



Republic of the Philippines  
City of Olongapo

## GORDON COLLEGE

Olongapo City Sports Complex, East Tapinac, Olongapo City  
Tel. No. (047) 224-2089 loc. 314



### Section 3

#### 3. Technical Background

File Management and Storing System for Students is a digital web-application for storing files, whether personal or academic-related. The development of this web-application requires several components. These software and hardware requirements will set the standard for the project to work seamlessly.

FMSS System proposes light-weight and fast transactions between the user and the server. To achieve this requirement, a strong foundation of technology should be utilized. A table showing the requirements is showed below:

#### 3.1 Hardware Requirements – Development and Maintenance Side

##### 3.1.1 Server Infrastructure and Hardware Requirement

The File Management and Storing System for Students will utilize the modern hosting servers known today. Apache, which is available for Microsoft Server systems, is our top choice for its robustness and flexibility. Used by 31.5 percent of all known websites, it is guaranteed a great server to host this project. Moreover, it is an open-source project that uses HTTP protocol. Another top reason is Apache operates on various operating systems, such as Windows. This server software is comprised of several modules, which our team can adjust to process different requests. Additionally, Apache supports various programming languages and has an active community of developers. Lastly, our project will utilize PHP for its backend technology, which Apache ultimately supports. Some key features of Apache Server include IPv6, Session Tracking, FTP and HTTP/2, and Customizable Modules. Powering our project requires extensive research and alignment regarding hardware capabilities and software requirements. A table showing the hardware requirement for our server is shown below:

CPU	RAM	STORAGE	STORAGE TYPE	OPERATING SYSTEM
Intel Xeon processor with at least 4 physical cores and is running in 64-bit	64 gigabyte memory that is at least running in DDR 4	5 Terabytes	Solid State Drive	Windows

The selected CPU for our project is a widely utilized server processor renowned for its commendable performance and reliability. Specifically, the Xeon processors, designed for server and workstation environments, are known for their high-performance capabilities and robustness. These processors boast multiple cores and threads, optimized to facilitate



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multitasking and parallel processing. Given our server configurations and requirements, the Xeon processor aligns seamlessly with our needs. Furthermore, it is worth noting that Xeon processors are already established in the server infrastructure of esteemed organizations. Our project, which involves handling traffic requests for beneficiaries such as students and professors, will benefit from the Xeon processor's capacity to manage such demands.

It is imperative to acknowledge the correlation between higher processing units and enhanced performance. However, any consideration of upgrading the processing unit should be approached cautiously due to potential budget implications and the need for extensive financial revisions. Regarding memory specifications, the server should possess a minimum of 16 gigabytes of volatile memory to ensure efficient data transfer and prevent performance issues. Ideally, a recommended memory capacity of 64 gigabytes aligns with our project's focus on file transfers.

In terms of server storage, a minimum of 1 terabyte is essential to accommodate files, images, and texts, all of which demand substantial storage space. For scalability and the ability to handle large files and requests effectively, a recommended storage capacity of 5 terabytes should be met. Opting for Solid-State Drive (SSD) storage is crucial for achieving speed and optimal performance, as SSDs outpace traditional Hard Disk Drives (HDDs). However, it is crucial to consider budget constraints when deliberating on the choice of storage, as faster options may involve higher costs. These specified requirements have been carefully considered to align with our budget constraints.

### **3.1.2 Hardware – Client Side**

#### **3.1.2.1 – Supported Devices**

The FMSS System will run on the user's browsers. As long as their devices have the power to run browsers, they will be able to use our proposed system. Any devices such as laptops, computers, mobile phones, and tablets will be able to utilize this system. The performance will vary depending on the user's device, but FMSS System is a light-weight web-application so a device that can run browsers, will be able to run our system.

#### **3.1.2.2 – Device Specifications**

Our system is a light-weight web-application, meaning that even the outdated devices will be able to run our system for as long as they have browsers on their devices. A table showing the device specifications is posted below:



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### 3.1.2.2.1 – Computers and Laptops Minimum Requirements

CPU	RAM	OPERATING SYSTEM
Intel® Celeron® Processor 7305L (8M Cache, 1.10 GHz) or any equivalent processor	4 gigabytes of ram	Windows or Linux

### Computers and Laptops Recommended Requirements

CPU	RAM	OPERATING SYSTEM
Intel Core i3 5010u or any equivalent processor	8 gigabytes of ram or higher	Windows or Linux

### 3.1.2.2.2 – Mobile and Tablet Minimum Requirements

CPU	RAM	OPERATING SYSTEM
Qualcomm Snapdragon 425 or any equivalent processor	1 gigabyte of ram	Android/iOS

### Mobile and Tablet Minimum Requirements

CPU	RAM	OPERATING SYSTEM
Qualcomm Snapdragon 660 or any equivalent processor	2 gigabytes of ram or higher	Android/iOS

## 3.2 Software Requirements - Development and Maintenance Side

The FMSS System is engineered to seamlessly operate within users' web browsers, encompassing popular platforms such as Chrome, Edge, Firefox, Opera, and Brave. Committed to elevating user experience standards, our system is dedicated to crafting a web application that epitomizes speed, reliability, and responsiveness. This commitment is underscored by the adoption of contemporary technologies, including HTML5, CSS3, Bootstrap, and a JavaScript framework, specifically JQuery. The incorporation of these cutting-edge technologies underscores our dedication to delivering an optimal and dynamic user interface. In terms of backend technology, our application is strategically designed to leverage Vanilla PHP, a versatile and widely recognized scripting language. This choice aligns with our commitment to robust and efficient backend functionality, ensuring the seamless integration of data processing, storage, and retrieval. By adopting Vanilla PHP, we aim to strike a balance between performance and versatility, facilitating a streamlined user experience while maintaining a scalable and adaptable backend architecture.



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The meticulous selection of these technologies underscores our unwavering commitment to technological excellence, ensuring that the FMSS System not only aligns with contemporary industry standards but also offers a sophisticated and user-centric interface that caters to the diverse preferences of our user base. This strategic technological integration positions our system as a cutting-edge solution in the digital landscape, poised to redefine the landscape of storing files within the educational institution.

### **3.2.1 Database Requirements**

Our web-application is strategically engineered to harness the robust capabilities of MySQL as its chosen database management system. The decision to integrate MySQL is rooted in its multifaceted strengths, encompassing speed, reliability, scalability, and userfriendly functionalities. This choice is particularly apt for a system that involves the storage of critical data such as student and professor information, as MySQL excels in managing such datasets efficiently. MySQL stands out as one of the most mature and extensively utilized databases globally, boasting a proven track record of over 25 years in various scenarios. Its resilience has been tested and affirmed by a multitude of enterprises, including some of the world's largest companies, attesting to its reliability in supporting mission-critical applications. The maturity of MySQL as a database solution provides a solid foundation for our web-application's data management needs.

In addition to its established reliability, MySQL offers the advantages of being lightweight and fast, facilitating swift data processing and retrieval. Its adaptability and scalability make it an ideal choice for a system that anticipates growth and evolving data requirements over time. The utilization of MySQL aligns seamlessly with our commitment to providing a web-application that not only meets current needs but also stands prepared for future expansions and enhancements. Furthermore, MySQL's connectivity, speed, and security features render it highly suitable for accessing databases over the internet, ensuring a seamless and secure interaction between our web-application and the underlying database. This aspect is pivotal for our system, which involves the dynamic exchange of data in an online environment.

In conclusion, the selection of MySQL for our web-application's database management stems from its proven performance, scalability, and extensive industry adoption. Leveraging MySQL ensures that our project system benefits from a database solution that not only meets the current demands of data storage and retrieval but also aligns with the robustness and reliability required for the successful execution of our system.



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### **3.2.1.2 Development Environment Requirements**

The development strategy for the FMSS System is rooted in the utilization of modern tools and Integrated Development Environments (IDEs) to optimize efficiency and productivity. Our primary IDE of choice is Visual Studio Code, distinguished for its wealth of extensions and plugins that promise to significantly enhance our development process. This selection aligns with our commitment to fostering a versatile and dynamic environment that caters to diverse development needs. Collaborative development is pivotal to the success of our project, and to facilitate seamless teamwork, Git has been chosen as our version control system. The robust features of Git ensure meticulous tracking and management of code changes, promoting transparency and streamlined collaboration among team members. By incorporating Git into our workflow, we aim to enhance the reliability and integrity of our codebase, ensuring a systematic approach to code modifications.

To further augment collaborative efforts and real-time communication within the development team, Slack has been designated as our Collaboration Platform. This choice reflects our dedication to creating a cohesive and communicative environment where ideas, updates, and feedback can be exchanged swiftly and efficiently.

### **3.2.2 Software Requirements – Client Side**

The FMSS System will utilize each user's browsers, as long as they have their browsers, they can freely use our system. Below is a table pertaining to the user's software requirements:

<b>BROWSER</b>	<b>VERSION</b>
Chrome, Firefox, Edge, Opera, Brave	Latest Version