**UNIVERSITY OF BOHOL**
**College of Engineering, Technology, Architecture, and Fine Arts**
DR. CECILIO PUTONG ST., TAGBILARAN CITY

Second Semester

# UB DAYS ATTENDANCE SYSTEM

**In Partial Fulfillment of the Requirements for CPEP 323 course**

Submitted to:

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BSCpE-3

**May 2025**

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# INTRODUCTION

Computer networks have become the backbone of modern communication, seamlessly connecting individuals, organizations, and devices across the globe. Through the interconnection of computers and network devices—such as routers, switches, and servers—networks enable the rapid exchange of data, resource sharing, and collaborative work environments. The evolution from isolated computing to interconnected systems has transformed how people share information, conduct business, and access services, making networking an essential pillar of technological advancement.

The relevance of computer networking extends far beyond simple connectivity. Networks facilitate instant file sharing, centralized backups, and efficient IT management, empowering organizations to optimize resources and ensure business continuity. In a world where data is a critical asset, network security becomes paramount. Robust network security safeguards sensitive information from cyber threats, minimizes operational and financial risks, and ensures compliance with regulatory standards. Without adequate protection, organizations face potential data breaches, loss of intellectual property, and reputational damage, highlighting the indispensable role of secure networking in today's digital landscape.

To bridge the gap between theory and practice in networking education, tools like Cisco Packet Tracer have emerged as invaluable resources. Cisco Packet Tracer is a sophisticated network simulation tool that allows students and professionals to design, configure, and troubleshoot virtual networks in a risk-free environment. By providing hands-on experience with real-world scenarios, Packet Tracer helps users develop practical skills in network design, device configuration, and security implementation without the need for costly physical hardware. Its collaborative features and support for a wide range of protocols and devices make it an essential platform for mastering networking concepts and preparing for industry certifications

# UB DAYS ATTENDANCE SYSTEM

## PROBLEM REQUIREMENTS

- Design a network topology that includes at least two routers, three switches, and five PCs, ensuring that each device is correctly placed and connected using appropriate cables.

- Assign unique and valid IP addresses to all devices in the network, configure subnetting as needed, and document the addressing scheme for future reference.

- Implement and configure basic routing protocols (such as RIP, OSPF, or static routing) on the routers to ensure inter-network communication between different subnets.

- Set up VLANs on the switches to segment the network logically, assign PCs to the appropriate VLANs, and configure trunk links between switches for VLAN propagation.

- Secure the network by configuring password protection on all device console and VTY lines, and implement basic access control lists (ACLs) to restrict traffic between specific network segments.

- Verify network connectivity and security by performing ping tests between devices in different VLANs and subnets, and demonstrate that ACLs are functioning as intended by testing permitted and denied connections

## SCOPE AND LIMITATIONS

The scope of this study focuses on the use of Cisco Packet Tracer as a simulation tool for designing, configuring, and troubleshooting computer networks within an educational environment. It aims to provide learners with hands-on experience in creating network topologies, implementing routing protocols,

configuring VLANs, and applying basic security measures without the need for physical hardware. However, the limitations of this approach include the inability of Packet Tracer to fully emulate all real-world network devices and advanced features, such as certain routing protocols and complex security configurations. Additionally, the simulation environment may not capture all the dynamic behaviors and performance issues encountered in live networks, which means that while Packet Tracer is an excellent tool for foundational learning and practice, it should be complemented with real hardware experience for a comprehensive understanding of network operations and security.

**ANALYSIS**

Cisco Packet Tracer serves as a powerful educational tool that effectively bridges theoretical networking concepts with practical application by allowing users to simulate network design, configuration, and security in a controlled environment. Its intuitive interface and broad device support enable learners to experiment with IP addressing, routing protocols, VLANs, and access controls, fostering a deeper understanding of network operations without the risks or costs associated with physical hardware. However, despite these advantages, Packet Tracer has limitations, including incomplete support for advanced protocols and real-world network behaviors, which can restrict its use for complex enterprise scenarios and in-depth security testing. Therefore, while it significantly enhances foundational learning and skill development, Packet Tracer should be complemented with hands-on experience on actual network devices to ensure comprehensive proficiency and readiness for real-world networking challenges

## DESIGN AND IMPLEMENTATION


Figure 1.2: Cisco Packet Tracer App

## TESTING AND DEBUGGING

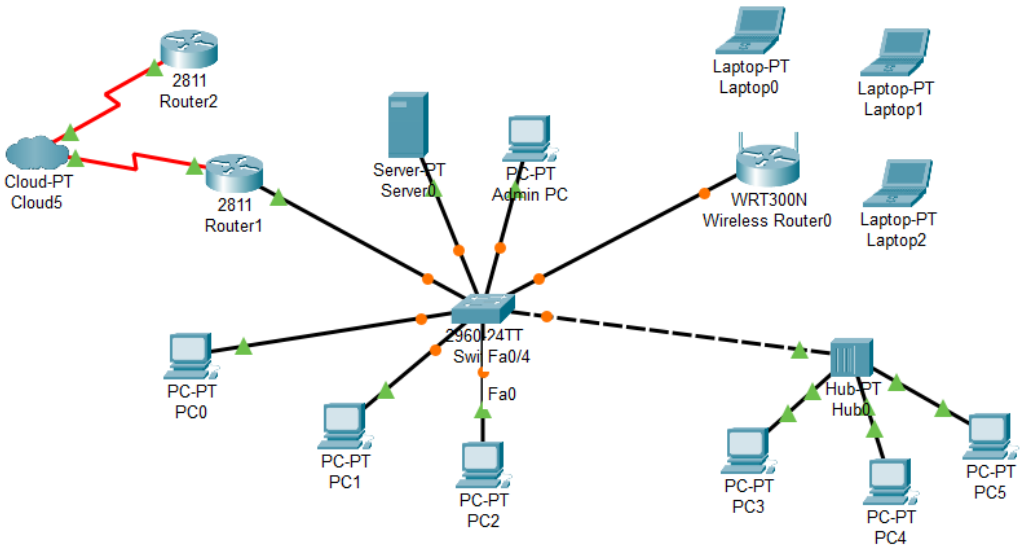


Figure 1.3: UB DAYS ATTENDANCE SYSTEM

## FUTURE DEVELOPMENT

Future development of Cisco Packet Tracer aims to enhance its simulation capabilities by incorporating advanced protocols, improved security features, and greater support for emerging technologies like industrial networking and the Internet of Everything (IoE). Updates will also focus on improving collaboration

tools and API integration to support remote and interactive learning. While new features are being introduced, Cisco recommends using stable releases for formal education to ensure reliability. These advancements will make Packet Tracer an even more powerful and versatile tool for networking and cybersecurity training..

# STUDENT INFORMATION

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https://bit.ly/4kq6Efq

*"If it is to be, it is up to me."*

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## PROFILE

| | | |
|---|---|---|
| Date of Birth | : | May 15, 2002 |
| Place of Birth | : | Tagbilaran City, Bohol |
| Nationality | : | Filipino |
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## EDUCATIONAL BACKGROUND:

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|---|---|---|
| Primary | : | Immaculata High School<br>Baclayon, Bohol<br>2017 - 2018 |
| Tertiary | : | University of Bohol<br>Tagbilaran City, Bohol<br>2019 - 2020 |
| Tertiary | : | University of Bohol<br>Tagbilaran City, Bohol<br>Bachelor of Science in Computer Engineering<br>2024 – present |

## PROJECTS:

| | | |
|---|---|---|
| Final Project | : | UB Days Attendance System |
| Project Link | : | **https://bit.ly/3SjMdoM** |