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# Research on Cloud Management Method of Epidemic Tracing

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## Abstract

**This design involves the cloud management method of epidemic tracing. The method of this design is mainly to grasp the students' situation in real time through the interaction between the mobile device terminal held by the students and the school management terminal, and to judge the safety indicators of the students returning to school according to the time, route and means of transportation specified by the students, and to conduct strict verification after the students return to school, so as to keep the epidemic out of the school. This design can effectively monitor and arrange students' returning to school during the epidemic prevention and control period, and avoid the possible adverse consequences of students' returning to school blindly. At the same time, by collecting and summarizing specific data, it provides data support and scientific basis for formulating corresponding administrative measures, which can shorten the response time of disposal, realize precise policy and prevent the spread of epidemic on campus.**

## Keywords

**Epidemic Situation; Traceability; Cloud Management.**

## 1. Preface

At the end of the holiday, students need to go back to school. College students, in particular, have scattered locations during their holidays, and need to take various public transportation, such as airplanes, trains, long-distance buses, and so on, and face the risk of being infected. How to collect students' real location information, how to master students' health status, how to deal with emergencies, and how to prevent the epidemic from spreading on campus have become urgent problems to be solved.

In the period when the epidemic situation has not completely passed, the existing methods of monitoring and analyzing student information management are mainly that school teachers communicate with students one by one by telephone or QQ group according to the students under their jurisdiction, and obtain information about student epidemic situation. In the student list form, the school epidemic administrator merges and classifies the student epidemic situation information collected by school teachers to form the whole school student epidemic situation information form. However, some problems are prone to occur in this process: for example, in telephone or information communication, sometimes there are delays or invalid situations, which require repeated information collection, and the process of information collection is laborious and inefficient; It is easy to record wrong or proofread wrong information, resulting in distortion of students' epidemic information; The data are scattered, which can't be effectively monitored and analyzed, and can't be used for early warning and reminding, and can't feed back the epidemic information to students in time, and can't achieve the goal of effective epidemic prevention and control.

## 2. The Design Content

The purpose of this design is to put forward the cloud management method of epidemic tracing. The specific scheme provided by the invention is as follows:

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A method for managing student information during an epidemic situation includes: formulating acquisition information items related to student epidemic situation, publishing them into student epidemic situation information acquisition codes, filling in students' personal epidemic situation health information by scanning the student epidemic situation information acquisition codes, acquiring student status information, student health code information, school material reserves, regional epidemic situation grades and other epidemic situation related information by means of big data, monitoring and analyzing them, generating early warning, monitoring, analyzing and reminding information, and pushing the early warning, monitoring, analyzing and reminding information to students and teachers. In the method for managing student information during the epidemic period, the acquired student status information, student health code information, school material reserve, regional epidemic level and other epidemic related information are verified. According to the method for managing student information during the epidemic period, student status information, student health code information, school material reserve, regional epidemic level and other epidemic related information are acquired to form a student epidemic information base. The method for managing student information during an epidemic situation carries out monitoring and analysis based on a student epidemic situation information base, and generates early warning, monitoring, analysis and reminding information. According to the method for managing student information during the epidemic period, the information filled in by students' personal epidemic health information is regularly updated, and the student epidemic information base is correspondingly updated. A system for managing student information during an epidemic situation comprises a filling module, a collecting module, a monitoring and analyzing module and a pushing module, wherein the filling module formulates collection information items related to the student epidemic situation, publishes the collection codes of the student epidemic situation information, and fills in individual health information of the student epidemic situation by scanning the collection codes of the student epidemic situation information. The collection module acquires student status information, student health code information, school material reserve, regional epidemic level and other epidemic related information by means of big data; the monitoring and analysis module monitors and analyzes student status information, student health code information, school material reserve, regional epidemic level and other epidemic related information to generate early warning, monitoring, analysis and reminding information; and the push module pushes the early warning, monitoring, analysis and reminding information to students, teachers and epidemic related personnel. The monitoring and analysis module in the management system of student information during the epidemic situation verifies the acquired student status information, student health code information, school material reserve, regional epidemic situation grade and other epidemic situation related information. In the management system of student information during the epidemic period, the monitoring and analysis module will acquire student status information, student health code information, school material reserve, regional epidemic level and other epidemic related information to form a student epidemic information base.

The technical scheme adopted in this design is as follows: the epidemic traceability cloud management method includes the following steps:

S1, before returning to school, students fill in health information by using a mobile device terminal, wherein the mobile device terminal is provided with a GPS module, and the mobile device terminal sends collected data and own GPS information to a school management terminal;

S2, the school management terminal confirms the student's identity according to the received student health information, and judges the student's health status in combination with the current epidemic physiological evaluation index, that is, judges whether the student's physiological index conforms to the current epidemic characteristics, if so, returns the

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instruction of not returning to school to the corresponding mobile device terminal, and marks the corresponding student's information and counts it on the data management platform; Otherwise, the management terminal judges whether the area is allowed to enter or leave freely according to the received GPS information and the epidemic situation of the area obtained from the internet; if so, it generates back-to-school batch information according to the identity authentication of students and the back-to-school management plan corresponding to the locally stored school, and sends the back-to-school batch information to the mobile device terminal; If not, returning the instruction of not returning to school to the corresponding mobile equipment terminal, marking the information of the corresponding students and counting the information to the data management platform;

S3, the students confirm whether to return to school according to the information returned by the school management terminal received by the mobile device terminal, and if the back-to-school batch information is received, formulate a back-to-school application according to the back-to-school time period included in the back-to-school batch, wherein the back-to-school application at least includes the back-to-school time, route and detailed information of the transportation vehicle, and the students send the formulated back-to-school application to the school management terminal;

S4, the school management terminal dynamically judges the application for returning to school according to the received application for returning to school and the relevant information of epidemic situation in various places obtained from the Internet, wherein the dynamic judgment means that the epidemic situation in all places where the route for returning to school passes is continuously monitored in real time before reaching the time for returning to school, and whether the safety index of the application for returning to school meets the requirements is judged according to the prestored judgment criteria according to the real-time epidemic situation in various places; if the safety index is lower than the set safety threshold, Then a back-to-school termination instruction is generated immediately, and the information is fed back to the mobile equipment terminal in real time, and the school management terminal summarizes the real-time processing results of all back-to-school applications to the data management platform;

S5, the school management terminal sends the information of the students who have passed the back-to-school application to the Internet of Things docking and data acquisition platform, which collects the identity information, real-time physiological indicators and bill information of the back-to-school students, verifies the real-time health status of the students and whether to return to school according to the information recorded in the back-to-school application, releases the students who have passed the certification to enter the school, and summarizes the verification results to the data management platform;

S6, the data management platform feeds back all the summarized information in real time.

Specifically, the mobile device terminal is a smart phone.

## 3. The Specific Implementation Mode

The following is a detailed description of the technical scheme of this design in combination with the attached drawings:

Based on the method of this design, the management system for students returning to school during the epidemic period is generated. As shown in Figure 1, the process of returning to school during the epidemic period is divided into three stages: preparation stage, review stage and arrival stage.

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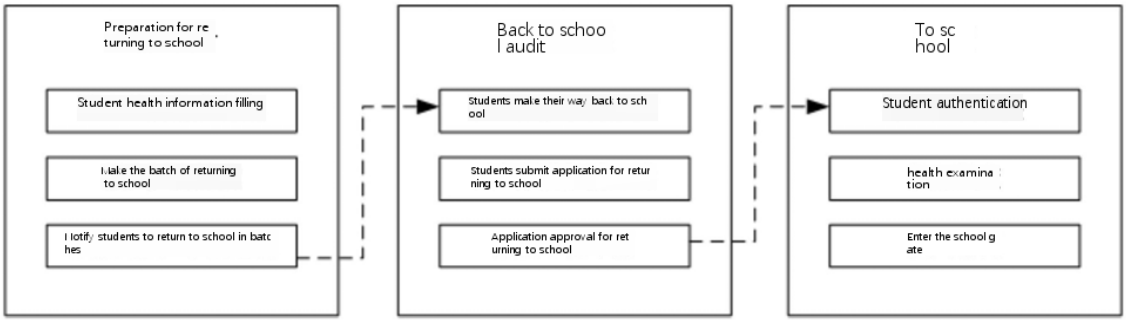


**Figure 1.** Process of back to school stage

(1) Preparation stage for returning to school:

1. Students use mobile phones to fill in health information. The mobile terminal of the mobile phone is connected to the unified identity authentication platform of the school to confirm the identity of the students. According to the preset health questionnaire, the students filled in the self diagnosis health information.The mobile terminal uses the GPS module of mobile phone to read the current location information of students and report it with the health questionnaire.

2. In the background management system, the student management department, according to the health information data reported by students, integrates the information of students' location and grade, and formulates the return batch of students according to the school's return time arrangement and management regulations. At the same time, students whose health status obviously does not meet the requirements are forbidden to return to school.

3. After the batch is formulated, the background management system will inform the students of the specific arrangement and time of returning to school by SMS and mobile phone reminder according to the batch information, and collect the reading status of students to ensure that the notice message has been reached.

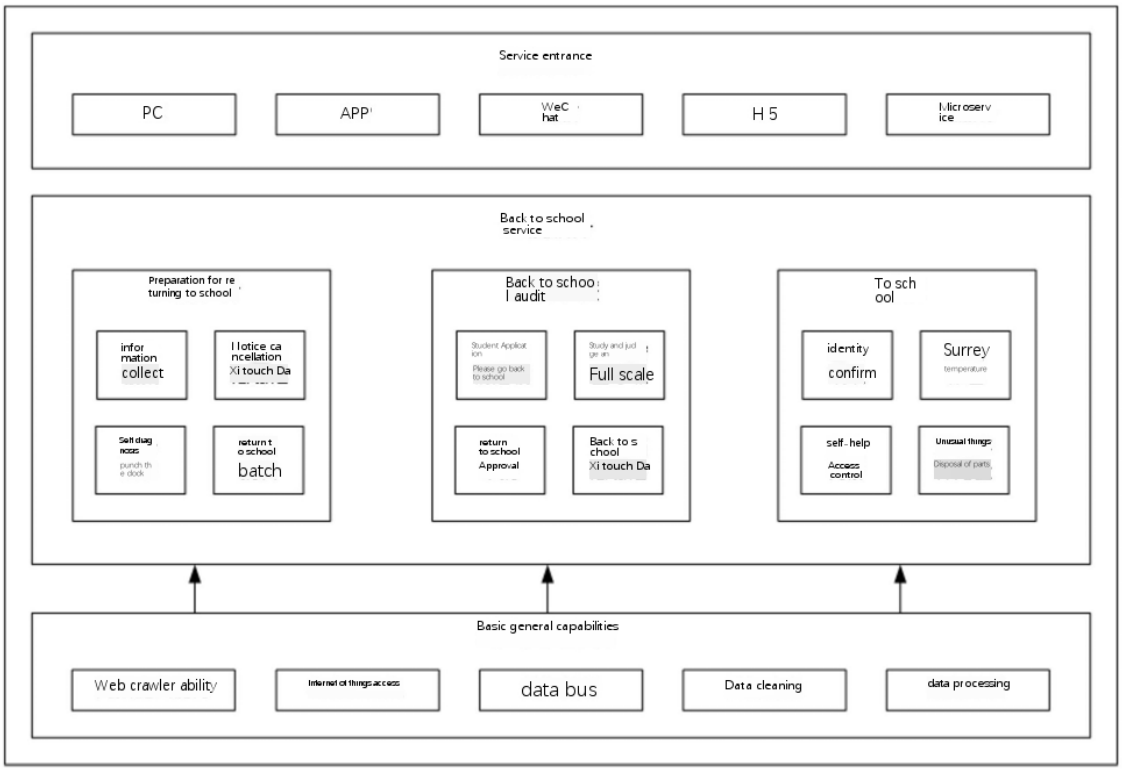


**Figure 2.** System functional architecture

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(2) Back to school audit stage:

1. Students can check their return batch on the mobile terminal, purchase the corresponding public transport tickets according to the return time, and submit the application for returning to school.When submitting the application for returning to school, submit the time of returning to school, formulate the return route and submit the proof materials of purchased tickets.If public transport tickets cannot be purchased in advance, such as long-distance bus, city bus, taxi, etc., the travel mode can be supplemented before entering the school gate.

2. The data management platform can obtain the real-time information of the epidemic situation published by the government authorities, especially the information of key areas and the transportation mode of confirmed / suspected people, etc. by means of designated website crawler and official data source connection.According to the health status information, current location information and return route information reported by the students, and according to the safety level judgment conditions prefabricated by the student management department in the background management platform, the safety level of students back to school is predicted.As shown in Figure 3, if the predicted safety risk level of students returning to school is higher, the application will be returned directly.If the predicted safety level of students returning to school is medium, wait for the student management department to make manual judgment.If the predicted safety risk level of students returning to school is low, they can apply directly.

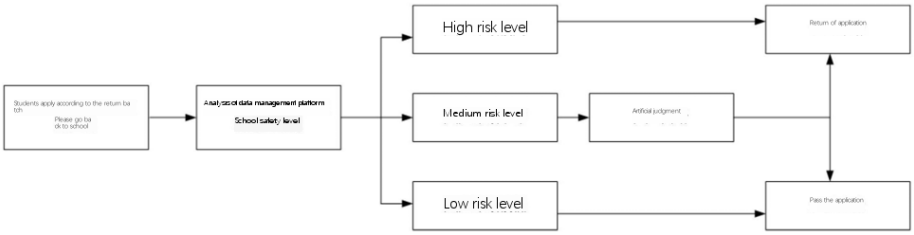


**Figure 3.** Return to school approval process

3. According to the security level of students returning to school given by the data management platform, the student management department reviews and approves the application of students whose safety risk level is medium in the background management system.

4. After students apply for examination and approval, they will be informed of the examination and approval results by SMS, mobile phone reminder, etc.Students who fail to pass the examination and approval can apply for the second time according to the situation of the epidemic situation. The processing method of the application process is the same as that of the first application.

5. Students' examination and approval will be distributed to the Internet of Things docking and data collection platform by self-service in the background. Internet of Things docking and data collection platform docking thermometer, school gate access control and other Internet of Things equipment.

(3) The stage of students arriving at school:

1. When students enter and arrive at the school gate, they need to open the mobile terminal of the mobile phone, display the two-dimensional code of student identity, confirm the student's identity through the two-dimensional code scanning device or face recognition function of the access control equipment, and inquire whether the student is on the list of allowed students to enter the school gate.

2. Students measure their body temperature by themselves, and the body temperature must be within the range of normal body temperature.

3. After the students pass the identity confirmation and body temperature test, the campus entrance gate will automatically open, and after the students enter the campus or time out, the gate will automatically close.

4. The epidemic alarm and disposal platform displays the summary of various information in an intuitive and quantitative way, such as statistical reports and dynamic views. School leaders, student management departments, and heads of graded epidemic prevention can check students' health information and obtain timely alarms for abnormal situations, and can also analyze and query macro and micro data according to the large-screen display, providing data support and scientific basis for formulating corresponding administrative measures, shortening the response time for disposal, realizing precise policies, and preventing the spread of epidemic on campus.

## 4. Concluding Remarks

The design has the following beneficial effects: it can effectively monitor and arrange students' returning to school during the epidemic prevention and control period, and avoid the possible adverse consequences caused by students' blindly returning to school. At the same time, by collecting and summarizing specific data, it can provide data support and scientific basis for formulating corresponding administrative measures, shorten the response time of disposal, realize precise policy, and prevent the epidemic from spreading on campus.

## Acknowledgments

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