

Project Title: IP Calculator for Subnet Design

Group Members:

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Proposed Project Description

The "**IP Calculator for Subnet Design**" is a web-based application developed using Python and Flask. It is designed to help organizations efficiently allocate IP addresses within a network by performing subnet calculations. The calculator will allow users to input an IP address and subnet mask, and it will generate details such as:

- Network Address
- Broadcast Address
- First and Last Usable IP
- Number of Hosts per Subnet
- Subnet Mask in Binary Format
- CIDR Notation
- Wildcard Mask
- Subnet Ranges

How It Will Work

Users will enter an IP address along with a subnet mask or CIDR notation. Upon submission, the system will process the input, perform the necessary calculations, and display the subnet information in an organized format. The results will assist network administrators in designing optimal subnet allocations by efficiently utilizing available IP addresses.

Functional Features

- User input validation for IP address and subnet mask
- Calculation of subnet properties
- CIDR notation conversion
- Visual representation of subnets
- Export results as a downloadable report (CSV or PDF)
- Responsive UI

Plan of Work

Week 1: Research and Planning

- Understand subnetting concepts and formulas
- Finalize project requirements and flow
- Set up Flask environment and project structure

Week 2: Basic Functionality Development

- Implement input validation for IP and subnet mask
- Develop core logic for subnet calculations
- Display calculated results on the webpage

Week 3: UI and User Interaction

- Design and implement the front-end interface
- Ensure mobile responsiveness
- Add dynamic updates using JavaScript

Week 4: Additional Features and Testing

- Implement report export feature (CSV/PDF)
- Unit testing and debugging
- Optimize performance and enhance security

Week 5: Finalization and Documentation

- Perform final testing and bug fixes
- Prepare documentation and user guide
- Deploy and present the project

Team Member Contributions:

Member	Contributions
Abdullah	Implements backend logic for subnet calculations, integrates Flask routes, and handles database interactions if needed.
Taha	Designs and develops the front-end UI, ensures user input validation, and implements dynamic features using JavaScript.

References

1. RFC 1918 – Address Allocation for Private Internets
2. RFC 4632 – Classless Inter-Domain Routing (CIDR)
3. Python Flask Documentation – <https://flask.palletsprojects.com/>
4. IP Addressing and Subnetting – Cisco Networking Academy
5. Online Subnet Calculator Tools for Benchmarking

This project aims to provide an efficient and easy-to-use solution for network administrators to design optimal subnet allocations, ensuring better resource utilization and network management.