**Khalifa University**

**Introduction to Software Engineering**

**Project: Baby monitoring system**

| Saif Ahmed, | 100059926 |
| --- | --- |
| Obaid Saif, | 100059726 |
| Abdulla Husain Binmahfoudh | 100058593 |
| Abdulrahman Saleh | 100053528 |

***Functional Requirements***

The system should:

* Notify the parents
  + In case of emergencies
  + When the daily chores are completed
* View and edit schedule
* Save information in database
* Access the input/output devices (microphone, sensors and phone camera)
* Verify passwords

***Non-Functional Requirements***

* Reliability: The parents should be able to depend on this software and the software should be available whenever needed at any time and place. The Baby monitoring app will keep on functioning for a long time and will not fail the user.
* Security: The Baby monitoring app should be protected against data corruption, destruction, loss and unauthorized access. There should also be access permission and authentication.
* Privacy: the information should be protected such that none is able to reveal information except for the parents.
* Performance: The Baby monitoring app should respond quickly (within 2 mins) and should always be available to users
* Portability: The Baby monitoring app should be used on different operating Baby monitoring app.
* Maintainability

***User Requirements***

* Interaction with the child
* Full time monitoring
* To be able to watch the child from camera
* Alerted in case of emergency
* Privacy: no one is allowed to access the data
* Check the child’s daily schedule

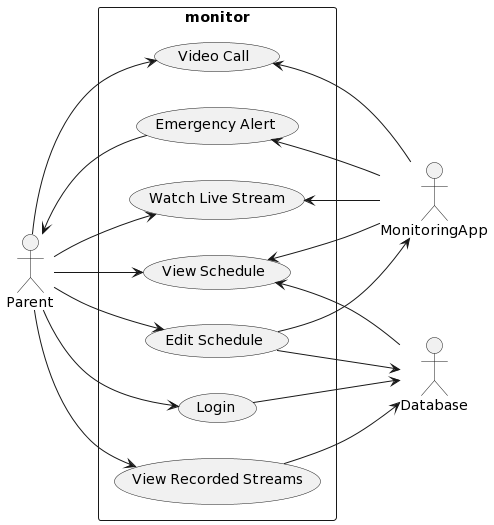
## ***System Requirements***

* Baby monitoring app should be able to:
  + Detect sound
  + Measure temperature
  + Alert in case of emergency (smoke, fire, …)
  + Save previous live stream videos
  + Save previous daily schedules and live streams.
* Baby monitoring app should access the microphone, sensors and camera of the phones.

# ***Use-Case***

* login
* View schedule
* Edit schedule
* Watch live-stream
* Video call
* Chat
* Emergency alert

***Use Case Diagram***

******

***Use Case Diagram Descriptions***

* Name: Login
* Description: Parent will be prompted to login with their account before using the Baby monitoring app
* Actors:
  + Parents
  + Database
  + Baby Monitoring App
* Pre-Conditions:
  + Correct Username and Password
* Post-conditions:
  + None
* Successful path:
  + Parent opens login page
  + Baby monitoring app asks for username and password
  + Parent enters username and password
  + Baby monitoring app validates username and password
  + Baby monitoring app creates a new session for the user
* Alternative path:
  + Start from step d in the successful path, the login password is incorrect
  + Baby monitoring app prompts the user to reset password
  + Baby monitoring app prompts the user to re-enter password
* Exception:
  + Invalid username: the Baby monitoring app displays “ Invalid username”
* Rules:
  + Username and password must match those in the database
* *Name:* view recorded streams
* *Description:*
  + Parents will have the option to retrieve and watch recorded streams from the database (history).
* *Actors:*
  + Database, Baby monitoring app, and Parents
* *Pre-condition:*
  + Logged in by the parents
  + Parents select the option to watch recorded streams.
* *Post-condition:*
  + Retrieving the history of recorded streams.
  + Showing them the option to retrieve the streams based on the date and time.
* *Successful path:*
  + User login
  + Parents clicks on view recorded streams
  + The Baby monitoring app gives the option to the user to select a specific date and time.
  + The Baby monitoring app shows the history of recorded streams
  + The user selects the stream
  + The Baby monitoring app should play the selected stream, with that task will be successful
* *Alternative path*:
  + The logged-in user is not the parents.
  + The selected date or time of the stream is invalid.
  + No recorded stream was found in the database.
* *Exceptions:* 
  + No history of recorded streams.
* *Rules:*
  + The babysitter is not allowed to have the option of retrieving recorded streams
  + Editing the history will be allowed only for the parents,
  + If there is any change in the history of recorded streams, both parents will receive a notification informing them about the changes.
* Name: View Schedule
* Description: Users will be prompted to view the schedule of the child with all daily tasks whether accomplished or not.
* Actors:
  + Parents
  + Baby monitoring app
  + Monitoring app
* Pre-Conditions:
  + User is logged in.
  + User is granted permission to view the schedule.
* Post-Conditions:
  + The parent has been prompted to view the schedule.
* Successful path:
  + User login
  + Parent clicks on view schedule
  + Baby monitoring app asks the user to select a specific date of the schedule requested
  + User selects date
  + The Baby monitoring app gets the requested schedule information from the database
  + Baby monitoring app displays the schedule
  + User views the schedule
* Alternative Paths:
  + Parent clicks on view schedule
  + Baby monitoring app asks the user to select a specific date of the schedule requested
  + Parent selects date
  + No available schedule in the selected date
  + “No Schedule available in selected date” message will be displayed for the user
* Exceptions:
  + Baby monitoring app interrupted due to loss in internet connection
  + No schedules available
  + User reloads page during the process
* Rules:
  + Stable internet connection
* Name: Edit Schedule
* Description: Users will be prompted to edit the schedule of the child by adding or removing tasks.
* Actors:
  + Parents
  + Baby monitoring app
  + Database
* Pre-Conditions:
  + User is logged in.
  + User is granted permission to edit the schedule.
* Post-Conditions:
  + The user has been prompted to edit the schedule.
* Successful path:
  + User login
  + User clicks on edit schedule
  + Baby monitoring app asks the user to select a specific date of the schedule requested
  + User selects date
  + The Baby monitoring app gets the requested schedule information from the database
  + Baby monitoring app displays the schedule
  + User views the schedule
  + User edits the schedule
  + User clicks save button
  + Baby monitoring app sends the edited schedule to the database
* Alternative Paths:
  + User clicks Cancel button instead of save
    - Schedule is not saved
  + Baby monitoring app asks the user to select a specific date of the schedule requested
    - User selects date
    - No available schedule in the selected date
    - “No Schedule available in selected date” message will be displayed for the user
* Exceptions:
  + Edited schedule is not saved due to a loss of connection
  + No schedules available
  + User reloads page during process
* Rules:
  + Stable Internet connection
* *Name:* Emergency alert
* *Description:* This feature will allows the Baby monitoring app to make an emergency alert sound and notification on both parents and the babysitter's applications. Some types of emergencies might be a sickness of the baby, home fire alarms, smoking, and the GPS tracker being out of the intended range. In addition to that both the parents and the babysitter have the option to make an emergency notification based on their evaluation of some events.
* *Actors:*
  + Babysitter, parents, and Baby monitoring app
* *Pre-condition:*
  + Detection of any emergency events such as:
  + sickness of the baby (selected by the babysitter)
  + home fire alarms
  + smokes
  + The GPS tracker is out of the intended range.
  + Emergency notification (by the parents or the babysitter)

* *Post-condition:*
  + Depending on the event the Baby monitoring app will alert the user by sound and notifications to provide extra information.
* *Successful path:*
  + Using the sensor, the Baby monitoring app will monitor the fire and smoke detectors and should alert if there are any risks
  + GPS tracker is out of intended range will make an alert
  + The babysitter has the option to alert the parents manually if there are some emergencies that cannot be detected automatically by the Baby monitoring app.
  + The parents can alert the babysitter if there is some emergency information or requirements needed to be addressed.
* *Alternative path*:
  + The Baby monitoring app will wait for the parents/ babysitter to respond to the alert.
  + If there is no response the Baby monitoring app will call them by mobile number.
* *Exceptions:* 
  + No internet connection or the device is out of battery, etc.
* *Rules:*
  + Login is not necessary to make an emergency alert.
  + A response to the emergency alert is necessary to continue using other features of the application.
  + All the responses and emergency details will be saved in the database which will be accessed by the parents if needed.
* Name: Watch Live Stream
* Description: This feature allows you to monitor the the child by watching a real time video of the room
* Actors:
  + Parents
  + Baby monitoring app
  + Camera
* Pre-conditions:
  + User is logged in
  + Have access to the camera
  + Have access to audio
  + Connected to the internet
* Post-conditions:
  + The user can see the live stream
* Successful path:
  + User clicks on watch live stream
  + Baby monitoring appasks the user to have access to cameras and microphone
  + User accepts the permission
  + Camera starts recording
  + A livestream video is shown to user
* Alternative path:
  + User clicks on watch live stream
  + Baby monitoring appasks the user to have access to cameras and microphone
  + User rejects the permission
  + Black screen is shown
  + User goes to the settings
  + User changes permission settings and grants access to the camera
  + A livestream video is shown to the user
* Exception:
  + Reject the permission to grant access to camera
  + Device is not connected to the internet
* Rules:
  + Permission to camera and audio
  + Connected to the internet
* Name: Video Call
* Description: This allows the user to video call and have a live conversation with the nanny/babysitter
* Actors:
  + Parents
  + Babysitter
  + Baby monitoring app
* Pre-conditions:
  + User is logged in
  + Connected to the Wi-Fi
  + Have access to the cameras and audio
* Post-conditions:
  + User is connected with the nanny/babysitter via video call
* Successful path:
  + User clicks on video call
  + The babysitter receives the call
  + The babysitter accepts the call
* Alternative path:
  + User clicks on video call
  + The babysitter rejects the call
* Exception:
  + Video is not transmitting properly due to slow internet connection
* Rules:
  + Both parent and babysitter should be connected to the internet