Interface Specification

<Database>

# Introduction

This document is designed to provide specific interfaces to guide the operations on the database, guaranteeing that the server team can use the interface we provided to fulfill all client systems demands. The server team can refer to this document to render mentioned interface services to the algorithm and client team.

All tables in the database including

·User Table(storing the user basic information such as name/birthday/identification etc.),

·X-ray Record Table(storing the information of X-ray that users have uploaded and the results provided by algorithm or doctor.),

·News Table(storing the news that the Android team needs),

·Message Table(storing the message between doctors and patients),

·Chatpot Table(storing the keyword and replying answers needed by the chatpot team),

Can be operated by the interfaces we offered below to add, delete, update and select.

# Services

## Services Provided

|  |  |  |
| --- | --- | --- |
| Service | Provided By | Tested By |
| User can log in the system | addUser | T1 |
| User can upload a X-ray and get the diagnosis result | addRecord, uploadRecordAlg,  uploadRecordDoc | T2 |
| User can view the changing curve of specific time period | selectRecord | T3 |
| User can delete specific record | deleteRecord | T4 |
| User can unsubscribe the system | deleteUser | T5 |
| Administrator can add news | addNews | T6 |
| Administrator can delete news | deleteNews | T7 |
| Administrator can upload news | uploadNews | T8 |
| Administrator can search news by date | selectNews | T9 |
| Doctor and patient can message each other | addMessage | T10 |
| Administrator can delete specific message | deleteMessage | T11 |
| user can search message with specific person by time | searchMessagebyTime | T12 |
| user can search last n message with specific person | searchMessagebyNum | T13 |
| User can get a reply by sending a message to chatpot | searchAns | T14 |
| Administrator can add a reply answer | addAns | T15 |
| Administrator can delete a reply answer | deleteAns | T16 |
| Administrator can upload a reply answer | uploadAns | T17 |
| Administrator can backup | backupDB | T18 |

## Access Method

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Access Method** | **Parameter name** | **Parameter type** | **Description** | **Exceptions** | **Map to services** |
| addUser | name,  birthday, phone\_number,  email\_address,  credential,  user\_password,  account\_type | String,  Date,  String,  String,  String,  String,  int | account\_type is an integer to represent the identification of the user:  patient(0), doctor(1),  Administrator(2) | User should provided phone\_number or email\_address(at least one of them) |  |
| addRecord | user\_id,  url,  detect\_date | String,  String,  Date | url is a string that the X-ray can be gotten through the url |  |  |
| uploadRecordAlg | upload\_record\_id,  result,  url, | String,  String,  String | url is a string that the X-ray marked by the algorithm can be gotten |  |  |
| uploadRecordDoc | upload\_record\_id,  doctor\_id,  url,  result | String,  String,  String,  String | result is a string that contents both result whose form is like the result from algorithm and the diagnosis remark by the doctor |  |  |
| selectRecord | start\_date,  end\_date | Date,  Date |  |  |  |
| deleteRecord | upload\_record\_id | String |  |  |  |
| deleteUser | user\_id | String |  |  |  |
| addNews | title,  content,  time | String,  String,  Date |  |  |  |
| deleteNews | title | String |  |  |  |
| uploadNews | title | String |  |  |  |
| selectNews | time | Date | time is a date that all the news on this date will be given |  |  |
| addMessage | sender\_id,  receiver\_id,  content,  time | String,  String,  String,  Date | If sender is a patient, then the receiver will be a doctor and vice versa |  |  |
| deleteMessage | mess\_id | String |  |  |  |
| searchMessagebyTime | user1\_id,  user2\_id,  start\_date,  end\_date | String,  Date,  Date | Uers1 and user2 can be either sender and receiver |  |  |
| searchMessagebyNum | user1\_id,  user2\_id,  n | int | The last n message will be given |  |  |
| searchAns | keyword | String |  |  |  |
| addAns | keyword,  ans | String,  String | The ans is a string that when the user’s question contents keyword, the ans will be send to the user |  |  |
| deleteAns | ans\_id | String |  |  |  |
| uploadAns | keyword,  ans | String |  |  |  |
| backupDB | address | String | address is a string that the backup file will be stored in this path |  |  |

## Access Method Effects

|  |  |
| --- | --- |
| **Access Method** | **Description** |
| addUser | Create a new record in User Table to store all the input information, and automatically generate a unique user\_id for the user |
| addRecord | Create a new record in X-ray Table to store all the input information, and automatically generate a unique upload\_record\_id for the record. “checked\_by\_doctor” will be set as false by default. |
| uploadRecordAlg | According to the upload\_record\_id to find the corresponding records, save the results of the algorithm prediction and annotated pictures |
| uploadRecordDoc | According to the upload\_record\_id to find the corresponding records, save all the input information, including updating the results generated by algorithm such as cobb angle and saving the diagnosis remark as well as the doctor\_id .“checked\_by\_doctor” will be set as true by default. |
| selectRecord | Filter all the records of the current user that meet the criteria according to the start date and end date, return all diagnosis results and annotated pictures |
| deleteRecord | Delete related records according to upload\_record\_id in X-ray Record Table |
| deleteUser | Delete related records according to user\_id in User Table and Patient Record Table |
| addNews | Create a new record in News Table to store all the input information, and automatically generate a unique news\_id for the piece of news |
| deleteNews | Delete related records according to title in News Table |
| uploadNews | Upload related records according to title in News Table |
| selectNews | Filter all the news in News Table that meet the criteria according to the date, return all news as a list |
| addMessage | Create a new record in Message Table to store all the input information, and automatically generate a unique consultation\_id for the message. “unRead” will be set as true by default. The “unRead” attribute of all the message that send to the user whose id is “sender\_id” will be set as false. |
| deleteMessage | Delete related record according to consultation\_id in Message Table |
| searchMessagebyTime | Filter all the message sent between user1 and user2 in Message Table that meet the criteria according to the start date and end date, return all message as a list |
| searchMessagebyNum | Filter all the last n message sent between user1 and user2 in Message Table, return the message as a list |
| searchAns | Return the answer according to the input keywords |
| addAns | Create a new record in News Table to store all the input information, and automatically generate a unique news \_id for the news |
| deleteAns | delete the answer according to the input keywords |
| uploadAns | upload the answer according to the input keywords |
| backupDB | Backup all the database to the input path |

## Services Required

<Format similar to Sec. 2.1.>

*none*

# Local Types

*none*

# Interface Design Issues

<Describe any design issues that arose during development. Describe the alternatives and the rationale for the alternative chosen.>

1. Whether User can log in the system?
2. Whether User can upload a X-ray and get the diagnosis result from DBMS?
3. Whether User can view the changing curve of specific time period?
4. Whether User can delete specific record?
5. Whether User can unsubscribe the system?
6. Whether Administrator can add/delete/upload/search news?
7. Whether Doctor and patient can message each other?
8. Whether Administrator can delete specific message?
9. Whether user can search message with specific person by time?
10. Whether user can search last n message with specific person?
11. Whether User can get a reply by sending a message to chatpot?
12. Whether Administrator can add/delete/upload a reply answer?
13. Whether Administrator can backup?

# Test Cases

<Characterize the expected value of the outputs over sets calls to the module.>

### T1

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Step** | **Description** | **Input Type/Value** | **Expected Results** | **Service** | **Preamble** |
| 1 | Application Server Registers  a new User | String,  Date,  String,  String,  String,  String,  int | The new user (patient /doctor/administrator) is registered in DBMS. |  | 1 |

### T2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Step** | **Description** | **Input Type/Value** | **Expected Results** | **Service** | **Preamble** |
| 1 | addRecord | String,  String,  Date | The x-ray and related information are registered in DBMS. |  | 1 |
| 2 | uploadRecordAlg | String,  String,  String, |  |  |  |
| 3 | uploadRecordDoc | String,  String,  String,  String |  |  |  |

### T3

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Step** | **Description** | **Input Type/Value** | **Expected Results** | **Service** | **Preamble** |
| 1 | Application Server Retrieves User’s Data by time | start\_date,  end\_date | The x-rays and predictions are returned to the Application Server |  | 1 |

### T4

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Step** | **Description** | **Input Type/Value** | **Expected Results** | **Service** | **Preamble** |
| 1 | Application Server Deletes user’s specific data | String | the specific data related to the specified user is deleted from the database. |  | 1 |

### T5

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Step** | **Description** | **Input Type/Value** | **Expected Results** | **Service** | **Preamble** |
| 1 | User wants to unsubscribe the system | String | all the data related to the specified user is deleted from the database. |  | 1 |

### T6

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Step** | **Description** | **Input Type/Value** | **Expected Results** | **Service** | **Preamble** |
| 1 | Administrator adds news | String,  String,  Date | The news is stored in the database, which is available for acquisition |  | 1 |

### T7

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Step** | **Description** | **Input Type/Value** | **Expected Results** | **Service** | **Preamble** |
| 1 | Administrator deletes news | String | The news is deleted from the database, which is unavailable for acquisition |  | 1 |

### T8

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Step** | **Description** | **Input Type/Value** | **Expected Results** | **Service** | **Preamble** |
| 1 | Administrator uploads news | String | The prediction is updated in the database, which is available for consulting. |  | 1 |

### T9

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Step** | **Description** | **Input Type/Value** | **Expected Results** | **Service** | **Preamble** |
| 1 | Administrator searches news by date | Date | Administrators can get all news contents for the corresponding date |  | 1 |

### T10

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Step** | **Description** | **Input Type/Value** | **Expected Results** | **Service** | **Preamble** |
| 1 | Patient sends a message to the doctor | String,  String,  String,  Date | The message will be saved in the message table. |  | 1 |
| 2 | Doctor sends a message to the patient | String,  String,  String,  Date | The message will be saved in the message table. |  | 1 |

### T11

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Step** | **Description** | **Input Type/Value** | **Expected Results** | **Service** | **Preamble** |
| 1 | Administrator wants to delete a message | String | The message will be saved deleted. |  | 1 |

### T12

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Step** | **Description** | **Input Type/Value** | **Expected Results** | **Service** | **Preamble** |
| 1 | Doctor wants to search message with specific patient by time | String,  Date,  Date | The server gets the qualified message. |  | 1 |
| 2 | Patient wants to search message with specific doctor by time | String,  Date,  Date | The server gets the qualified message. |  | 1 |

### T13

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Step** | **Description** | **Input Type/Value** | **Expected Results** | **Service** | **Preamble** |
| 1 | Doctor wants to search last n message with specific patient | int | The server gets the qualified message. |  | 1 |
| 2 | Patient wants to search last n message with specific doctor | int | The server gets the qualified message. |  | 1 |

### T14

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Step** | **Description** | **Input Type/Value** | **Expected Results** | **Service** | **Preamble** |
| 1 | User can get a reply by sending a message to chatpot | String | User get a reply from chatpot |  | 1 |

### T15

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Step** | **Description** | **Input Type/Value** | **Expected Results** | **Service** | **Preamble** |
| 1 | Administrator wants to add a reply record | keyword,  ans | A new record is added. |  | 1 |

### T16

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Step** | **Description** | **Input Type/Value** | **Expected Results** | **Service** | **Preamble** |
| 1 | Administrator wants to delete a reply record | ans\_id | A reply record is deleted. |  | 1 |

### T17

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Step** | **Description** | **Input Type/Value** | **Expected Results** | **Service** | **Preamble** |
| 1 | Administrator wants to upload a reply record | keyword,  ans | A reply record is uploaded. |  | 1 |

### T18

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Step** | **Description** | **Input Type/Value** | **Expected Results** | **Service** | **Preamble** |
| 1 | Administrator can backup | String | Backup all the database to the input path |  | 1 |