American International University-Bangladesh (AIUB)
Department of Computer Science
Faculty of Science & Technology (FST)

Project Title:
Integrated Application Usage Tracking & Parental Control System

Supervised by:

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A Software Engineering Project Submitted
By

Semester: Summer_23_24		Section: H	Group Number: 09	
SN	Student Name	Student ID	Contribution (CO3+CO4)	Individual Marks
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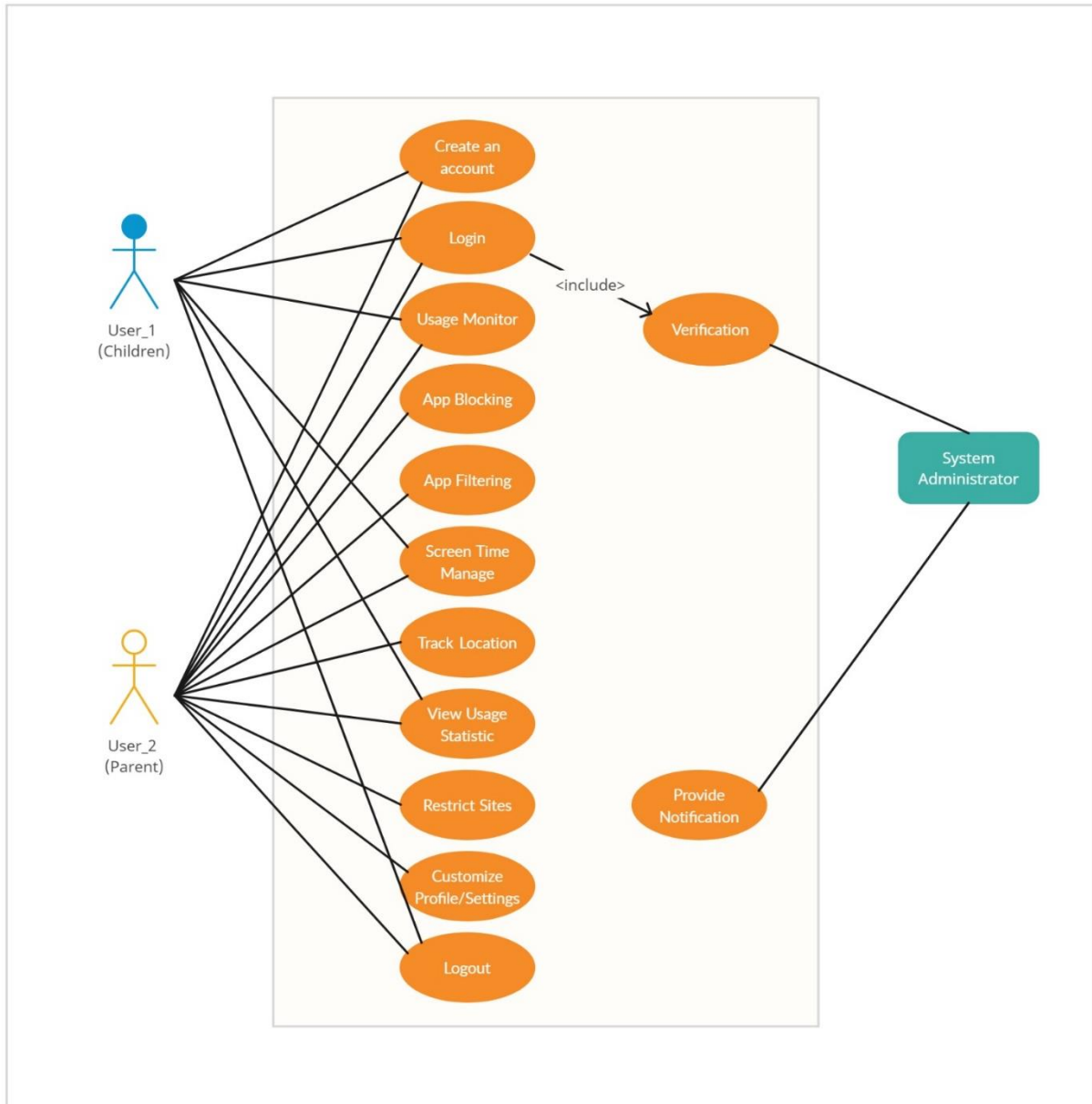# 1. **System Design Specification**

Case Study:

The Integrated Application Usage Tracking & Parental Control System is a tool that allows parents to manage and monitor their children's device usage effectively. It provides features like tracking screen time, setting time limits, restricting access to certain apps, and notifying parents when children attempt to access restricted content. The system ensures that parents can guide their children's digital habits while maintaining a balance between usage and restrictions. Key use cases like logging in, monitoring, and setting restrictions are clearly represented, showing the relationships necessary to implement the system's features.

In this system, children log into the device, and the system tracks their usage in real-time. If the child exceeds the set time limit, access to specific apps or the entire device is restricted. The system continuously monitors and records details about app usage and overall screen time. Parents can view this data through a dashboard, where they also set time limits and restrictions. If the child attempts to access restricted apps or needs additional time, the parent is alerted and can choose to approve or deny the request.
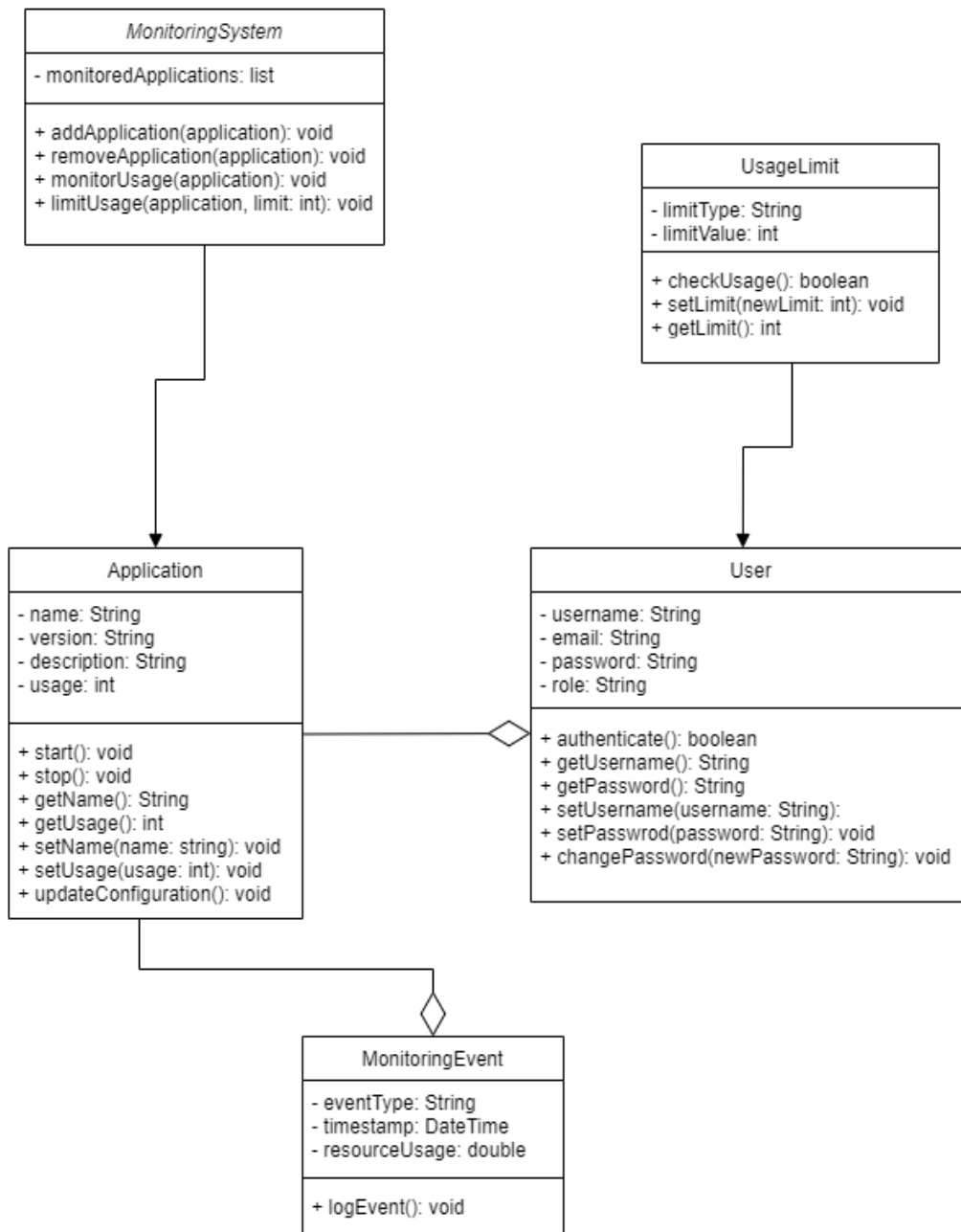
The system's core structure involves components like Monitoring System, which handles app tracking and restrictions, and User, which manages authentication and role-based access for parents and children. The parent interacts with the system to customize restrictions for their child's device, which is then implemented by the system. The sequence of interactions between parent, child, and system ensures real-time monitoring and control, allowing parents to maintain oversight while giving children managed freedom to use their devices.

By offering flexibility and customization, the system ensures that parental controls are easy to set up and adjust, making it a practical solution for managing children's device usage and fostering healthy digital habits.
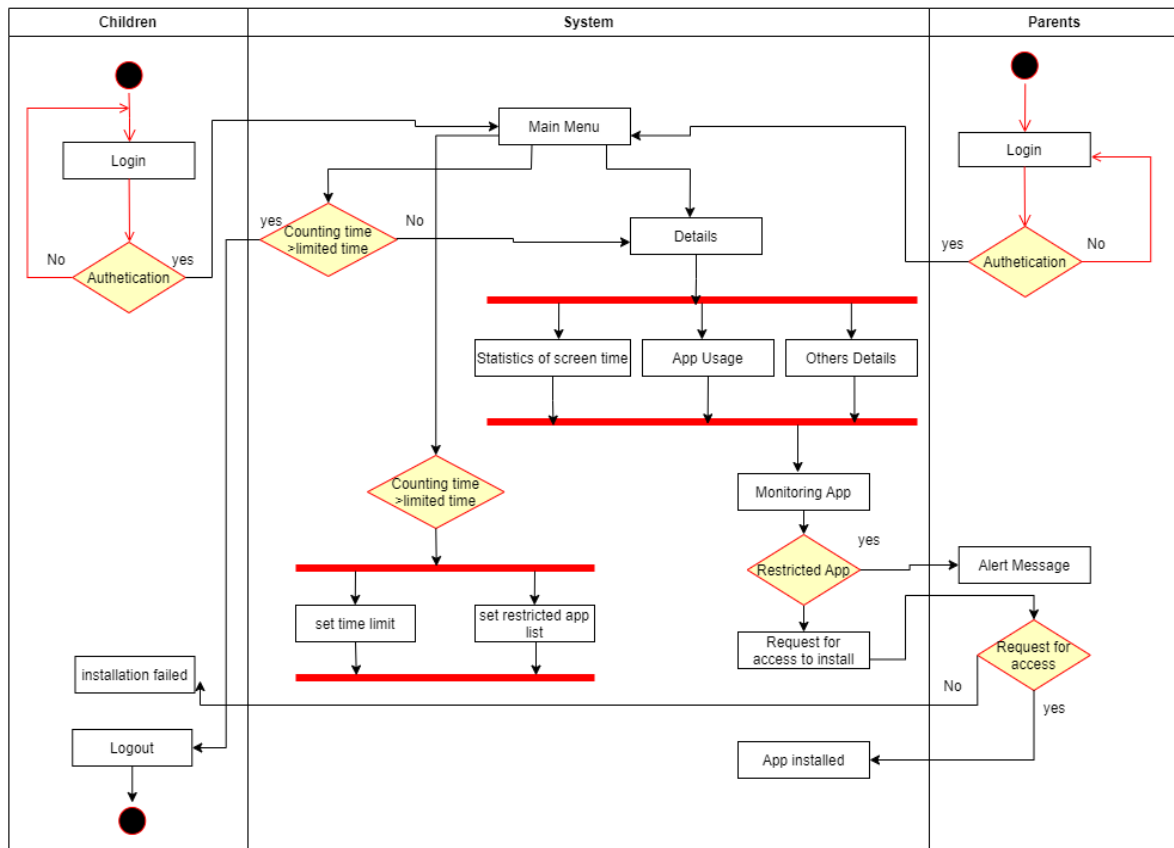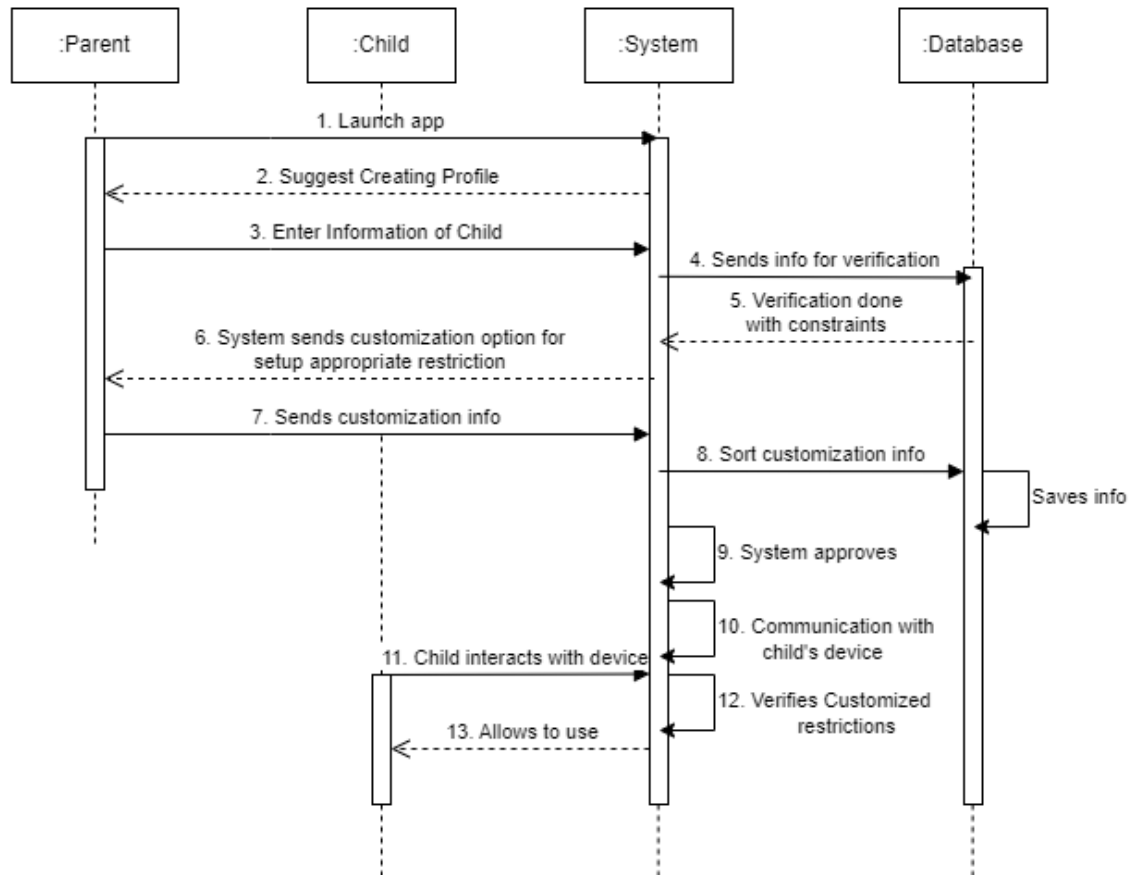
Use Case Diagram:

Class Diagram:

MonitoringSystem

- monitoredApplications: list

+ addApplication(application): void
+ removeApplication(application): void
+ monitorUsage(application): void
+ limitUsage(application, limit: int): void

UsageLimit

- limitType: String
- limitValue: int

+ checkUsage(): boolean
+ setLimit(newLimit: int): void
+ getLimit(): int

Application

- name: String
- version: String
- description: String
- usage: int

+ start(): void
+ stop(): void
+ getName(): String
+ getUsage(): int
+ setName(name: string): void
+ setUsage(usage: int): void
+ updateConfiguration(): void

User

- username: String
- email: String
- password: String
- role: String

+ authenticate(): boolean
+ getUsername(): String
+ getPassword(): String
+ setUsername(username: String):
+ setPasswrod(password: String): void
+ changePassword(newPassword: String): void

MonitoringEvent

- eventType: String
- timestamp: DateTime
- resourceUsage: double

+ logEvent(): void

Activity Diagram:

Sequence Diagram:

ER Diagram: