



**Lecture Final Project**

**BSCS 3C**

# OPERATING SYSTEM





# TABLE OF CONTENTS

1 .History of Operating System .....	Page 1
1.1 Key Contributors .....	Page 1-3
1.2 The Operating System .....	Page 4
1.3 Various Types of Operating System .....	Page 4-6
2. Background of the Project .....	Page 6
2.1 Overview and Details .....	Page 6-7
2.2 OS Model .....	Page 8
2.3 Materials .....	Page 8
References .....	Page 9

## **SUBMITTED BY:**

De Belen, Alloizeus John B.

Parantar, Lee Parker D.

Perez, Denzel Manz S.

Rada, Shawn Tyrone D.

Viñas, Jade S.



## **OPERATING SYSTEM**

### **1. History of Operating System**

It was in the 1940s where the earliest digital system surface and it does have an operating system. Computers were primitive during this time, unlike the modern computer that allows program input using various programming languages. In the long run, machine language consisting 1s and 0s was introduced which sped up the process of programming (Stern, 1981). The concept of binary was introduced by Gottfried Wilhelm Leibniz a German Mathematician in 1679 which served as the premise of the present programming language and serves as the pre-eminent foundation of the operating system's structure.

#### **1.1 Key Contributors:**

1. **Gottfried Wilhelm Leibniz (1679):** Leibniz is often credited with developing the modern system of binary arithmetic. In his 1679 manuscript *Explication de l'Arithmétique Binaire* ("Explanation of Binary Arithmetic"), he showed that all numbers could be represented using just two symbols: 1 and 0. Leibniz's binary system was based on the idea of representing numbers with the least possible symbols, which is



**GORDON COLLEGE  
OLONGAPO CITY  
COLLEGE OF COMPUTER STUDIES  
Bachelor of Science in Computer Science**



central to the structure of computers today. He was inspired by the *I Ching*, an ancient Chinese divination text that used a system of broken and unbroken lines (which could be thought of as binary states, akin to 1s and 0s).

2. **George Boole (1854)**: Although not directly associated with binary numbers themselves, George Boole's development of Boolean algebra in the mid-19th century was crucial to binary computation. Boolean algebra introduced the idea of logical operations like AND, OR, and NOT, which can be applied to binary digits (bits). His work laid the theoretical groundwork for digital circuits and computing, enabling the manipulation of binary numbers in logic operations.
3. **Charles Babbage (1830s)**: While Babbage's difference engine and analytical engine were never fully built during his lifetime, the design of these mechanical computers was conceptually ahead of its time. The Analytical Engine was intended to use gears to perform calculations, and it had a memory unit that could store data. Though Babbage did not use binary numbers explicitly, his design of a machine that could execute programmed instructions was a precursor to modern computing systems, which rely on binary arithmetic.
4. **Claude Shannon (1937)**: In the 1930s, Claude Shannon, often called the "father of information theory," formally applied Boolean



**GORDON COLLEGE  
OLONGAPO CITY  
COLLEGE OF COMPUTER STUDIES  
Bachelor of Science in Computer Science**



algebra to electrical circuits, and his work showed how logic gates (AND, OR, NOT) could be built using binary digits (0 and 1). Shannon's 1937 master's thesis, *"A Symbolic Analysis of Relay and Switching Circuits,"* used binary values to simplify and optimize circuit design, directly influencing the design of digital computers.

The use of binary in modern computing was cemented with the invention of the electronic digital computer in the mid-20th century, especially through the work of figures like **John von Neumann** and the development of early computers such as the **ENIAC** (Electronic Numerical Integrator and Computer), which used binary arithmetic for computation.

The foundation of Operating System was introduced around between 1940s and 1950s wherein the program was placed in a punch card or tape. The idea of batch processing was vaguely utilized during this period as users queue to submit jobs and the output is printed afterwards. It was around 1956 when the first operating system and batch processing was formally introduced with the invention of GM-NAA I/O's ([General Motors](#) and [North American Aviation](#)) IBM 704 computer created by Robert L. Patrick. Later, the multi-user system was introduced, allowing multiple users to interact with one machine (the UNIX of 1969). The terminals are connected to a central mainframe which enables time-sharing and simultaneous access. User interface, multi-tasking, file system and networking support was the main



**GORDON COLLEGE  
OLONGAPO CITY  
COLLEGE OF COMPUTER STUDIES  
Bachelor of Science in Computer Science**



feature of the UNIX computer. These inventions played a key role in the innovation of the present operating system which is user-friendly, accessible, innovative and can be found in both portable and non-portable personal computers.

## **1.2 The Operating System**

According to Mary E. Shacklett in her article (TechTarget.com), an operating system is the program that manages all other applications in the computer that is initially loaded by a boot program. It manages the hardware (such as CPU, memory and storage), runs a program added in the device (eg. games, software applications), stores the file into the device and allows the user to organize files and/or folders making it quicker to access, and protects the user's data according to the built-in security features. It serves as the middleman, a mediator between the user and the computer.

## **1.3 Various Types of Operating System**

1. **Batch Operating System:** Executes batches of jobs without direct user interaction commonly utilized on data processing tasks like payroll and billing. (eg. Early IBM systems used in the 1960s)



**GORDON COLLEGE  
OLONGAPO CITY  
COLLEGE OF COMPUTER STUDIES  
Bachelor of Science in Computer Science**



2. **Time-Sharing Operating System:** Allows multiple users to share the computer's resources at the same time by quickly switching between tasks found in multi-user environments like research labs and offices. (UNIX)

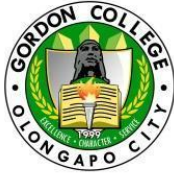
3. **Distributed Operating System:** Used in Cloud computing and networked systems which combines multiple computers to work as one system, sharing resources like memory and processors. (eg. LOCUS, Google's Fuchsia)

4. **Real-Time Operating System (RTOS):** It is found in Medical devices, automotive systems, and robots where it processes data and responds immediately in real-time (eg. VxWorks, FreeRTOS)

5. **Network Operating System:** It manages network resources like file sharing and communication between connected devices like servers and data centers (eg. Microsoft Windows Server, Linux).

6. **Mobile Operating System:** Found on mobile devices which optimizes smartphones and tablets (eg. Android, iOS).

7. **Embedded Operating System:** Operating System (eg. Embedded Linux, Windows Embedded), controls devices that are not traditional computers, like appliances or IoT gadgets such as Smart TVs, washing machines, and sensors.



**GORDON COLLEGE  
OLONGAPO CITY  
COLLEGE OF COMPUTER STUDIES  
Bachelor of Science in Computer Science**



8. **Multi-Tasking Operating System:** The operating system (eg. Windows, macOS, Linux) let computers like Desktops and laptops handle multiple tasks (programs) simultaneously.

9. **Single-User Operating System:** Found in early personal computers (eg. MS-DOS) which is designed for one user at a time.

10. **Multi-User Operating System:** Allows multiple users to use the computer resources simultaneously (eg. UNIX, Mainframe systems) in large-scale computing environments.

## **2. Background of the Project**

The operating system is defined as a program that manages the application of a computer. This section defines the overview of the project as well as the details.

### **2.1 Overview and Details**

1. The team chose an specific operating system for the project which is the android operating system.
2. The team created a figurine out of recycled and old materials.
3. The team will explain how the operating system work during the presentation.





**GORDON COLLEGE  
OLONGAPO CITY  
COLLEGE OF COMPUTER STUDIES  
Bachelor of Science in Computer Science**



The android operating system was founded by Andy Rubin, Rich Miner, Nick Sears, and Chris White in Palo Alto, California. It was initially created for digital cameras but later on shifted towards mobile phones. It was created amidst the year 2003 but was officially launched by 2007 and thus embedded on the mobile phones and later progressed into smartphones most people carry these days. The android OS releases versions according to the innovation of technology and these OS version is named after tasty snacks like Lollipop(version 5), Nougat (version 7), Oreo (version 8) but was later on abandoned these tradition and the 10th version was simple named "Android 10".

The Android Operating system is known to be a linux based and an open source OS that is widely utilized in various phone brands. It operates the device's hardware components like camera, sensors, wifi and the like. Such operating system serves as the backbone of the smartphones which is responsible for allocating resources (power, memory, storage distribution) on an app. OS support the multi-tasking of the devices allowing ease of use and flexibility of devices making it user friendly.

In summary, the operating system is essential for the usability, functionality, and security of smartphones. It transforms the device from mere hardware into a powerful, versatile tool that enhances daily life and connects users to the digital world.



## **2.2 OS Model**



## **2.3 Materials**

- A. Old cardboard / recycled box
- B. Glue stick
- C. Glue gun
- D. Scissors
- E. Glue
- F. Green paper / crepe paper / paint (for model color)
- G. Old and recycles computer components



**GORDON COLLEGE  
OLONGAPO CITY  
COLLEGE OF COMPUTER STUDIES  
Bachelor of Science in Computer Science**



**REFERENCES:**

Bullynck, M. (2018). What is an operating system? A historical investigation (1954–1964). *Reflections on programming systems: Historical and philosophical aspects*, 49-79.

Hansen, P. B. (2001). The evolution of operating systems. In *Classic operating systems: from batch processing to distributed systems* (pp. 1-34). New York, NY: Springer New York.

Shacklett , M.E. (2024). What is an Operating System (OS)?. In *TechTarget* (<https://www.techtarget.com/whatis/definition/operating-system-OS>). Arictle

Moumina, A. (2001). *History of operating systems*.