**#Instructions**

* **Please make a copy before you edit it.**
* **Please submit the new copy access link in the** [**submission form**](https://forms.gle/S6GZ48U9F7t6jexHA)**.**

|  |
| --- |
| **2020 Google Girl Hackathon VI Semifinal Round Project Submission** |
| Project Name: Cloud School |
| Group Name: 达啦崩吧 |
| Group Members: Chinese Name/Pinyin Name  ⻩千茹/Qianru Huang, ⻩家晏/ Jiayan Huang, 陈怡如/ Yiru Chen, 王书悦/ Shuyue Wang, 郑瑜婷/ Yuting Zheng |
| **Group Member Roles & Responsibility**  Please brief introduce the contribution of each group member: the specific tasks or duties that each member complete.  Qianru Huang builds the front-end framework and implements many functions and codes.  Jiayan Huang and Yiru Chen write some backend codes.  Shuyue Wang and Yuting Zheng design the graphic and user interface of the App. Also add and modify some front-end codes. |
| **Brief summary**  Please summarize your problem statement and solution in a short paragraph.  Because of COVID-19, students have to study at home. Without the atmosphere in school, many college students lose their familiar state of study and become inefficient and lonely. To improve students’ study efficiency, our group plans to develop a virtual school App to bring college students the sense of ceremony, making them get more connection with their schoolmates and arousing their self-identity as students. |
| **Problem Statement**  What's the background of the chosen theme? (brief introduction is enough)  What is the specific problem on the chosen sub theme? Please mention the theme your solution caters to. (Multiple selections is acceptable.)  • Background: As COVID-19 makes its way across the globe, inevitably, it’s affecting students' study in different ways. We work out a creative solution which can help students using this App at home enjoy same real scene as at school, maintain concentration and improve learning efficiency.  • Trying to solve: Enabling productivity and creating familiar scene for students.  • What We are doing: To enable college students affected by COVID-19 to effectively manage their time and plans, our plan is to provide a real scene like a library or a coffee shop, inviting friends to study together and promoting each other. We hand out questionnaires to students in different colleges and learn that most college students think they can achieve higher learning efficiency in school than at home, and great majority view the library as the best study place. Our group also investigates the reason why they can be more efficient during studying to get better design for these factors and simulate the scenes in reality. Members brainstorm and design the scene and function of our App. Moreover, we find some relevant Apps and experience their strengths and weaknesses.  • Why: According to our questionnaire survey, more than 50 percent of the students cannot have the same learning efficiency at home as at school. We think that an App that enables them to promote each other to study with their roommates and friends at school and provide a learning atmosphere similar to the library.  • For whom: For all students, especially college students who procrastinate at home and have low self-control. |
| **Problem Factor**  What is the underlying reason behind the problem  Homes provide comfortable environment for students, but it also makes students forget the study routine and urgency of learning. An in-school environment, a reminder of tasks, the company of classmates, a record of study time and the comparison with classmates may help students with their study.  We provide a school online to make students feel like at school and arouse students’ sense of urgency for study.  We design a to-do list to remind student of their tasks and plans.  User can invite their classmates/friends and study together.  We record the study time of users and help user to analyze.  Study data are displayed in the personal center, which may activate students’ passion. |
| **Use Cases**  Describe specific use cases that illustrate the problem/opportunity.    **1.** **Study Together (Public Scene)**  **Description:** The main requirement of users to use our product is to improve efficiency by studying together with others. Our App offers public scenes for users to enter.  **Actors:** Users under same scene.  **Success End Condition:** User studies and then gets bonus points, we have their study record.  **Failed End Condition:** We have not recorded this study, and user hasn't got bonus points.  **Actions:**  1. Enter a public scene --> 2. Choose a seat --> 3. Start study --> 4. Stop study --> 5. Get points --> 6. Exit scene  **Extensions:**  1a User can make appointment at most one day earlier  3a User can pause a while to have a rest  3a1. Pause study --> 3a2. Continue to study  3b User can pause a while to chat with friends  3b1. Pause study --> 3b2. Check online friends --> 3b3. Chat with friends --> 3b4. Continue to study  3c User can pause a while to make friends:  3c1. Pause study --> 3c2. Check users under same scene --> 3c3. Send friend requests --> 3c4. Continue to study  4a If user leave the App, the time will stop and transform to points  **Variations:**  User may enter: Library / Cafe  **2.** **Study Together (Customized Room)**  **Description:** Sometimes user needs a private room to have discussion or meeting with acquaintances. User can create room and set the property of this room for some time, for example, only admit his friends in.  **Actors:** User, user's friends, other users who are invited.  **Success End Condition:** There are vacant rooms in the place the user enters, and we have their study time record.  **Failed End Condition:** No vacant room in selected scene. We have not recorded this student, and user hasn't got bonus points.  **Actions:**  1. Enter a scene --> 2. Choose a customized room and set its properties --> 3. Start activities --> 4. Stop study --> 5. Get points --> 6. Exit scene or exit  **Extensions:**  3a User can pause a while to have a rest  3a1. Pause --> 3a2. Continue  3b User can pause a while to chat with friends  3b1. Pause --> 3b2. Check online friends --> 3b3. Chat with friends --> 3b4. Continue  3c User can pause a while to make friends:  3c1. Pause --> 3c2. Check users under same scene --> 3c3. Send friend requests --> 3c4. Continue  4a If user leave the App, the time will stop and transform to points  **Variations:**  User may enter: Library / Cafe  User can: study / hold audio or video conference / listen to music  **3. Study Alone**  **Description:** User choose a self-study room and can obtain study points according to the time.  **Actors:** User  **Success End Condition:** The real based library has vacancy for private.  **Failed End Condition:** We have not recorded this study, and user hasn't got bonus points.  **Actions:**  1. Enter a scene --> 2. Choose study-alone mode --> 3. Start study --> 4. Stop study --> 5. Get points --> 6. Exit mode --> 7. Exit scene.  **Extensions:**  3a1. Pause study --> 3a2. Continue to study  3b User can pause a while to chat with friends  3b1. Pause study --> 3b2. Check online friends --> 3b3. Chat with friends --> 3b4. Continue to study  4a If user leave the App, the time will stop and transform to points  **Variations:**  User may enter: Library / Cafe / Dormitory  **4.** **Create Reminder**  **Description:** Creating to-do list and memo helps to efficiently schedule the study. Users can manually create new to-do item or import calendar/course table to automatically create reminder.  **Actors:** User.  **Success End Condition:** User creates new reminder and our App reminds the user on time.  **Failed End Condition:** User fails to create new reminder, or we fails to remind in time.  **Actions:** 1. Select create reminder --> 2. Fill in relevant information like item name and time to remind. --> 3. Get reminded at selected time.  **Extensions:**  2a User is able to import local calendar  2a1. Choose to import local calendar --> 2a2. Select relevant calendar file --> 2a3. Confirm the reminder generated automatically --> 2a4. Get reminded at selected time.  3a User is able to edit item before reminding time  3a1. Select item --> 3a2. Edit item information --> Get reminded at selected time.  3b User is able to delete/finish item before reminding time  3b1. Select item --> 3b2. Delete item  3c User is able to skip to study alone interface to do selected item  3c1. Select item --> 3c2. Start study alone --> 3c3. Finish item  **Variations:**  User may want to create: Memo / To-do / Habit / Due time reminder  User can choose some preset template reminder: Sleep / Drink water / Exercise reminder  **5. Decorate Scenes**  Description: User exchanges his accumulated study hours with decorations to turn his room into the style he wants, which is one part of the motivating mechanism.  Actors: User, users under same scene.  Success End Condition: User 's study points are greater than or equal to the points the decoration needs.  Failed End Condition: User 's study points are less than the points the decoration needs. Actions:  1. Enter a store --> 2. Exchange his study points with some decorations --> 3. Enter the room he wants to decorate --> 4. Put the decorations on the place he wants --> 5. Exit scene  Extensions:  2a User can sell his decorations for 50% off.  2b User can exchange his decorations with his friends. 4a User can take off decorations.  **6. Record Sleep**  Description: To simulate life in school, a regular lifestyle is necessary. Before going to  bed, user clocks in, and clocks out after getting up. The recorded data helps to analyze user's sleep habit.  Actors: User.  Success End Condition: User records time to sleep and get up, system saves the data and analyses.  Failed End Condition: User fails to record get up time or get up time regularly, system can't get valid information.  Actions:  1. Clock in Before going to bed --> 2. Clocks out after getting up --> 3. Get bonus points --> 4. Get sleep habit analysis  Extensions:  1a User can set regular sleep reminder 2a User can set regular get up clock  In summary, we can use a diagram to demonstrate one day's activities of our user. |
| **Detailed Design**  Adapted from front-end design section description and backend design section  Description. How does the overall design work? Details about the algorithms, schemas, encodings, etc., that will be used should be included here.  Guideline: If something's going to be 100 lines of code or more, it should be described here. You should also describe every major data structure and algorithm you use.  The front-end design section uses the VUE as the overall framework and USES the Vuetify as the UI design library, with Ajax interfaces.  The backend design section uses Springboot as the framework and Java language for development.  l 3.5.1.3数据词典  表 1“cloud\_study”标签名的数据字典表   |  |  |  | | --- | --- | --- | | 字段名 | 类型 | 说明 | | 用户名 | Varchar(128) | 家具名 | | 手机号码 | Varchar(128) | 手机号码 | | 生日 | Varchar(128) | 生日 | | 房间邀请码 | Varchar(128) | 房间邀请码 | | 性别 | Varchar(32) | 性别 | | 个人介绍 | Varchar(2048) | 个人介绍 |   l 3.5.2.2核心功能模块描述  表 1 核心功能模块描述   |  |  |  |  | | --- | --- | --- | --- | | 功能模块 | 功能 | 功能描述 | 优先级  （1最高） | | 账户 | 登录 | 通过用户名密码登录 | 1 | | 注销 | 用户可以主动注销会话 | 1 | | 注册 | 发送图片验证码，核验通过后发送手机验证码注册 | 1 | | 个人信息修改 | 用户可以修改自己的用户名与密码 | 1 |     l 3.5.2.3重点用例规约  表2 注册用例规约   |  |  | | --- | --- | | 用例名称 | 注册 | | 功能简述 | 发送图片验证码，核验通过后发送手机验证码注册 | | 用例编号 | Account003 | | 执行者 | 用户 | | 前置条件 | 云短信服务正常运行 | | 后置条件 | 无 | | 涉众利益 | 无 | | 基本路径 | 1. 用户点击注册按钮  2. 系统发送图片验证码，用户输入验证码核验  3. 系统向用户指定手机号发送一条验证码短信  4. 用户输入验证码  5. 注册成功 | | 扩展路径 | 2.a 用户输入图片验证码核验失败  2.a.1 系统生成新的图片验证码  2.a.2 用户输入新的验证码  4.a 用户手机验证码过期  4.a.1 重新走流程2，从图片验证码开始 | | 字段列表 | 用户id：id  手机号：tel  用户名：username  密码：password  账户创建时间：creatime | | 设计规则 | 无 | | 未解决的问题 | 无 | | 备注 | 无 |     表 3设置学习时间用例规约   |  |  | | --- | --- | | 用例名称 | 设置学习时间时间 | | 功能简述 | 用户可以设置学习时间 | | 用例编号 | Tag004 | | 执行者 | 用户 | | 前置条件 | 用户想修改的学习时间已经与该用户绑定 | | 后置条件 | 无 | | 涉众利益 | 无 | | 基本路径 | 1. 用户点击修改学习时间按钮  2. 用户输入想修改成的学习时间  3. 系统更新学习时间  4. 系统更新学习的修改时间（为当时）  5. 系统返回修改成功 | | 扩展路径 | 3.a 用户输入的日期不合法（不是未来的日期）  3.a.1 系统抛出异常，返回异常结果 | | 字段列表 | 用户id：user\_id  标签id：id  标签最新更新时间：mtime  标签学习时间：study\_time | | 设计规则 | 无 | | 未解决的问题 | 无 | | 备注 | 无 |     表 4 修改学习组标签用例规约   |  |  | | --- | --- | | 用例名称 | 修改学习组标签 | | 功能简述 | 用户可以对自己的学习组中的时间进行增加与删除 | | 用例编号 | Group003 | | 执行者 | 用户 | | 前置条件 | 用户想修改的学习组中的时间已经与该用户绑定 | | 后置条件 | 无 | | 涉众利益 | 无 | | 基本路径 | 1. 用户点击修改学习组中的时间按钮  2. 用户为学习组中的时间选择添加或删除标签  3. 系统更新学习组中的时间  4. 系统返回修改成功 | | 扩展路径 | 3.a 用户想增加的学习组中的时间没有先与用户绑定  3.a.1 系统抛出异常，返回异常结果 | | 字段列表 | 用户id：user\_id  标签组id：id  学习组中的时间序列：tags | | 设计规则 | 无 | | 未解决的问题 | 无 | | 备注 | 无 |   3.5.5接口需求  l 3.5.5.1硬件接口——蓝牙接口  表6硬件接口——蓝牙接口表   |  |  | | --- | --- | | 接口名称 | 蓝牙TAG操作 | | 接口功能 | 连接和断开蓝牙、启动和关闭蜂鸣器、读取温湿度 | | 接口限制 | 低频率下10s更新一次、高频率下1s更新一次数据 | | 请求方式 | 通过平台API通讯或原生API通讯 | | 请求参数 | 连接和断开蓝牙、启动和关闭蜂鸣器、读取温湿度 | | 返回参数 | 连接是否成功，操作是否成功，温湿度值 |   3.5.6其他需求  l 3.5.6.1图片上传  对于上传图片的功能，支持jpg与png格式的图片。且图片大小不能超过5MB。  **数据库设计**  User（用户表）  userId 用户ID  username 用户昵称  tel 手机号  bonus\_points 积分  password 密码  primary key(userId)    Friends（交友表）双向关联  userId1 用户ID  userId2 用户ID  primary key: userId1, userId2  foreign key: userId1, userId2    honor(荣誉表)  honorId 荣誉Id  honorName 荣誉名称  honorPic 荣誉图片  primary key: honorId    user\_honor(用户-荣誉表)  userId 用户ID  honorId 荣誉ID  primary key: userId, honorId  foreign key: userId, honorId    room（学习室表）  roomId 房间ID  roomName 房间名  password 房间密码  roomPic 房间背景  seatNum 座位总数  realNum 实坐总数  status Public or Customized  primary key: roomId    Seat（座位情况表）  roomId 房间ID  userId 用户ID  seatId 座位号  primary key: roomId, seatId  foreign key: userId, roomId    r  study\_record(学习记录表)  userId 用户ID  roomId 房间ID  enterTime 进入时间  quitTime 退出时间  IsTogether 是否是一起学习  primary key: userId, roomId  foreign key: userId, roomId    Reminder(提醒表)  userId 用户ID  reminderType Getup/Sleep  Time 提醒时间  primary key：userId, reminderType  foreign key: userId |
| **Caveats**  You may need to describe what you did not do or why simpler approaches don't work. Mention other things to watch out for (if any).  There are something want to implete but not for many reasons:   1. The interaction between students/friends. 2. Some other buildings like cafe, dormitory. 3. The function of video call.   It is hard to implement video/voice call in a Web App. We’ve considered some SDKs to satisfy this requirement, but they are all too weak on web app.   1. Incentives like decorating room, awarding study time medals.   Firstly, it is not one of the most important designs in our product, so we did not prioritize it when time was short. Secondly, we lack art designers. We suffered a lot when designing teaching building and main map, and we recognized that we do not have the ability to design a dress-up app.   1. The connection between frontend and backend   Due to the epidemic situation, our team members developed separately in various places, unable to communicate well and effectively. And the time for Hackathon is too tight that we do not have the time to connect the frontend and backend. |
| **Final Result**  Please share what you achieve in this project.  We achieve a web app which enables students find the feeling of staying at school and studying with friends to arouse the passion and urgency for learning.  First we investigate the need of college trapped at home.  Then we design the UI interface, and graphic style.  Frontend and backend code are designed afterwards.  Till end, user can enter the map of school and choose a building(library) and choose a room to study. Also he can choose to create his own room and invite his friends for company. Moreover, user can show his study condition and set a goal, see his record of study and edit his todo list or plan. Maybe he will be awarded if he beat 50% of his classmates. |
| **References and appendices**  Any supporting references, diagrams or demos that help depict your solution.  Any public datasets you use to predict or solve your problem.    **1. Several Apps we've referred**  We have used several similar time managing products like Forest, Timing, Small daily and TomaTodo.  These Apps are designed with some wonderful ideas and practical functions which have listed above. Therefore, they all have large user base. Some of our basic functions like recording study time and getting bonus points take these Apps as reference.  However, these products are not designed to simulate in-school study environment, which are urgently needed especially during COVID-19 period. The simulation of real school life makes our App unique.  **2. The raw outcome data of our questionnaire**  We choose some representative questions for this part.  你在什么地方学习最有效率 [多选题]    为什么觉得在图书馆学习更有效率 [多选题]    你觉得效率软件软件应有哪些必有的功能？ [多选题]    为了让 app 更易上手也更有趣味性，我们还想增加一些功能，你觉得以下哪些功能较为吸引你？ [多选题]    你希望有一个怎样的学习软件帮助你进行学习 [填空题]  回答主要为：限制手机使用，简洁有趣，发帖交流，能回答学术问题，可以互相监督学习的，有提醒计划功能，能视频，不收费，合理的激励措施 |
| **Appendix: Instructions**  Please provide a user guide for your source code and give instructions to implement your demo.  Our frontend codes, UI interface and graphic designs are in the repository cloudschool/Frontend\_CloudSchool.  In this folder, cloudSchool is our design of UI interface and some graphic design. And the rest is the frontend code. Run following instruction to view our web:  cd ./cloudschool/Frontend\_CloudSchool/Frontend\_CloudSchool  npm run dev // maybe you need chmod first  And you can see our App at link <http://localhost:8080> (need to adjust the aspect ratio of web page to 0.5625:1, recommended 414\*736 according to the size of IPhone 6 Plus)  In src of the frontend code, we place each of our scene in the components part. At beginning, user will see the main map of our cloudschool, and choose which building to enter(as the limit of time, we haven’t realized all building) and the code are in the index.vue. And then user can see many classrooms can choose one to enter(code in GotoFloor), and choose their prefer time to study(code in GotoClass, user can’t leave this App). Also, user can go to user center to create a room of his own and invite his their via inviting number(code in AddRoom and Personal, friends can join the same room via inviting number). In the User Center(should be logged/registered in first, code in Login and Register), User can see his data like user information, study record, to-do list(code in ToDo, EditTodo).  The rest part of the cloudschool includes backend login function and the design of database. |