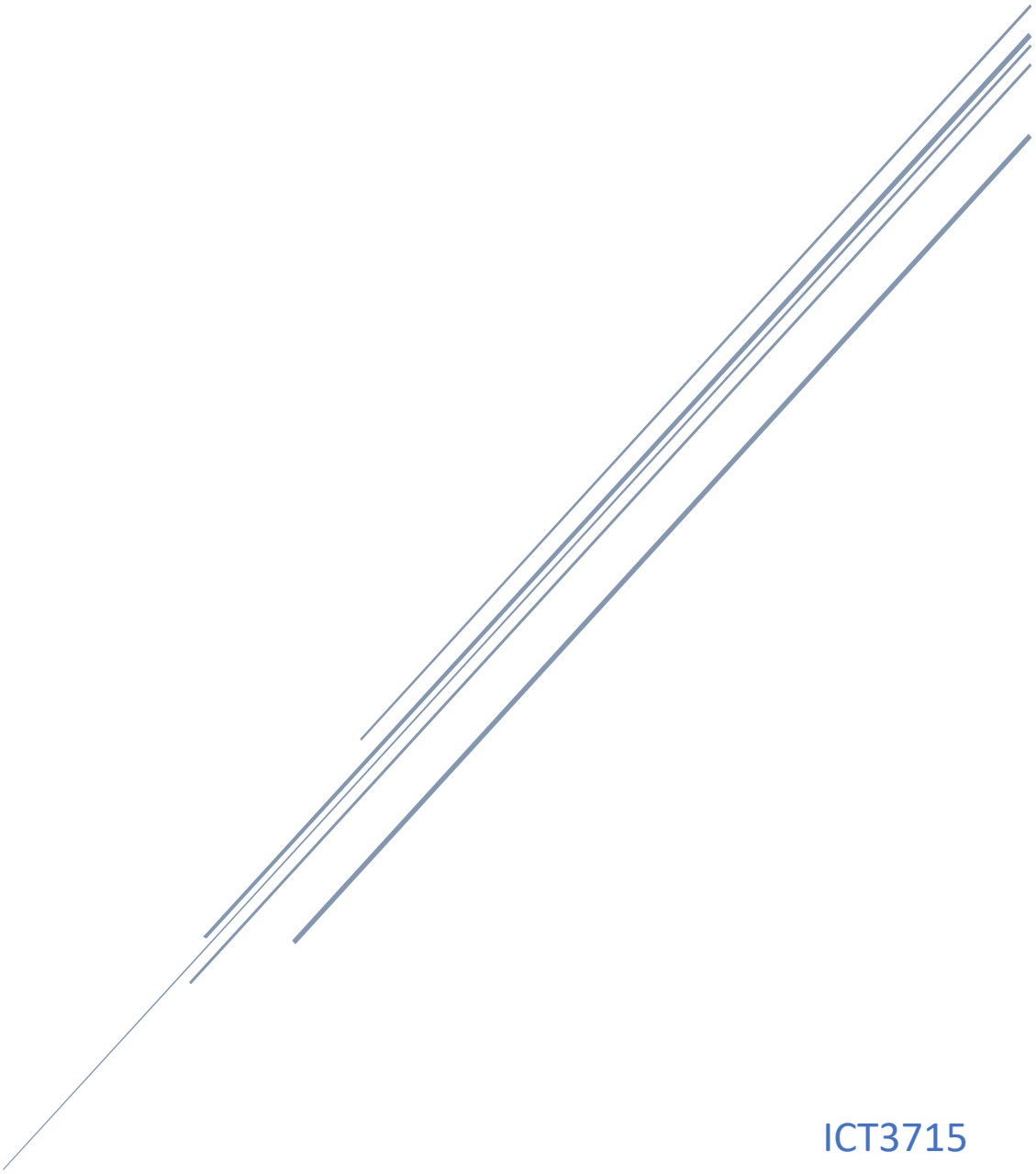
INSTALLATION AND ADMINISTRATION MANUAL



ICT3715

Student 5705-033-3

The AltHealth Database System

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About This Manual

1.1 Copyrights

The information in this document is subject to change without notice due to further development and progression, as and when required by the exclusive rights holder, AltHealth. The code still remains the property of Johann Smith, with the student number of 5705-033-3 at the University of South Africa (UNISA).

This document and parts thereof shall not be reproduced or copied without written permission from Johann Smith, and the contents thereof must not be imparted to a third-party nor used for any unauthorized purpose.

The coded software, excluding the software packages used for the successful implementation of the system, is copyrighted by the owner and may not be used, copied or distributed prior to written consent and/or agreement. The software is specifically intended and designed for the exclusive rights holder, AltHealth.

Disclaimer: The relevant providers of the open source software used in the installation for the implementation of the system are responsible for assistance and troubleshooting. Should any errors or the need of any support required that cannot be provided by the owner of the AltHealth Database System, the relevant support division(s) (if any) would then be contacted by the owner in order to solve and troubleshoot any error or potential error that may exist.

1.2 Overview of the System Purpose and Document Purpose

The purpose of this system is to implement an improved and digitalised solution for the alternative healthcare provider. This effectively replaces an older and outdated system with a new and convenient database system. This database system focusses in digitalising all patient records and to keep better track of supplements in stock, client orders and client appointments. From the owner's (the Health Care Practitioner) side of the system, more information about the various business activities within the business (namely the amount of consultations held with clients, client demographics and supplements sold) is provided enabling the owner to take more calculated decisions regarding the business offerings and position in the future.

With the data provided by AltHealth, the data has been normalised accordingly and integrated into a structured database with the appropriate data relationships discovered and assigned. The functionality of the system contains a smooth and effective interface for both users, namely the Health Care Practitioner and General Administrative.

The hardware and software requirements of the system is in line with the budget set by the business at the start of the project.

This manual provides information on the installation of selected open source software packages that will be utilised in order to implement functionality of the system. This manual provides step-by-step instructions on how to source and install the relevant packages, and also how the coding would be implemented in order to use the system directly after installation.

1.3 Documents and Versions

The table illustrated below provides the different documents associated with The AltHealth Database System, their version and the latest date of publication. These versions are correct upon the publication of this document.

Documentation	Version	Date of Latest Publication	Reference
Installation and Administration Manual	1.3	07 June 2021	I&A_Version_1.4
User Manual	1.2	07 June 2021	UM_Version_1.2
Demonstration and Guide Document	11/2019	24 November 2019	N/A

System and Software Requirements

The following aspects has been taken into account during the design of the solution for AltHealth. These aspects include, but not limited to:

- The budget for the project
- The current technology implemented on site
- The use of the system and/or its intended functions
- The user experience with modern technologies of today (i.e. computer literacy)

2.1 System and Technological Requirements

In taking the aspects mentioned above into consideration, the following system requirements have been set:

- Random Access Memory (RAM) – 3GB DDR3
- Central Processing Unit (CPU) – Intel i3-2100 2.8GHz or similar
- USB 2.0 ports
- 500GB Hard Drive (with minimum of 2GB free space available)

It is important to note that these above requirements are minimum requirements. No compatibility issues has been reported by making use of higher or newer specifications.

2.2 Software Requirements

In taking the aspects mentioned above into consideration, the following software requirements have been set:

- Microsoft Windows 7 Operating System
- XAMPP
- Google Chrome (Version 77 or higher)
- Backup and Sync from Google (Google Drive)

With regards to the operating system, it is important to note that Windows 7 is the minimum requirement for the system to function properly. Any later Windows version is acceptable as no issues were reported during the testing of the developed system on later operating systems.

This manual only provides installation instructions for a Windows 7 (or higher) Operating System. This system is compatible on other operating systems, such as Linux Ubuntu and MacOS, however further testing and development would occur to confirm compatibility.

In this system, the latest version of Backup and Sync, as well as Google Chrome is utilised. The recommended version of XAMPP is 7.1.8, which is also the version used in this manual. Compatibility cannot be confirmed (as yet) if the system would function as intended on a later version of XAMPP.

During installation, the administrative privileges (i.e. administrator user accounts) set on the Operating System may perform installation of the software packages.

Installation and Administration

The following software packages (if not installed onto the system) will be installed, configured and administered in the order they appear below:

1. Google Chrome
2. XAMPP
3. phpMyAdmin (part of the XAMPP package) and the AltHealth Database
4. Backup and Sync from Google
5. Deployment of the system code

3.1 Installing Google Chrome – Installation (if required)

Installing the latest version of Google Chrome can easily be done by navigating to the following link:

https://www.google.com/chrome/

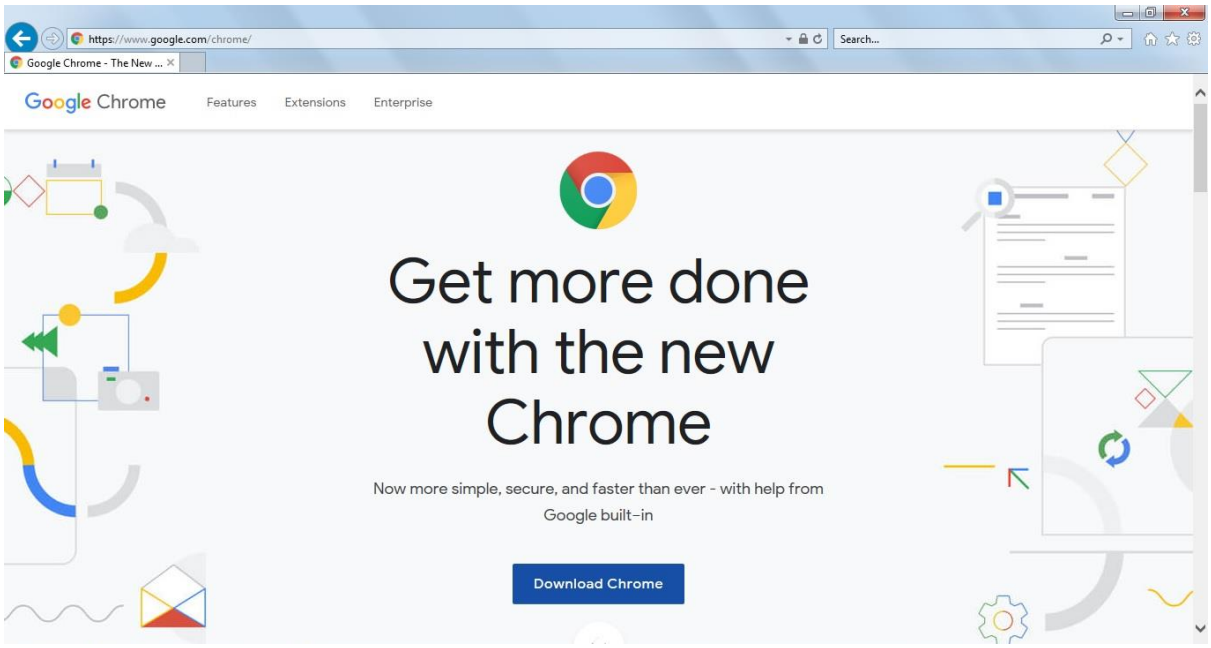


Figure 1: The Google Chrome Webpage

By simply clicking on the Download Chrome button, the installation file is downloaded to your Downloads directory (or the set directory to store downloads).

Double click on the downloaded file to initialise the installation process of Google Chrome. Depending on the speed of your internet connection, this may take a few minutes to complete.

3.2 XAMPP – Installation and Configuration

This manual uses XAMPP 7.1.8 for the AltHealth Database System. The URL for downloading the software package is as follows:

http://sourceforge.net/projects/xampp/files

On the page, select “XAMPP Windows” which will redirect you to the page to choose the XAMPP version you wish to download. It is recommended to make use of version 7.1.8 for the system.

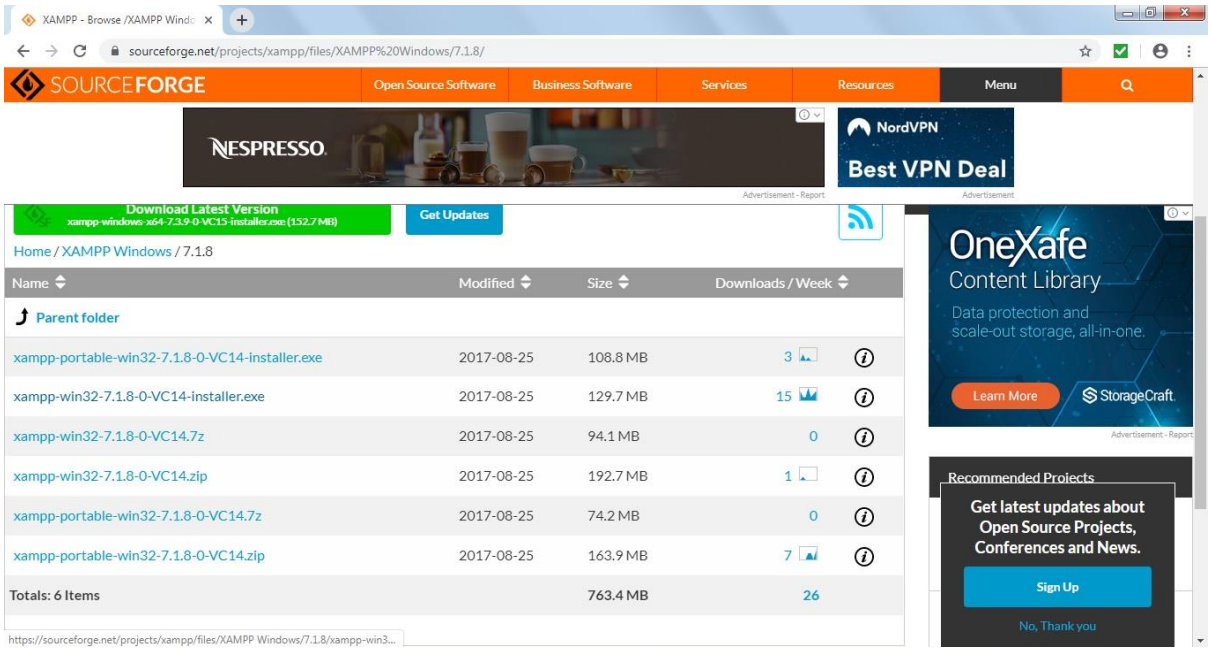
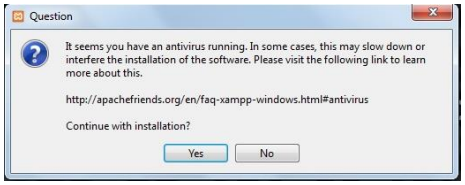


Figure 2: Sourceforge page for XAMPP 7.1.8 for Windows

On this page, choose the “xampp-win32-7.1.8-0-VC14-installer.exe” file, which will download to your Downloads directory (or the set directory to store downloads).



Double click on the file to execute the installer. A dialogue box similar to Figure 3 may appear indicating that you are running an antivirus software. This will not affect your system at all. Continue by clicking “Yes”.

Figure 3: Dialog Box

Should a warning appear that your current system has an activated User Account Control (UAC) and that some functions are possibly restricted, kindly press OK to continue as the location XAMPP would be installed to will be C:\XAMPP .

Continue with the setup wizard as normal and accept the defaults as indicated. Uncheck the “Learn more about Bitnami for XAMPP” option as it is not required for the AltHealth Database System.

Once the setup is completed, check the box to start the Control Panel once “Finish” has been pressed.

When instructed, choose the American flag option as it represents the language for the XAMPP interface. After selecting your desired language, the Control Panel window appears, which will look like the window in Figure 4.

This control panel allows you to start the Apache and MySQL servers in order for the designed code and database to function for the AltHealth Database System. The initialisation of the system will be explained in the user manual.

After XAMPP has been successfully installed, open the following file:

C:\xampp\php\php.ini

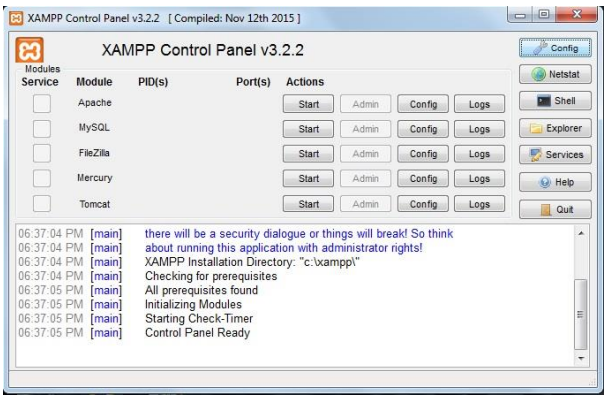


Figure 4: XAMPP Control Panel

Search the file for the second occurrence of 'timezone', which should be located on line 1957 in the text editor. Set the time zone, as indicated in Figure 5, to: date.timezone=Africa/Johannesburg

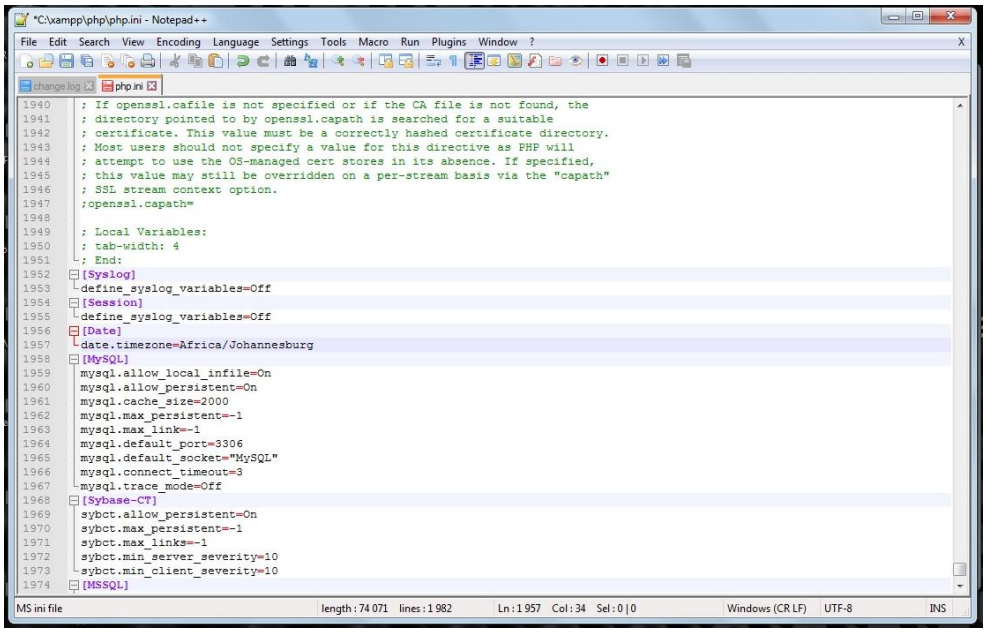


Figure 5: php.ini file

The setting sets the time zone correctly, which is vital for the database system.

The installation for XAMPP has now been completed.

3.3 phpMyAdmin – Initialisation and Administration

phpMyAdmin is a web-based tool for working with MySQL, which is the database the AltHealth Database System is based upon. In the following configuration, authentication is enabled.

Open the file C:\xampp\phpMyAdmin\config.inc.php in order to perform the following configuration as illustrated in Figure 6:

1. Set the ‘blowfish_secret’ option to a random 32-character string, as this specifies the encryption key for the authentication cookie.
2. Set the ‘auth_type’ option to a value of ‘cookie’.
3. Set the ‘user’ and ‘password’ options to empty strings.
4. Save the changes made to the file

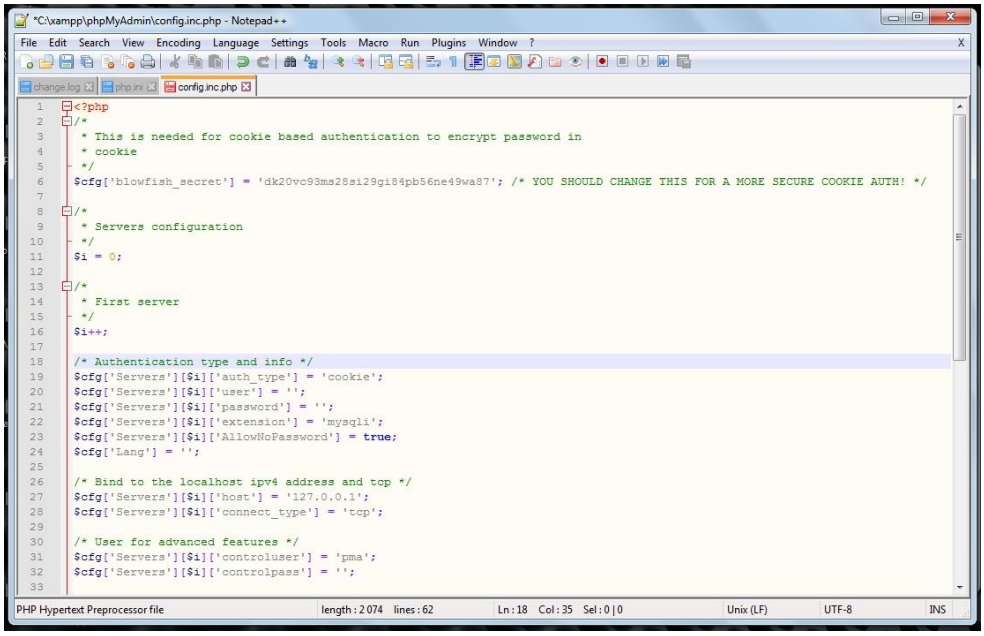


Figure 6: config.inc.php file with the changes made

XAMPP will now be activated to test the MySQL server and setting a password to the root user.

On the XAMPP control panel, press start for both Apache and MySQL services. This takes a few moments to activate these services. Once both modules are highlighted green, click on the “Admin” button of the MySQL service. This will launch a webpage on the localhost, which is hosted on the local system/network. The graphical user interface (GUI) will launch in the web browser. Login as ‘root’, but do not enter a password. This will navigate you to the Home page of phpMyAdmin.

Click on the change password link in the General Settings section. Enter and re-enter a password and click on the Go button. This will set a password for the root user.

Navigate and click on the “User accounts” tab. This is where we will be adding the users and defining their role in the database. Note that these usernames and passwords are not affiliated with the login functionality of the front-end of the system. The front-end of the system is dealt with in the User Manual.

Use the functionality to set the username of “hcp” and the password of the hcp. Scroll further down and select the box to grant data privileges to the hcp. Repeat when adding the “ga” user to the system.[1]

Add another user to the system called “public”. This is the user which is utilised for the front-end of any user who interacts with AltHealth through its website. This includes, but not limited to, the view of upcoming appointments for the specific patient. This will be explained further in the user manual.

[1] Credentials required to be set for database access may be found in the Evaluation and Preparation guide

For the public user, only grant SELECT privileges as the designed AltHealth Database System (currently) do not allow the user to insert or update any data in the database.

Once all the relevant users has been added, on the left-hand side, click on “New”. This will enable you to create a new database. For this project, create the new database called “althealth”. This has been illustrated in Figure 7 below.

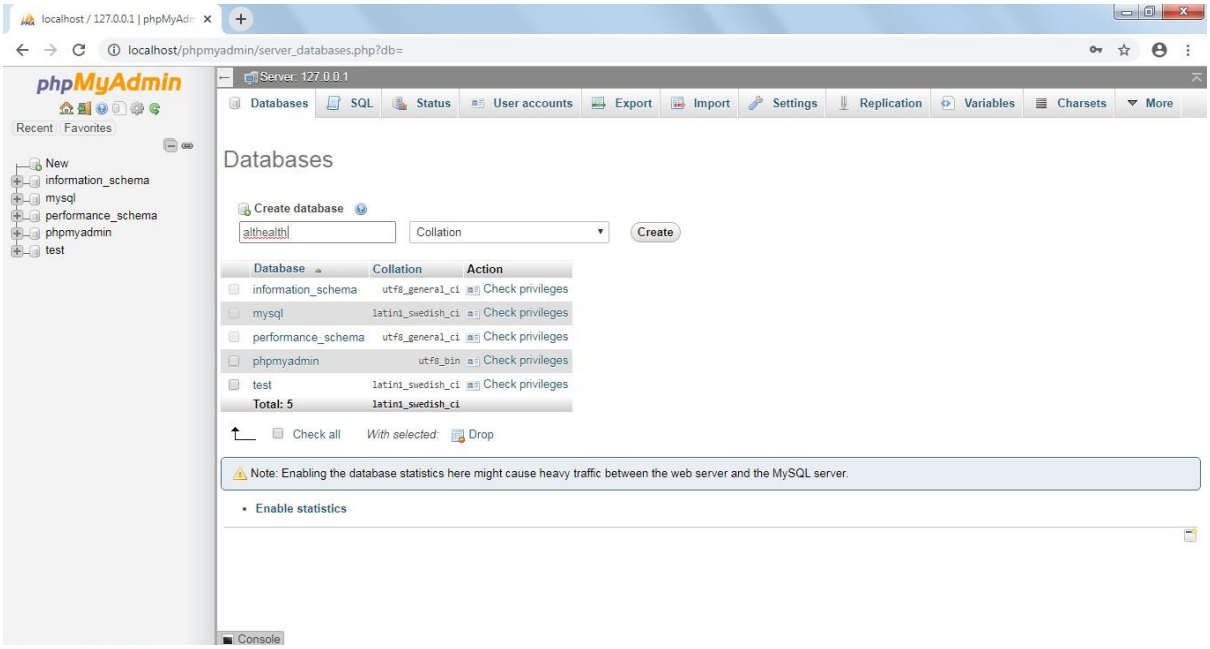


Figure 7: Creating the althealth database

Once the database has been created, import the pre-populated and configured database to the created database in phpMyAdmin. The import tab will be used to perform the import, which will enable you to select the “althealth.sql” file. Be sure to uncheck the option “Enable foreign key checks” as it would prevent any unnecessary irregularities that may occur during import. Once the file has been selected from the directory and the foreign key checks are disabled, press “Go”. It will take a few moments for the queries to run by the SQL interpreter. Once successful, a page will appear that is illustrated in Figure 8 which confirms the successful import. Note the “althealth” database now contains the relations that makes up the relational database used by the system.

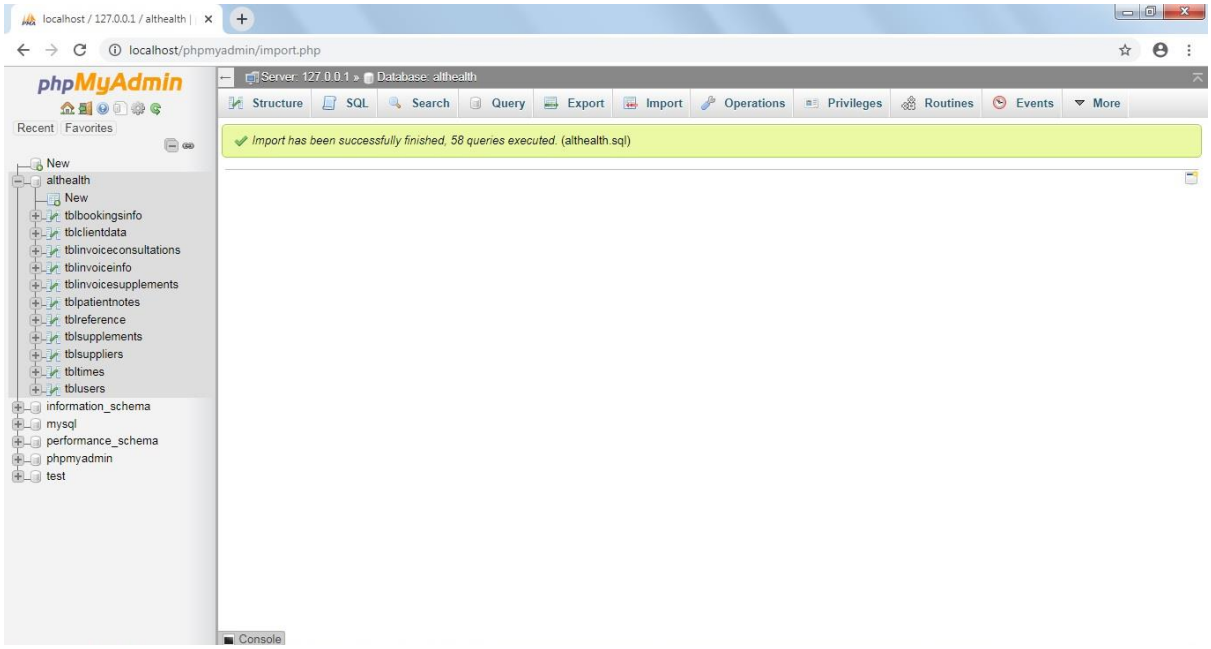


Figure 8: AltHealth database successfully imported

3.4 Backup and Sync from Google – Installation and Configuration of Auto Backups

The Backup and Sync software is provided by Google for use with their provided cloud storage service, Google Drive. For the purposes of this system, and for this project, Google Drive has been selected as the cloud storage service being used.

Navigate to the following link to download the software package called “Backup and Sync”:

https://www.google.com/drive/download/

The installation file is downloaded to your Downloads directory (or the set directory to store downloads). Double click on the downloaded file to initialise the installation process of Google Drive. Depending on the speed of your internet connection, this may take a few minutes to complete.

During the download and installation of Backup and Sync, create a new directory called ”AltHealth” on the C:\ drive, as well as a new directory called “Backup” inside the AltHealth directory. This folder will be used to store the backups automatically created by a batch file that will be scheduled to run at an interval set by the system administrator, or a requested day and time by the system user(s).

When the installation is completed, log in with the credentials available for AltHealth. Once logged in, choose the Backup folder from the AltHealth folder on the C:\ drive in order for Google Drive to continuously backup the AltHealth folder once a change occurs. This will then place the folder in the ‘Computers’ tab on drive.google.com, should recovery from the cloud become necessary. Should the user wish, select other folders that needs to be backed up to the cloud. Bear in mind that the limit is 15GB for online file storage before a fee is applicable for a larger capacity.

To save data usage, uncheck the ‘Sync My Drive to this computer’.

Once the installation has been completed, with the text editor, create a Windows Batch File (.bat) which would enable a backup (i.e. a dump of the database) to be created and stored in the C:\AltHealth\Backup folder. Once the file is created and stored, Google Drive will automatically (provided that an active Internet connection is available) store the backup onto the cloud. The coding used for the althealth.bat file is displayed below in Figure 9:

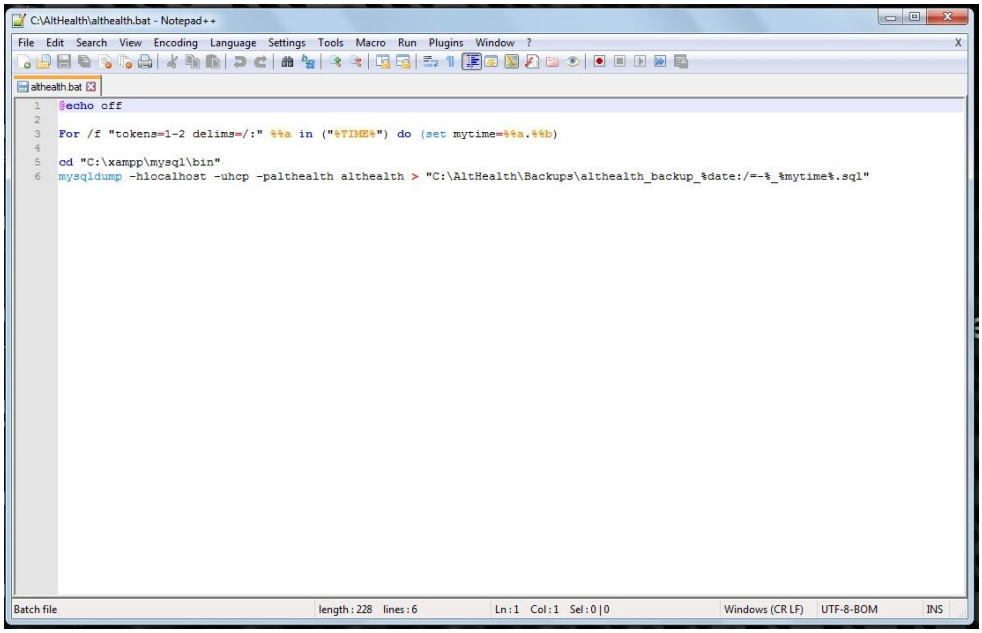


Figure 9: althealth.bat

Once the althealth.bat file is saved, open the task scheduler to create a new task which would run the althealth.bat file on a schedule determined by the administrator. Figures 10 through 12 illustrates the actions that needs to be implemented to run the backup each Friday at 15:30.

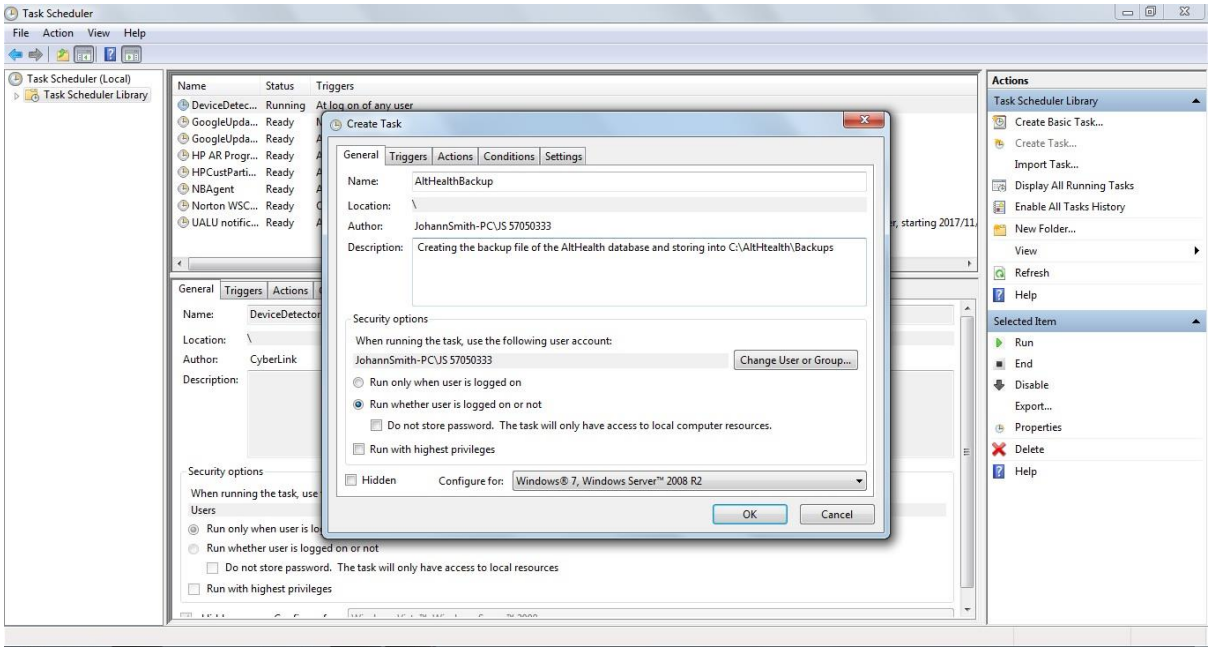


Figure 10: Creating the task – Setting the security options

The security settings are set that the task would run whether the user is logged in or not. The user who initialized the task would need to enter his/her password in a pop-up login window in order for the setting to be activated.

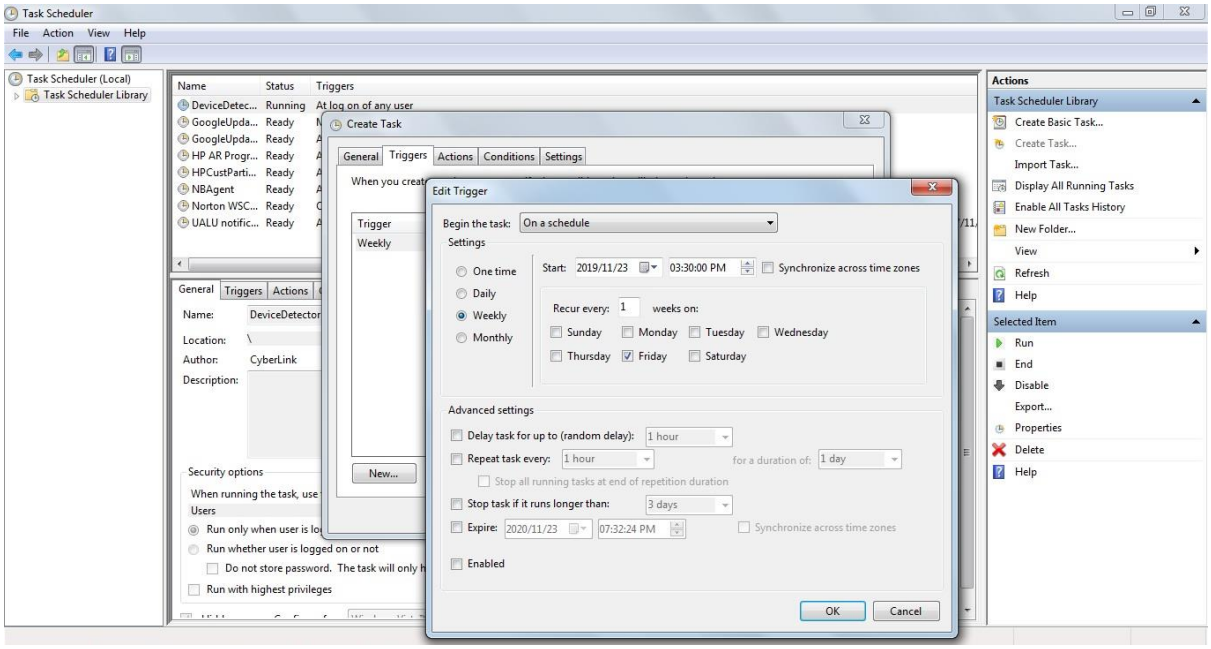


Figure 11: Creating the task – Setting the trigger

A new trigger would need to be created by pressing on the Triggers tab. This would be set that the task would be placed on a schedule, running weekly at a given time.

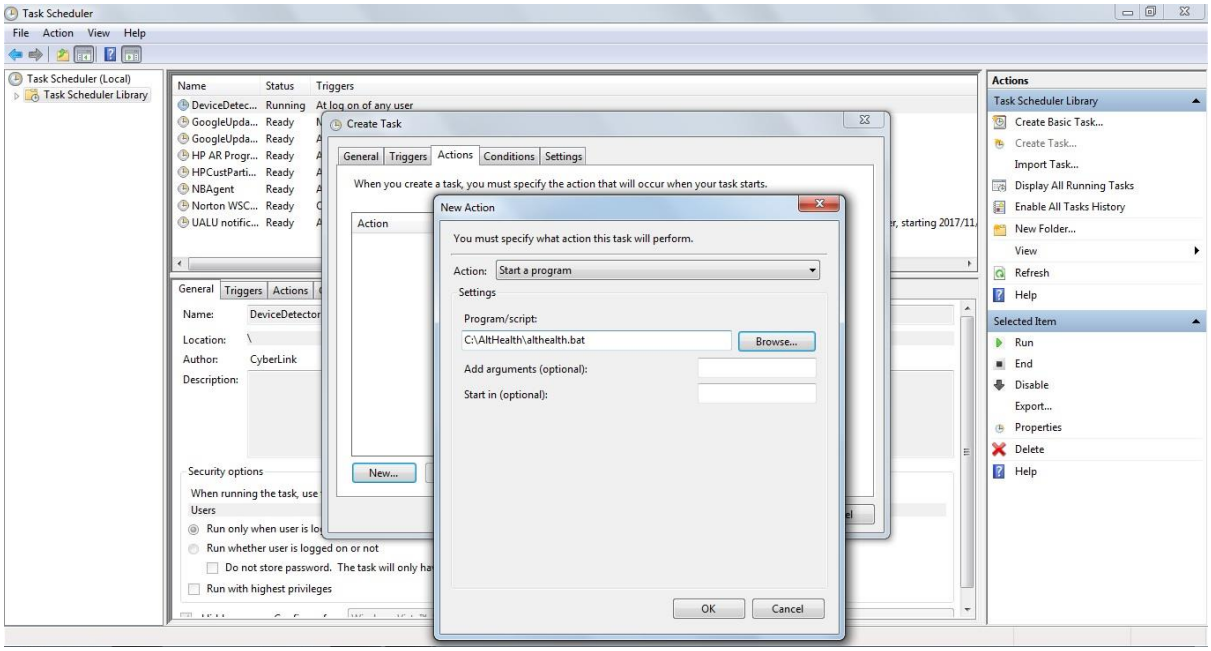


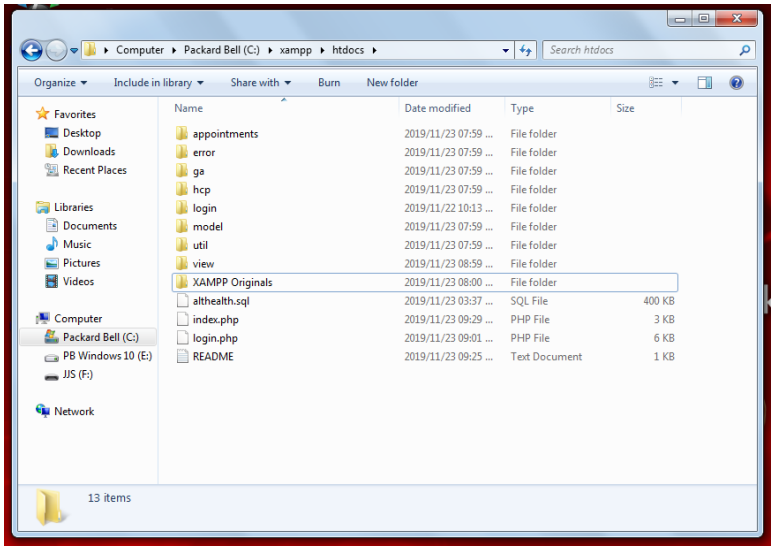
Figure 12: Creating the task – Setting the action

On the Actions tab, a new action needs to be declared in order to start a program. By selecting Browse on the New Action window, select the created batch file in the AltHealth directory.

Once these actions are performed in the Task Scheduler, save and close the scheduler. The system is now set to backup automatically to the cloud without the requirement of any user input.

3.5 Deployment of Code

The code has been designed and developed to be easily deployed through the use of the htdocs directory located at C:\xampp\htdocs. The code can be taken from its source (for example from a removable storage device) and directly placed into the htdocs directory. This enables that the system is immediately assessable once the user opens Google Chrome (the preferred web browser of the AltHealth Database System) and enters into the address bar "localhost" or http://localhost



Before deploying the source code to the htdocs directory, move all contents of htdocs to a separate directory in htdocs, in order to avoid confusion when the administrator accesses the htdocs directory. In Figure 13, note that a folder called 'XAMPP Originals' exists. This is the folder that was created for the contents that was stored in htdocs before deployment.

Figure 13: htdocs Directory in XAMPP

Once the code has been deployed in the htdocs folder, the system can be immediately accessed as all roles, usernames and passwords (for both front-end and back end) has been configured during development.

It is important to note that the code deployed is not accessible over the Internet (in the form of a public webpage). A File Transfer Protocol would need to be set up in order for the site to be live. This will only occur once Phase 1 of the system (i.e. the supplements ordering and stock management system) has been completed and configured in conjunction with the current system.

Any device that has access to the network where the system is available may access the system, by entering the IP-address of the host (i.e. the computer where the installation and configuration has been performed) into the address bar of the web browser. Only granted users, such as the HCP and the GA, will have access to the full system and according to their privileges and certain tasks associated with their duties and roles in the business.

3.6 System Recovery – Performing Recovery (if required)

Recovery is an important aspect of the AltHealth Database System as it is required should the system fail or gets corrupted due to internal and/or external force. With regards to internal forces, these possibilities are minimal as defensive measures has been implemented in the coding of the system to prohibit failure or corruption.

With regards to database recovery, the system is equipped with a recovery solution in the case of an error occurring. With the version of MySQL used for this database, it includes the use of the InnoDB storage engine for the database management system. InnoDB has an auto recovery solution active

to recover from a potential server crash. The only requirement is to restart the database server (i.e. the system the database is hosted from) as InnoDB automatically checks the logs and performs a roll-forward of the database to the present. InnoDB automatically rolls back actions that were present at the time of the error. No configuration is required to activate the solution.

In any instance where the system is slow, the system does not perform correctly, or the system is erroneous in data output, it is highly recommended to request for support in order to prevent any damage in the form of data corruption to the system. This is where, by the discretion of the system administrator, a manual recovery would be performed should no other alternative be possible.

To perform the recovery, the system administrator would need to log into the phpMyAdmin interface, which can be done through a web browser by entering http://localhost/phpmyadmin into the address bar. The administrator would login as the root user.

The althealth database would be clicked on in the left-side list, which would then display the structure of the database. Click on the Operations tab and remove the database by performing the DROP action (Drop the database), as indicated in Figure 14. Confirm by clicking OK on the window that has popped up, which would then drop the database.

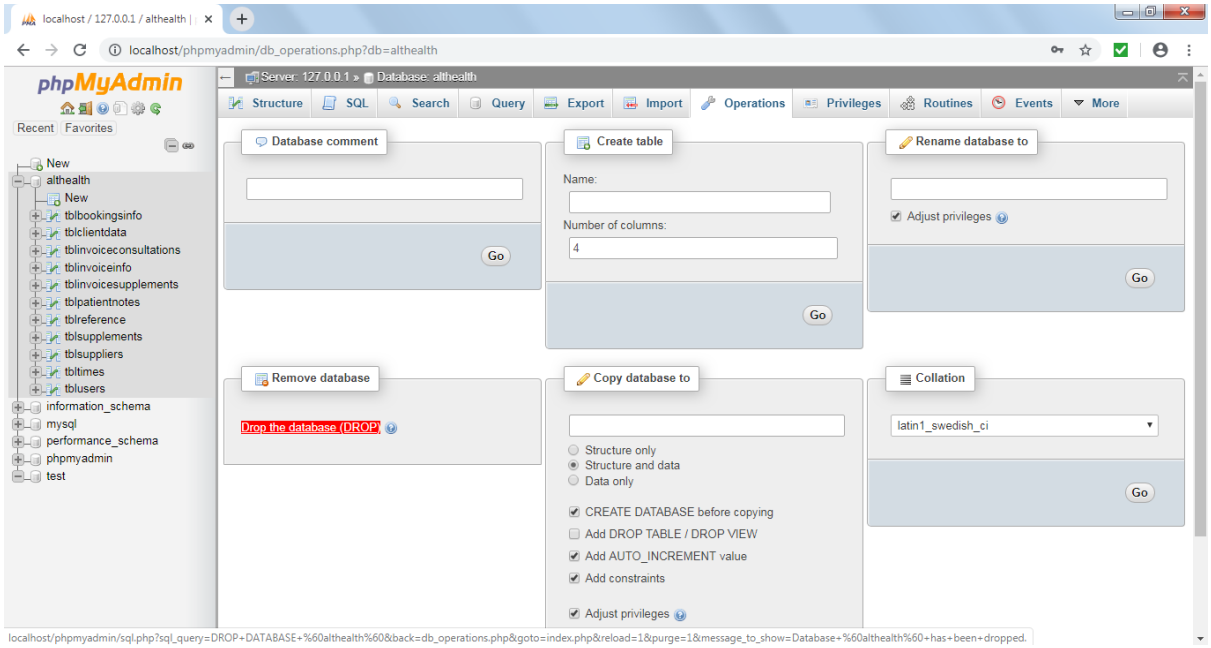


Figure 14: Dropping the althealth database

The system administrator can now recreate the althealth database by the althealth database again, by clicking on the New link in the left pane. After the althealth database has been created, the latest database backup can be imported by pressing on the import tab and to select the latest backup sql file in the Backups directory located in the C:\AltHealth folder. Remember to uncheck the box to prevent the check for foreign keys to be enabled.

After the import has been successful, the database has been restored to the date of the last backup that has been made, which should be the last Friday at 15:30.

Only the system administrator may perform the recovery to ensure that no errors or data redundancies are present during the recovery, which also guarantees the reliability of the system.