**ACKNOWLEDGEMENT**

We wish to take this opportunity to express our sincere gratitude and deep sense of respect to our beloved **Dr. P. Prasad Rao**, Principal, Vaagdevi Engineering College for making us available all the required assistance and for his support and inspiration to carry out this mini project in the institute.

We extend our heartfelt thanks to **Dr. Naveen Kumar Rangaraj**, Head, Department of CSE, Vaagdevi Engineering College for providing us the necessary infrastructure and thereby giving us the freedom to carry out the mini-project.

We express heartfelt thanks to the Mini Project Coordinator, **Mr. E. Hari krishna**, Assistant Professor, Department of CSE for his constant support and giving necessary guidance for completion of this mini-project.

We express heartfelt thanks to the guide**, Mr. D. Anil Kumar**, Cisco trainer, Department of CSE for his constant support and giving necessary guidance for completion of this mini-project.

Finally, we express our sincere thanks and gratitude to my family members, friends for their encouragement and outpouring their knowledge and experience throughout the mini-project thesis.

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**ABSTRACT**

In today’s world, through the use of networks, we are connected like never before. People with ideas can communicate instantly with others to make those ideas a reality. News events and discoveries are known worldwide in seconds. Individuals can even connect and play games with friends separated by oceans and continents. Having a well-established network has become an important part of our lives. A **network** is a collection of computers, servers, network devices, peripherals, or other devices connected to one another to allow the sharing of data.

An **IP address**, or simply an "**IP**," is a unique **address** that identifies a device on the Internet or a local network. Designing, implementing and managing an effective IP addressing plan ensures that networks can operate effectively and efficiently.

This project includes IP Subnetting. **IP Subnetting** is a process of dividing a large IP network into smaller IP networks. In Subnetting we create multiple small manageable networks from a single large IP network.

There are two types of Subnetting: FLSM and VLSM.

* In FLSM (Fixed-Length Subnet Mask), all subnets have an equal number of host addresses and use the same Subnet mask. FLSM is easy in implementation and simple in operation but wastes a lot of IP addresses.
* In VLSM (Variable-Length Subnet Mask), subnets have a flexible number of host addresses and use different subnet mask.

The main aim of our project is to reduce the wastage of IP addresses by using VLSM. VLSM is hard in implementation and complex in operation but utilizes maximum IP addresses.

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