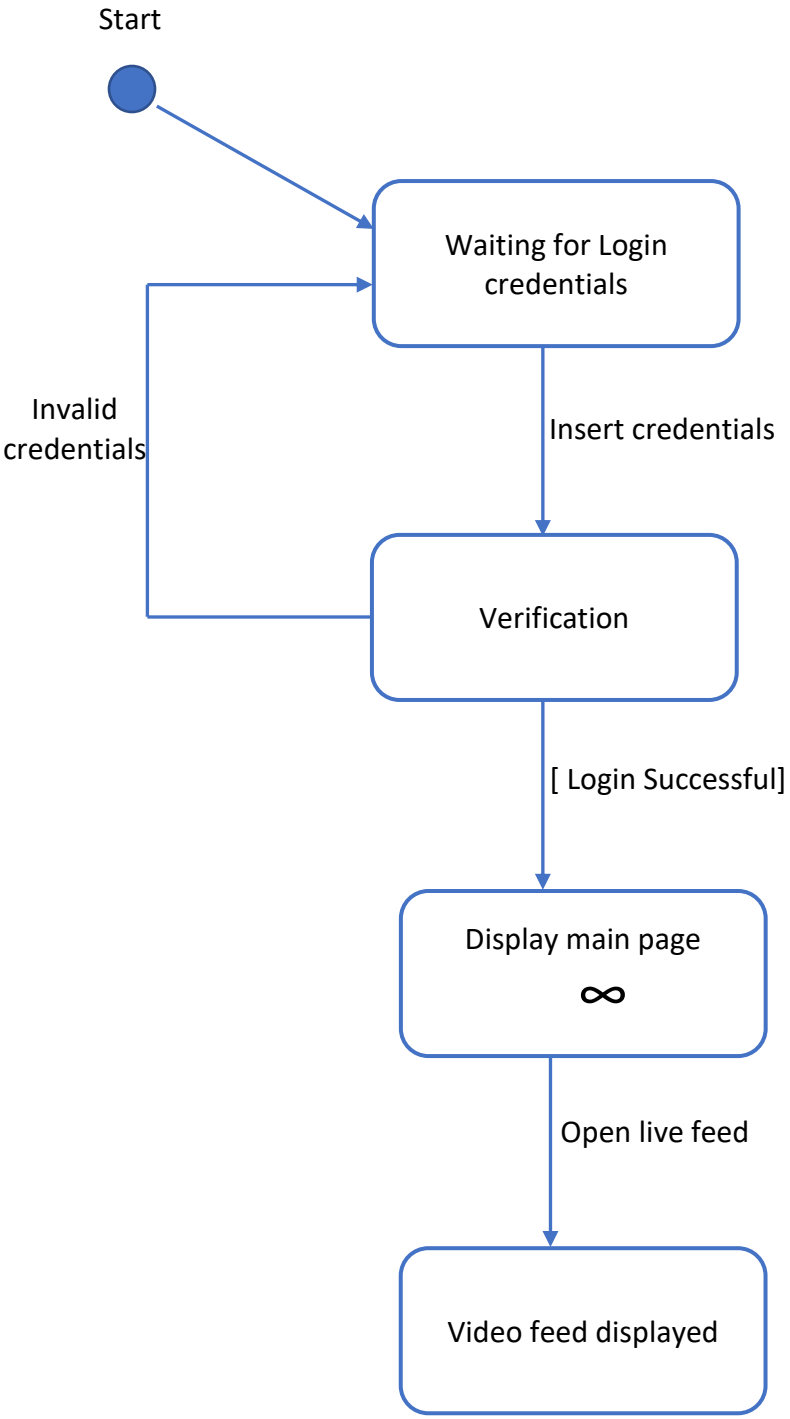
1. The parents provide their username and password
2. The parents click on the Login option
3. The system validates the entered credentials
4. The System directs the parents to the home page



Verification

Use case 2: Open live feed

1. The parents click on the option to open live feed from the main page
2. The system displays the video feed



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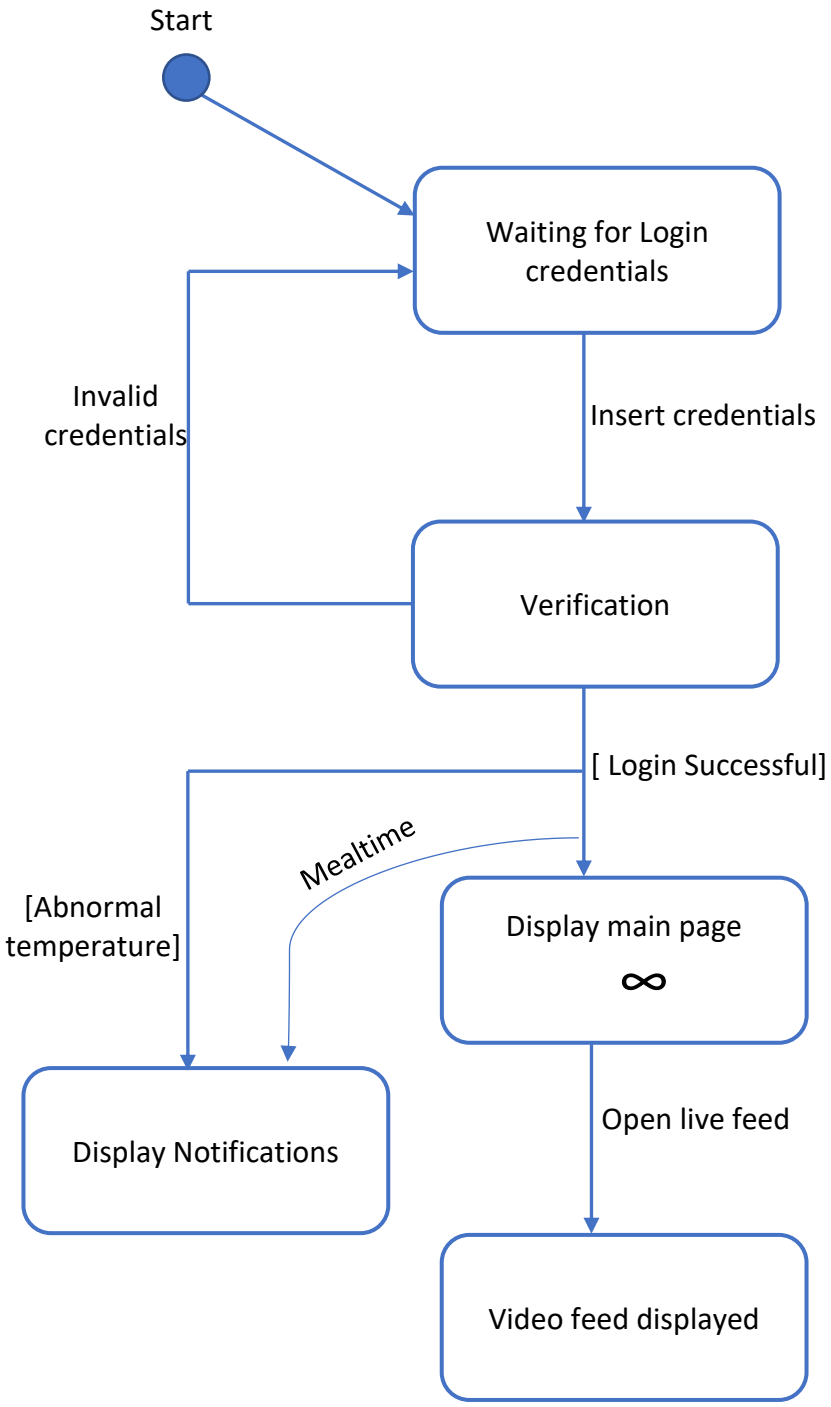

System Updates

Upon reviewed discussion the group has made some changes to the use cases previously stated in the requirements document. The changes made in this document are listed below:

1. From this document onwards the system will assume that the users of this system are already registered. Since the system will have only two users, they can be registered by the system [provider]/ [during the setup of the system.]
2. From this document onwards the two use cases presented in the requirement document: “open live feed” and “display data from the camera system” will be presented under one use case, “open live feed”. The reason being that, we have updated our system so that opening the video feed will directly lead to displaying the video feed in the screen. This means, the opening and displaying of video feed are like the two faces of the same thing. Thus, they are grouped under the “open live feed” use case.

GitHub Link

https://github.com/Noah-Yohannes/Baby-Monitoring-System

Appendix

PlantUML code used in Visual Studio Code

```
@startuml
class ChildMonitoringSystem{
String Username;
String Password;
void login();
void logout();
}

class Parents{
String Name;
String ID;
void Verify();
}

class ControllerSW{
int temp;
double time;
void DisplayVideo();
void CheckTemp();
void TrackMealTime();
}

class Camera{
int temp;
object video
int getTemp();
object getVideo();
}
ChildMonitoringSystem -- Parents
ChildMonitoringSystem -- ControllerSW
ControllerSW -- Camera
@enduml
```