SECP1513-06 TIS

VR Classroom

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INTRODUCTION

Our project domain is VR Classroom which is 'ClassVR'

- a dynamic platform that uses virtual and augmented reality for education and training
- gives students a one-of-a-kind, multi-sensory, and totally immersive learning experience

Project is based on the fourth Industrial Revolution (IR4.0) technologies

- The fourth Industry Revolution represents a movement towards the goal of intelligent industry and manufacturing.
- Mainly focus on one of the technologies of the Fourth Industrial Revolution (IR4.0) is, virtual reality Classroom

Continue...

Prototypes

- a first version of a product from which further versions are created
- simple physical representations of concepts, use processes, or information structures intended for fast feedback and product improvement

DETAIL STEP AND DESCRIPTIONS

Empathy

- stage where we should understand the problems faced by our clients.
- our education platform needs to be improved
- interview some of our friends who doing their courses online
- problems with online classes on various platforms

Define

- identify the issues that our clients are experiencing
- studying and analyzing their replies given during the interview process

continue...

Ideate

- brainstorming where we can generate possible solutions for the problem statement

Prototype

- choose the best concept from a source of possibilities and transform it into a product
- prototype was the ClassVR application's user interface

DETAILED DESCRIPTION

PROBLEM

- online learning sessions that are being conducted nowadays are not effective
- Students have a problem focusing during class sessions

SOLUTION

- create an application called VR Classroom
- experience a learning session in virtual reality

Team Working

- Split into different tasks
- Labib will mainly focus on the production of the video.
- Bukhari, Jiau Ting and Mahamudul focus on the content of the report and discuss the progress in creating the prototype of the VR classroom application.

TEAM WORKING EVIDENCES
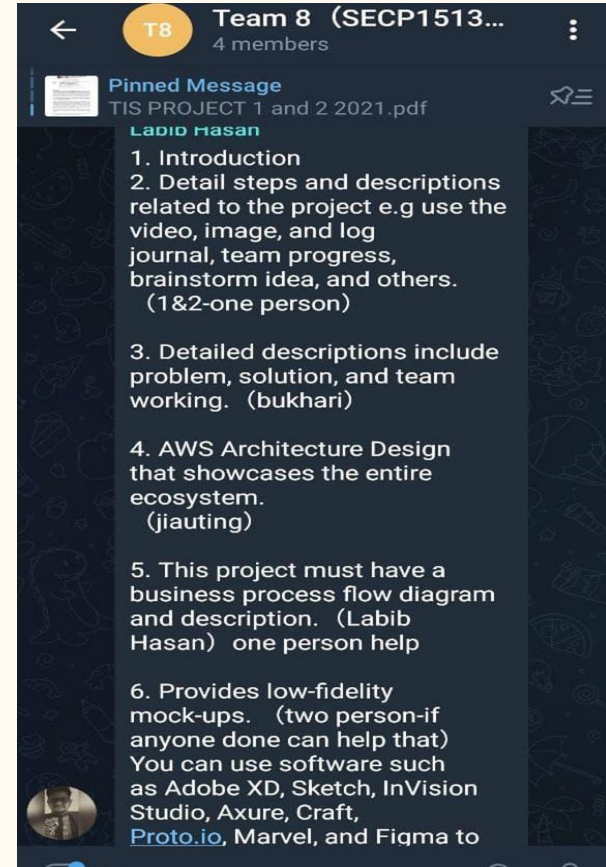
Architecture Design
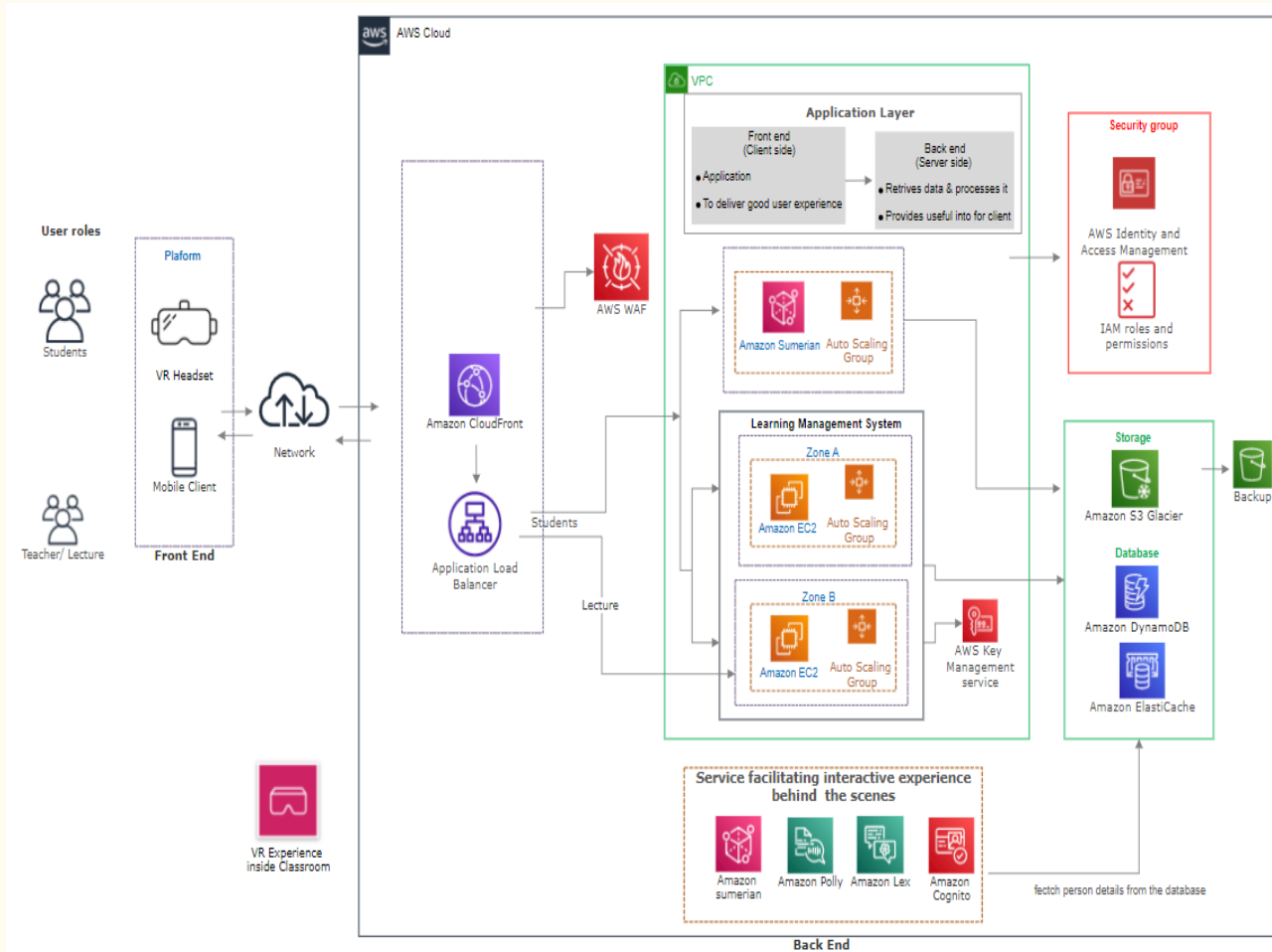
Components of Front-End Cloud Architecture

User and Description:

Teacher

- Provide student orientation services
- Provide content for pedagogical activities

Students

- It generates its own knowledge
- It is characterized by being interactive

Platform

VR Headset

- allows the user to interact with a simulated environment and experience a first-person perspective (FPV)
- connect to each other as well as to the cloud
- instructor/student can move the user's perspective in a natural way through the eye-tracking module, position and motion controllers.

Mobile

- VR learning environments can be built on mobile devices.
- use mobile to open the VR Classroom app
- go into the learning system to view the menu and case submission

Network

- visual experience via a 5G network connection with minimal latency, high capacity, and assured throughput
- The sensor input signals from the terminal are sent to the app for processing over the same 5G network connection

Components of Back-End Cloud Architecture

Compute and Networking

Application Load Balancer

- serves as the client's single point of contact
- improves the application's availability

Auto Scaling Group

- ensuring that we have the appropriate number of Amazon EC2 instances available to manage the load on your application
- collection of EC2 instances known as automatic scaling groups

Amazon EC2 instances

- service that allows corporate students and lecturers to execute applications in a computing environment
- used to create an almost limitless number of virtual machines (VMS)

Amazon Sumerian

- introducing 2D web apps into the realm of 3D
- students and lecturers may interact in novel ways with a simple click, touch, or swipe

Database

Amazon DynamoDB

- has features such as built-in security, continuous backup, automated multi-zone replication, memory caching, and data export tools
- suitable for students and lecturers to store the information of class and personal detail

Amazon ElastiCache

- used for caching, which improves application and database performance, or as the primary data store for non-persistent use cases such as session storage, grade leaderboards, streaming, and analytics
- can help lecturers save a lot of time managing data.

Storage

Amazon CloudFront

- Web service that speeds the distribution of static and dynamic Web material to students and teachers, such as.html,.css,.js, and picture files
- When a student or teacher requests CloudFront material, the request is routed to an edge location with the lowest latency (time delay) to provide the content with the greatest performance.

Amazon S3 Glacier

- Safe, long-lasting, and low-cost Amazon S3 storage class used for data preservation and long-term backup
- allows students and lecturers to offload the administrative burden of operating and scaling storage to AWS

Business process flow diagram
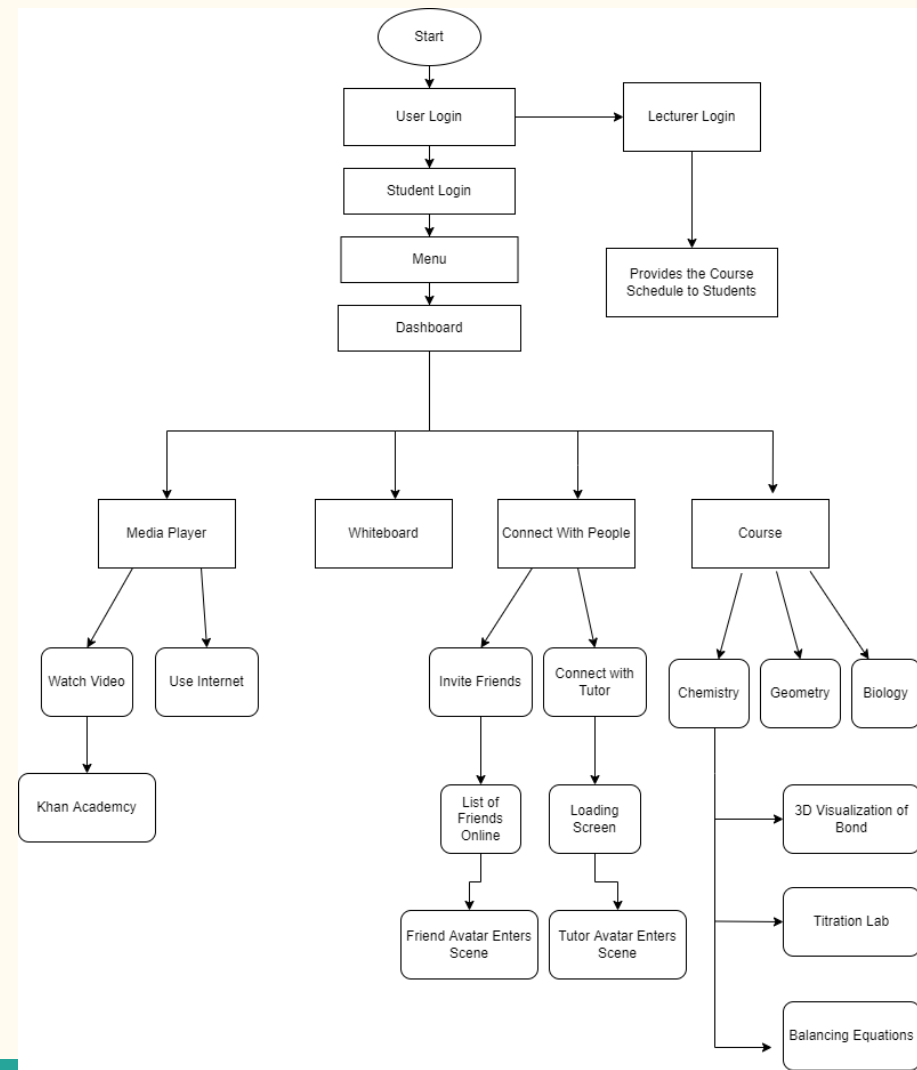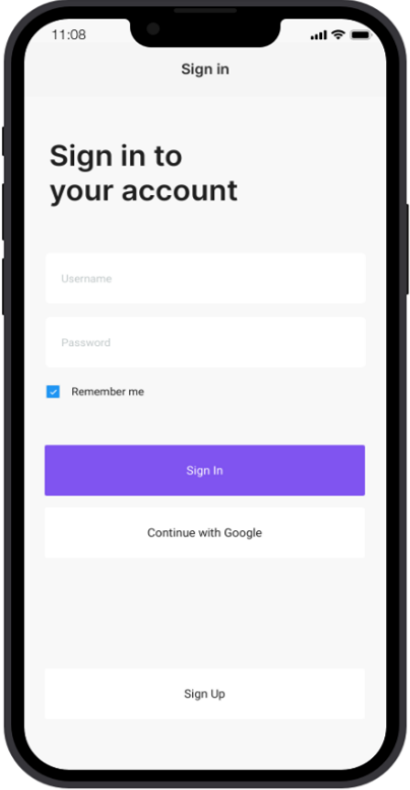
Low-fidelity Prototype

Logo & user interface of modified VR Classroom
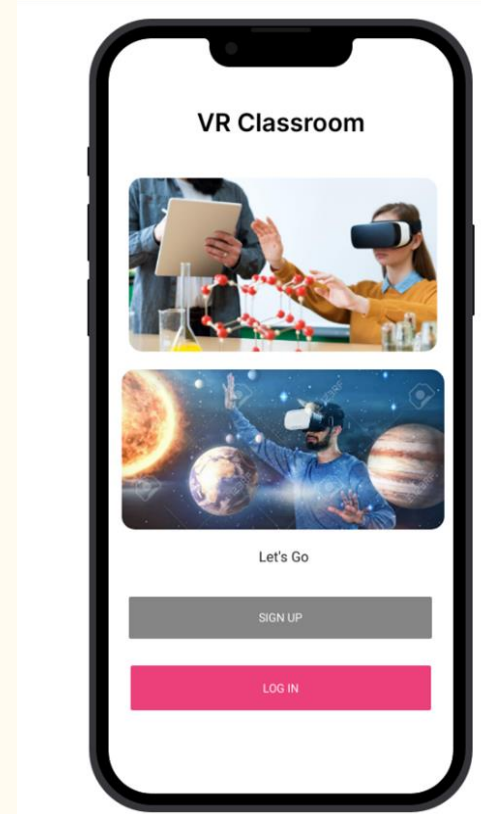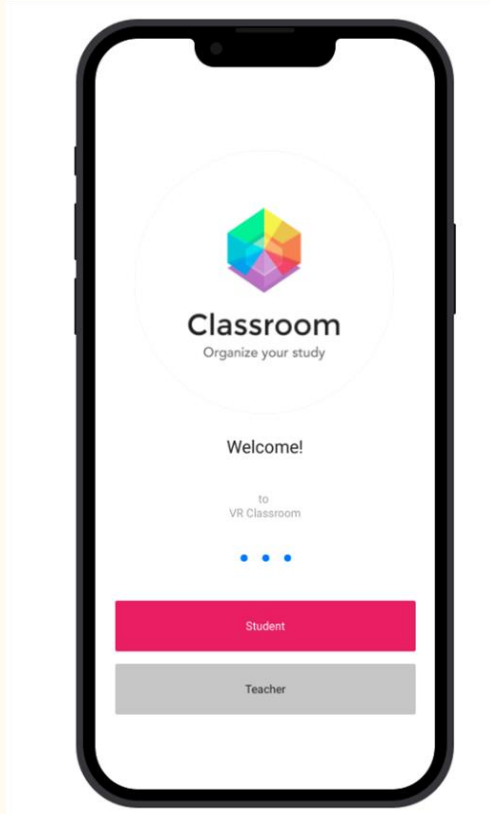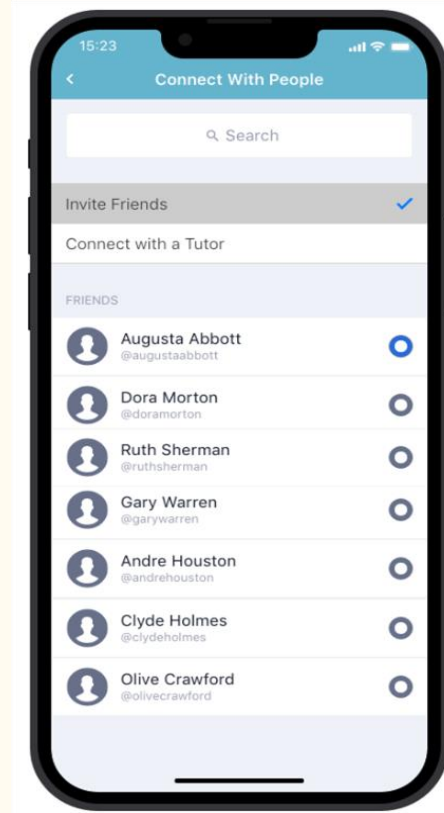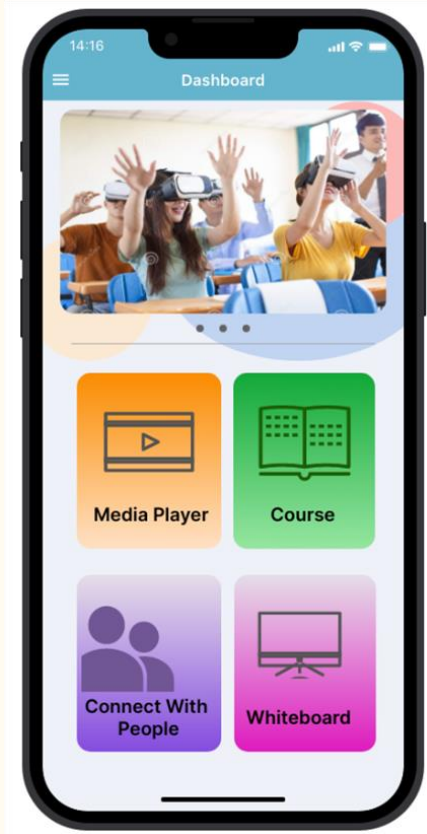
User interface for Sign in & Sign up

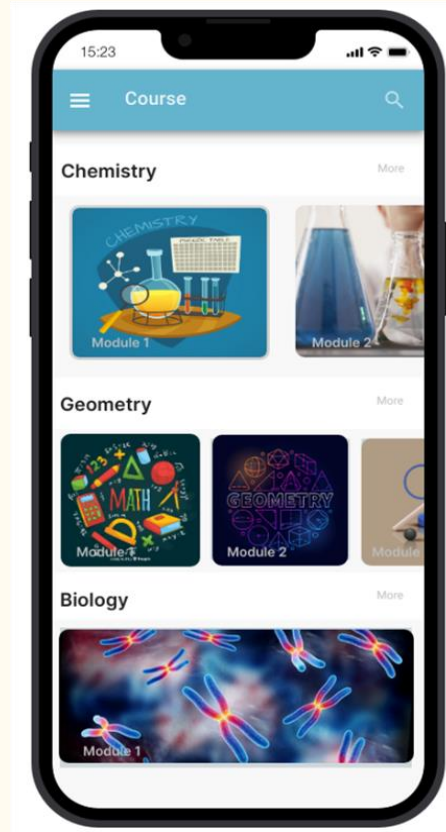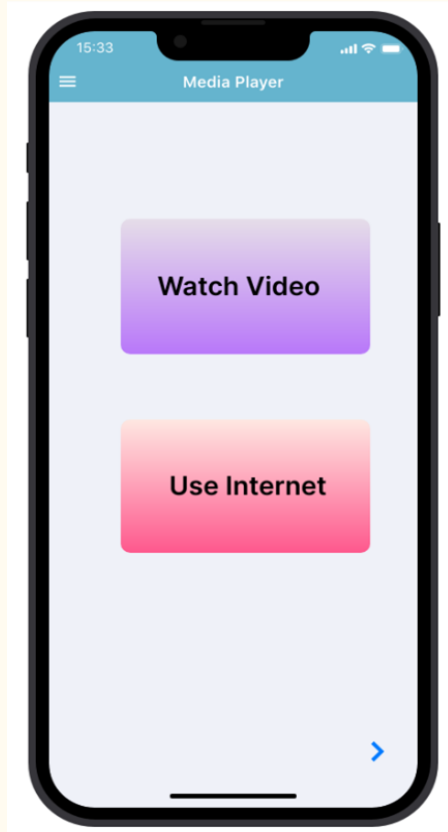# User interface of Menu and Calendar to plan the course time
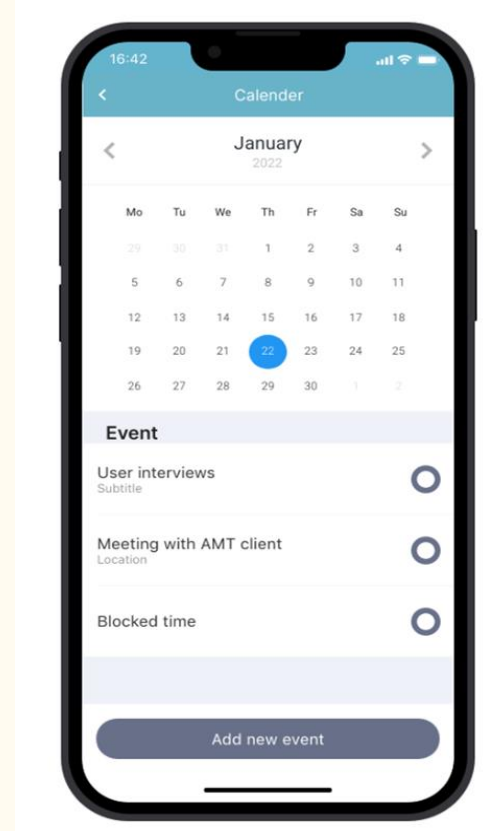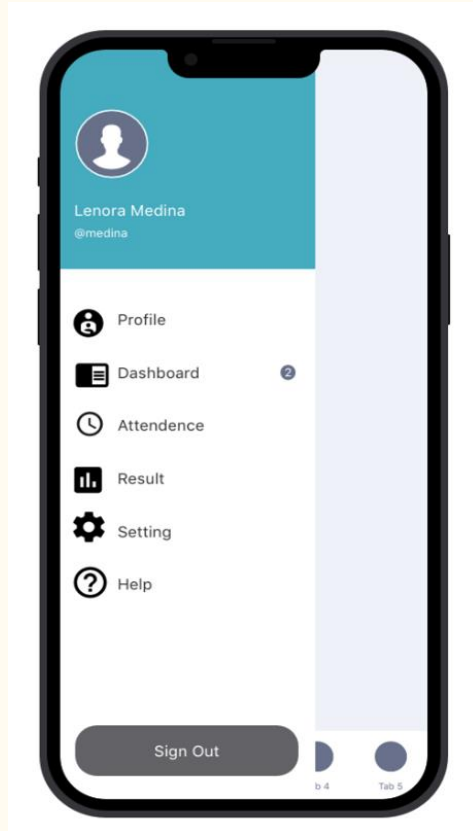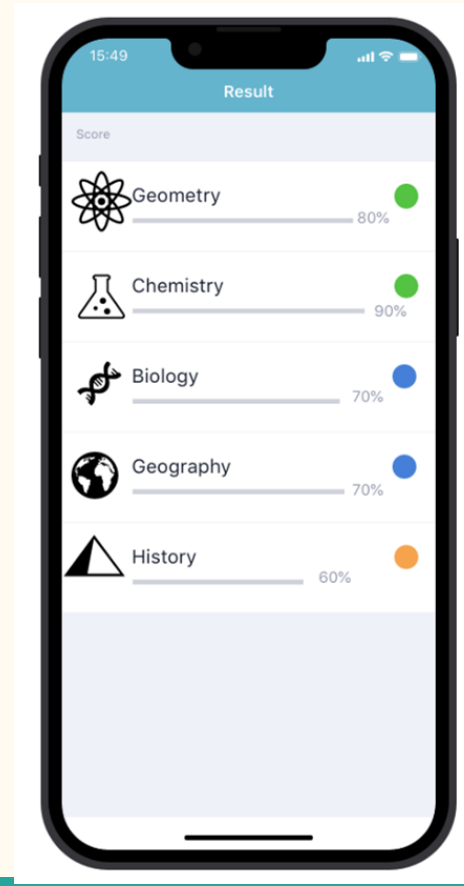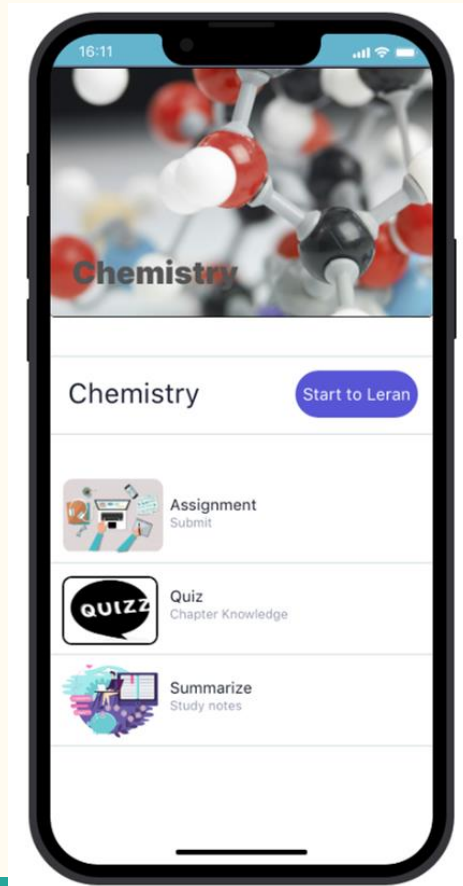
User interface of Setting and Profile
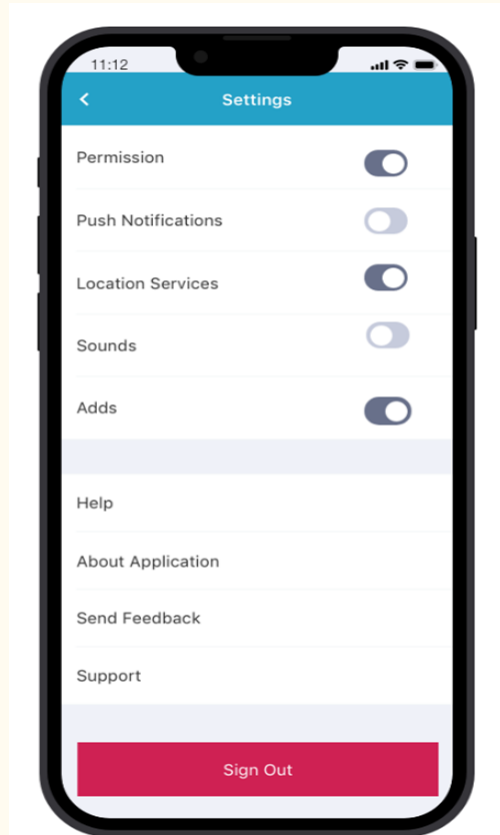
User interface of dashboard and Connect with people

User interface of Media Player and Course

User interface of Course and Result

User interface for Connect With Headset