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2022

## Open-Source Education Management System

Shaoxiong Yang

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Open-source Education Management System

by

Shaoxiong Yang

Capstone Project paper presented to the

Faculty of the Department of  
Computer Science  
Loyola Marymount University

In partial fulfillment of the  
Requirements for the Degree  
Master of Science in Computer Science

May 1, 2022



# Opensource Education Management System

CMSI 694 Capstone Project:  
Shaoxiong Yang

Technical Advisor: Dr. BJ Johnson

Class Advisor: Dr. Elham Ghashghai



# Executive Summary

- **Background:** Bilingualism on the rise in the U.S. due to demographic shifts in the U.S.[1]
- **Problem:** single teaching method can't improve students' learning efficiency.
- **Methodology:** Use agile development methods. Develop an opensource education management tool.
- **Impact:** It fills the gap of bilingual online education in the United States.

- **Executive Summary**
- **Background**
- **Problem Statement**
- **Objective & Impact**
- **Methodology**
- **Feature Design**
- **Measure of Effectiveness**
- **Comparison**
- **Operational View**
- **Focus & Limitations**
- **Schedule**
- **Future work**
- **Project Timeline**
- **Reference**
- **Appendix**

# Agenda

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# Background



- Learning a second language in the US has become a trend.[2]
- Educational institutions have only traditional teaching class methods.
- Lack of study materials.
- Students lack motivation to study.
- Existing learning materials are expensive.
- No FREE open Learning Language resources.

# Problem statement

## Problem Statement:

- Brightspace like website is an effective tool for learning. However, it is costly. So, I have created an opensource website that is open to public for use and further development.

## Motivation:

- Convenience for teachers and students.
- Provide open learning resources.
- Allow students have extra exercise out of class.

## Clients:

- All non-English Language institutions in the United States.



# Objective & Impact

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## Objective:

- Help teachers post assignments and announcement.
- Students can study on mobile devices, anytime and anywhere.
- Provide a variety of learning methods such as animated videos and games, etc.
- Build a large language learning database.

## Impact:

- Improve students' motivation to learn.
- To develop students' ability of self-study and extra-curricular inquiry.
- The first opensource Chinese-oriented learning software tools.



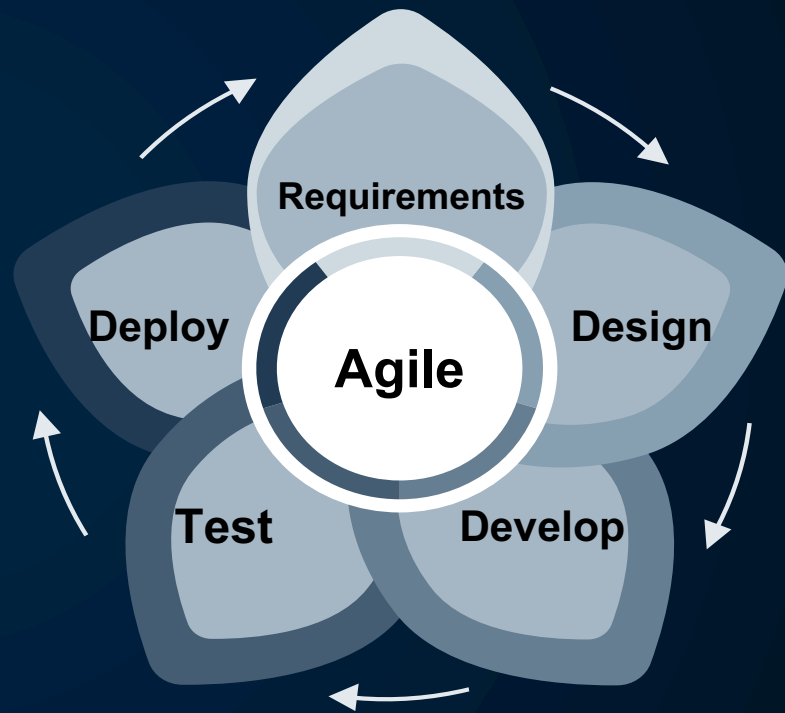
# Methodology

1. Use agile development methods.
2. Based on React
3. Framework form Ant design
4. Get data from API

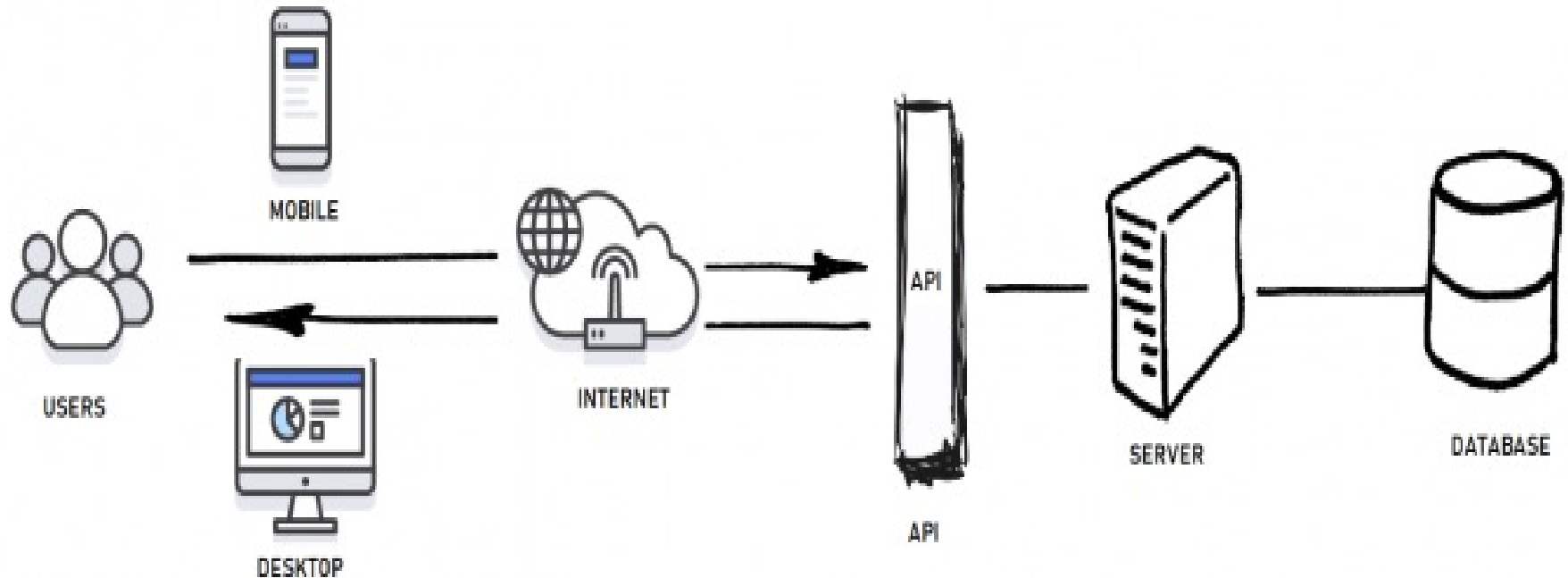
Tools: React. JavaScript. Ant Design pro

## Data source:

- Preliminary: Open sources on website. Tianapi.com. Strapi.
- Later: User upload.



# Operational View



# Function Design

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**Class Pre-sale**



**Class Extension**



**Class Expansion**



**Quiz**

# Measure of Effectiveness

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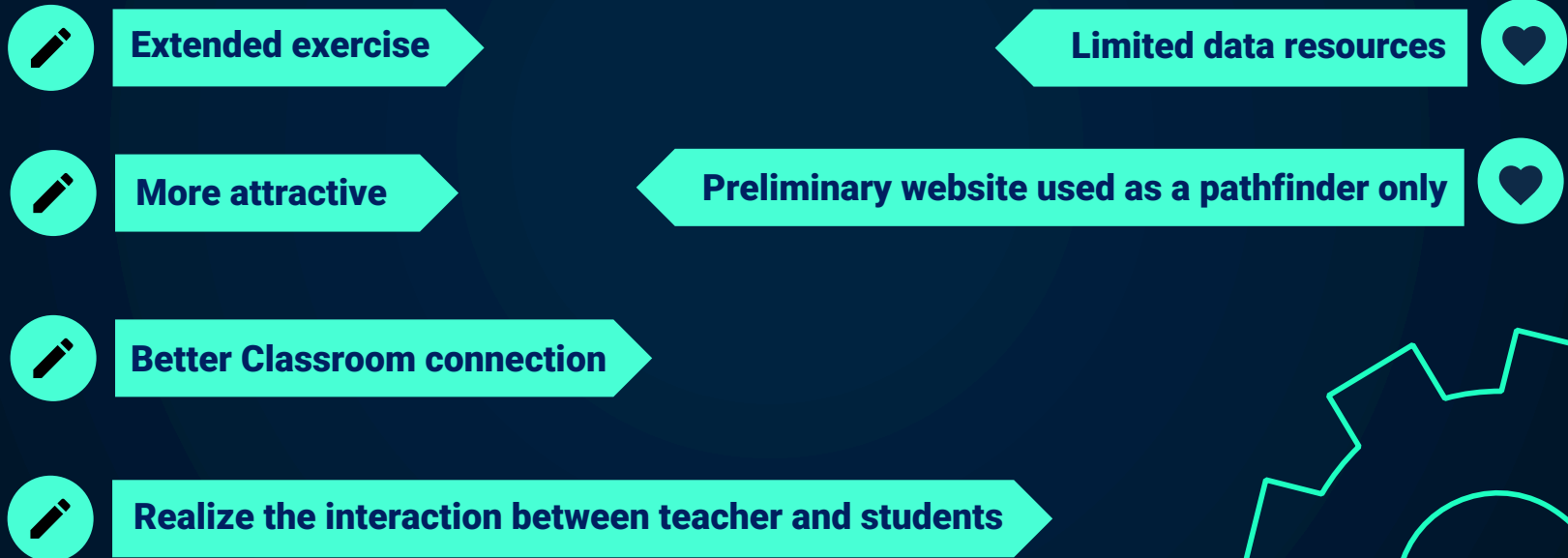
**Measure Method: HSK.** (an international standardized test of Chinese language proficiency, assesses non-native Chinese speakers' abilities in using the Chinese language in their daily, academic and professional lives. It has 6 level. ) [4]

# Comparison-with other tools

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	My website	Others website
Cost	Free	Expensive
Resource	Variety	Single
Interface	Clean	Complex

# Focus & Limitation



# FUTURE WORK

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## Add function:

- Daily attendance
- Class schedules
- Targeted Quizzes

## Build database:

- Textbook
- Exercise
- Quiz
- Video
- And more!

**More stylish interface**

Project Start:

2022/1/18

Cleaner and more be

Display Week:

1

TASK	ASSIGNED TO	PROGRESS	START	END
------	-------------	----------	-------	-----

Jan 17, 2022							Jan 24, 2022							Jan 31, 2022							Feb 7, 2022							Feb 14, 2022							Feb 21, 2022							Feb 28, 2022							Mar 7, 2022							Mar 14, 2022							Mar 21, 2022																				
M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S

**project design**

Task 1	Project design	90%	1/18/22	1/21/22
Task 2	make document	90%	1/21/22	1/23/22
Task 3	make timeline	100%	1/23/22	1/24/22
Task 4	Fand API	25%	1/24/22	1/27/22
Task 5	Common configuration	90%	1/27/22	1/28/22

**Front-end demo**

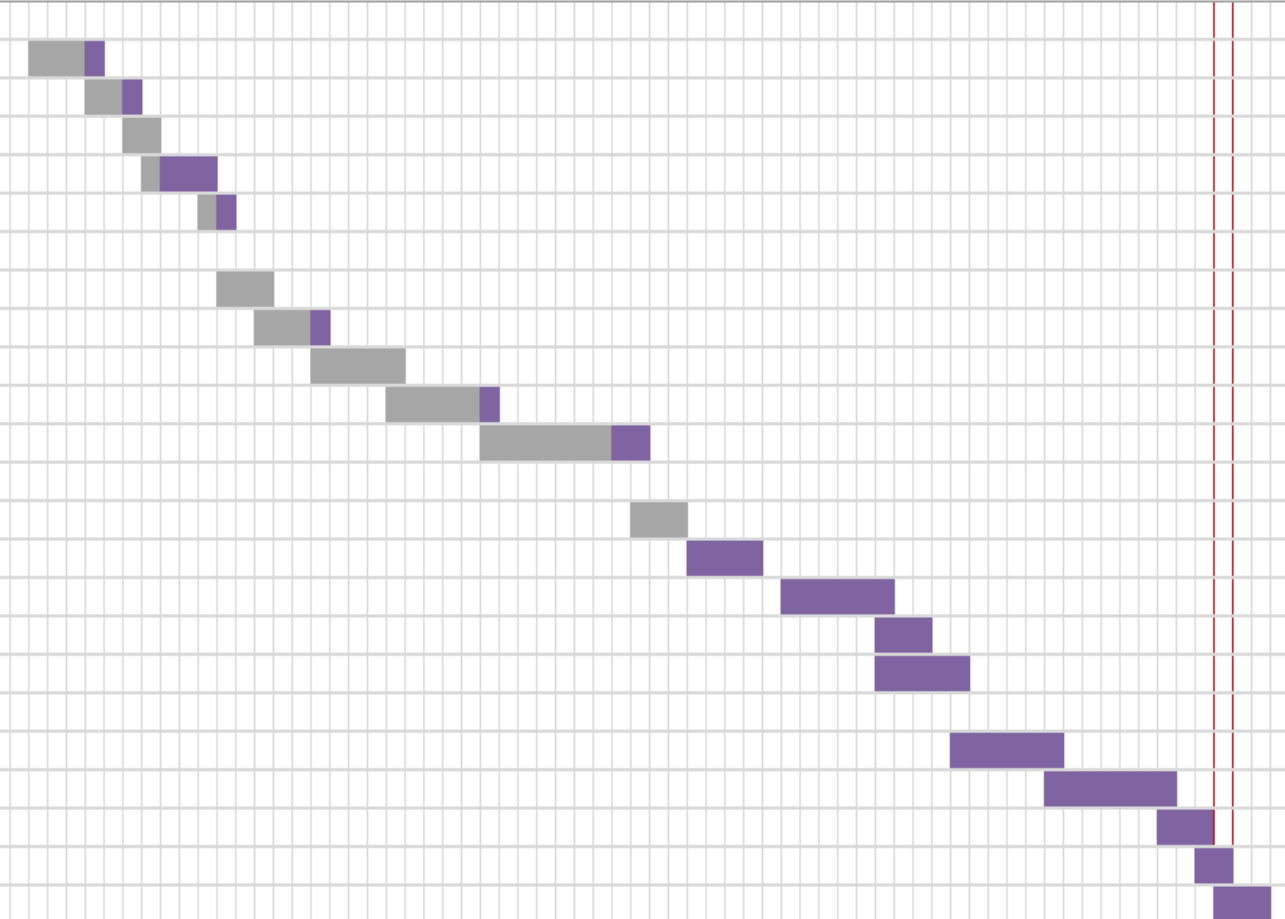
Task 1	Routing	100%	1/28/22	1/30/22
Task 2	HTML Template	80%	1/30/22	2/2/22
Task 3	integrate DVA	100%	2/2/22	2/6/22
Task 4	Mock and continuous Tuning	90%	2/6/22	2/11/22
Task 5	Todo list	80%	2/11/22	2/19/22

**Initialization Project**

Task 1	Encapsulate network requests	100%	2/19/22	2/21/22
Task 2	Login and logout	20%	2/22/22	2/25/22
Task 3	User Management		2/27/22	3/4/22
Task 4	Product edit page		3/4/22	3/6/22
Task 5	Lists and Categories		3/4/22	3/8/22

**pack uplode and test**

Task 1	Listing and Recommendation		3/8/22	3/13/22
Task 2	Package upload		3/13/22	3/19/22
Task 3	Domain name resolution		3/19/22	3/21/22
Task 4	HTTPS certificate		3/21/22	3/22/22
Task 5	User test		3/22/22	3/24/22





# Reference

1. Anshool Deshmukh.(2021.12.20) Besides English and Spanish, what do you think is the most common language in the US?
2. Rujin.C. Jun.L.(2019.12).People.cn. From <http://ydyl.people.com.cn/>
3. lplayable. (2017.7).From <https://zhuanlan.zhihu.com/p/394298993>
4. www.Chinesetest.com
5. Ant.design. components.
6. Umijs.com. (2022.2) Docs.
7. Sachin.Jain.(2019.10). Guidelines & Best Practices for Design RESTful API From bytenbit.com

# Appendices-page



🏠 Introduction

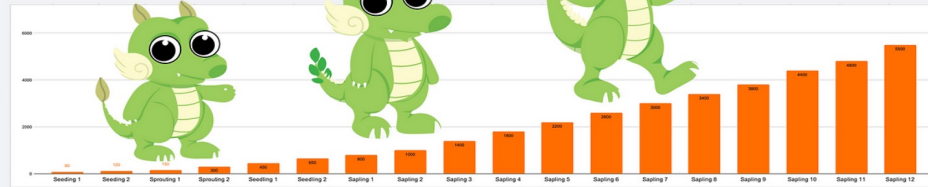
📅 assignment

✍️ Exercise

☑️ Quiz

At Growing Trees Chinese Academy, student (from 8 month to AP level Chinese) get to learn Mandarin Chinese in small groups(max 1-on-7) or 1.5 hour full immersion class once or twice per week

## Growing Trees Chinese Language Development Programs



	Seeding		Sprouting		Seeding		Sapling		Sapling High											
Levels	Seeding 1	Seeding 2	Sprouting 1	Sprouting 2	Seeding 1	Seeding 2	Sapling 1	Sapling 2	Sapling 3	Sapling 4	Sapling 5	Sapling 6	Sapling 7	Sapling 8	Sapling 9	Sapling 10	Sapling 11	Sapling 12		
Words	80	120	150	300	450	650	800	1000	1400	1800	2200	2600	3000	3400	3800	4400	4800	5500+		
Test Levels					YCT1	YCT2	HSK 1		HSK 2		HSK3		HSK4 / SAT1		HSK5 / SAT2		HSK6 / AP prep			
reading	Be able to recognize basic Chinese characters	Be able to recognize basic Chinese characters	Be able to read common Chinese words	Be able to read common Chinese words	Be able to read simple sentences	Be able to read simple sentences	Be able to read short stories and understand the main idea	Be able to read short stories and understand the main idea	Be able to read a reading material, and understand the main idea	Be able to read a reading material, and understand the main idea	Be able to read and understand the main idea of a reading material, and get the main points behind things as well as catch relevant details	Be able to read and understand the main idea of a reading material, and get the main points behind things as well as catch relevant details	Be able to read long articles and understand the profound cultural background	Be able to read long articles and understand the profound cultural background	Be able to read long articles and understand the profound cultural background	Be able to read long articles and understand the profound cultural background	Be able to read long articles and understand the profound cultural background	Be able to read long articles and understand the profound cultural background	Be able to read long articles and understand the profound cultural background	



- > config
- > dist
- > mock
- > node\_modules
- > public
- > src
- > tests
- ⚙️ .editorconfig
- 🔍 .eslintignore
- 🔍 .eslintrc.js
- 🔍 .gitignore
- 🔍 .prettierignore
- JS .prettierrc.js
- 🔍 .stylelintrc.js
- JS jest.config.js
- { } jsconfig.json
- { } package.json
- JS playwright.config.js
- 📄 README.md
- 📄 yarn.lock

- ▼ pages
  - > TableList
  - > user
  - 🌀 404.jsx
  - 🌀 Admin.jsx
  - JS axios.js
  - 🌀 chengyu.jsx
  - JS cookie.js
  - <> document.ejs
  - 🌀 Exercise.jsx
  - 🌀 Introduction.jsx
  - 🌀 Quiz.jsx
  - # shici.css
  - 🌀 shici.jsx
  - 🌀 t.jsx
  - 🌀 Welcome.jsx
  - { } Welcome.less
- > services
  - JS access.js
  - 🌀 app.jsx
  - 🌀 global.jsx
  - { } global.less
  - { } manifest.json
  - JS service-worker.js

# Appendices-package



# Appendices-Code

```
getdata(obj) {
  // http://api.tianapi.com/chengyu/index
  var this_ = this;
  if (obj.type == 0) {
    console.log(JSON.parse(getCookieChese('data')));
    this.setState({
      data: JSON.parse(getCookieChese('data')) ? JSON.parse(getCookieChese('data')) : [],
    });
  } else if (obj.type == 1) {
    // ciyu
    let this_ = this;
    httpGet(
      'http://api.tianapi.com/chengyu/index?key=9938079914b17d4479da4582e38abc63&word=' + obj.key,
    ).then((res) => {
      console.log(res.data.newslst);
      this_.setState({
        data: res.data.newslst[0],
      });
    });
  } else if (obj.type == 2) {
    console.log(JSON.parse(getCookieChese('datayinyu')));
    this.setState({
```

```
getdata() {--
}
getyin() {
  let this_ = this;
  httpGet('http://api.tianapi.com/everyday/index?key=9938079914b17d4479da4582e38abc63').then(
    (res) => {
      console.log(res);
      this_.setState({
        everydayData: res.data.newslst,
      });
    },
  );
  // console.log(this_.state.data);
}
back(data, router, type, index) {
  if (type == 0) {
    SetCookieChese('data', JSON.stringify(this.state.data[index]));
  } else if (type == 2) {
    SetCookieChese('datayinyu', JSON.stringify(this.state.everydayData[0]));
  }
  console.log(type, data);
  this.props.history.push('/' + router + '?key=' + data + '&type=' + type);
}
```



# Appendices-Code

config > JS routes.js > [🔍] default

```
1 export default [
2   {
3     path: '/user',
4     layout: false,
5     routes: [...],
19  ],
20 },
21 {
22   path: '/shici',
23   layout: false,
24   component: './shici',
25 },
26 {
27   path: '/ti',
28   layout: false,
29   component: './t',
30 },
31
32
33 {
34   path: '/introduction',
35   name: 'Introduction',
36   icon: 'HomeOutlined',
37   component: './Introduction',
38 },
39
```

```
1 import React, { Component } from 'react';
2 import { PageContainer } from '@ant-design/pro-layout';
3 import { Card, Alert, Typography, List, Avatar, Space, Table, Pagination, Divider } from 'antd';
4 import { MessageOutlined, LikeOutlined, StarOutlined } from '@ant-design/icons';
5 import { Row, Col, Slider } from 'antd';
6 import { useIntl, FormattedMessage } from 'umi';
7 import styles from './Welcome.less';
8 import { useStore } from 'react-redux';
9 import { httpGet, httpPost } from './axios';
10 import { SetCookieChese } from './cookie';
```

A world map composed of light blue dots on a dark blue background. The dots are arranged in a grid pattern that forms the continents. The text "Questions?" is centered over the map.

**Questions ?**

CMSI 694 Capstone Project: Shaoxiong Yang

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May 04,2022

## **Open-source Management Education System**

### **User store**

As a language teaching institution. Schools should not be limited to a single teaching model. While observing students' classroom performance, we should also pay attention to students' after-class performance to improve students' learning efficiency. To prevent students from leaving the language learning environment and opportunities after class. More materials and resources should be provided to students. And with the rapid development of educational technology. Schools should be equipped with corresponding teaching assistance systems. However, the teaching system on the market is expensive, and many institutions are in the early stage of establishment and are reluctant to pay the high price. But students should have access to their corresponding learning resources.

I want to make a free open source educational management tool. It provides both access to information and courses. Also, it supports better interaction between teachers and students. Through an established library of learning resources, students have more opportunities to learn the languages they need.

So that better realizes the interaction between students and teachers. Through the established learning resource library, students have more opportunities to learn about the language they need.

# Test plan

## Project name:

Open Source management education system

## Function test:

1. Class pre-sale: It can be browsed normally, and the content can be played normally.
2. Class extension: The content can be published normally with the release date and teacher name. The commit function can read local files.
3. Class expansion: The API can read data normally and update the content in real time.
4. Quiz: The API can be read normally, and the quiz can provide the correct answer.

## Performance test:

Simulate various normal, peak and abnormal load conditions to test various performance indicators of the system.

## Compatibility test:

A test of whether the software can run amicably on a specific hardware platform, between different browsers, on different operating system platforms, and in different networks.

## Security test:

Security inspectors should check software for security vulnerabilities.