**Network Manual Reservation Tool**

I am a graduate student currently pursuing Master of Science in Information Systems at Northeastern University. I have two years of work experience as a Software Engineer in Aricent, India where I acquired in-depth knowledge on object oriented programming language and Database Management .While I was in Aricent, I gained hands on experience in various languages such as Java , HTML ,CSS , Javascript . I have also designed, developed and maintained relational database MySQL which is used for back end database connectivity to the web application. I have worked in Agile/scrum software development methodology which includes various phases such as planning, requirement gathering, designing, developing, testing and maintenance in iterative way. I have experience working in both windows and Linux environment.

**Project Story:**

There are various network devices available in the Lab . Each Engineers across the team works on different devices in the lab which include Switches, Router, Traffic generator, Module , Cards and port in node. Each devices is accessed with the help of IP Address. In order to work and configure any available devices in the lab, that particular device IP Address should not be used by another Engineers . So be4 the development of tool Engineers manually communicate through E-Mail for reservation of particular devices in the network. I was Part of the two-member team to develop ‘**Network Manual Reservation Tool’** using PHP,JAVASCRIPT, HTML,CSS, MYSQL, Tableau in order to avoid interruption using network devices across various team members thereby increasing the efficiency in turn adds profitability reducing the usage time.

  1. HTML to define the content of web pages

   2. CSS (Cascading Style Sheets)to specify the layout of web pages

   3. JavaScript to program the behavior of web pages.

Since we developed the project from the Scratch we Designed Centralized Database with includes complete details of all nodes, cards, modules etc. which is physically present in Lab. First we gathered Business Requirement from the client and Developed Conceptual Data Model followed by Logical Data Model (Normalization is the last part of the logical design) and Physical Data Model and Finally Deployed the application in MySQL Server. In the Logical data Model we Normalized the database to reduce data redundancy and to ensure data integrity in which Insert, delete and Update anomalies is minimized.

In this project we have used MySQL Workbench 6.2 for ER data modeling ,generating DDL/SQL scripts and backend connectivity.

We have used Tableau which is Business Intelligence tool for visually analyzing the data and for Reporting the trends, variations and density of the data in form of graphs and charts.( Reservation History Report, Node Utilization Report, Unused Node in the network, fault Node , Module and card report used)

**The main advantage of the Tool is:**

Automatic inventory population based on IP address range

Easy automatic reservation of nodes by Scrum teams

Sharing of nodes across the teams

Finding Misplaced hardware components

# Main Modules

## Reservation

Manual reservation for variable times (1 h, 1 day, 2 days etc.)

Queuing and Future Reservation

Manual Test Equipment Reservation in port level

Manual 86XX reservation in port level

Lending Nodes across scrums

Different roles:

Users- Login and user authentication.

Allow user to reverse the node. The node will be reserved automatically for 7 days.

After 7 days the particular request of user will be expired.

If any other user or engineer wants to reserve the same node, he /she can request the node. It will be automatically added to the queue. Once the old request is processed he will be added to request. And I used the queue data structure to implement this. User can also dynamically select the number of days he/she wants particular node.

Scrum Team leader-Add user to the scrum team, remove user from scrum

Manager- Assign Scrum team leader, add scrum team lead, remove scrum lead, add user, remove user from scrum

## Manage Nodes

Add New Node

Add Shared Node

Reserve Shared Device’s Port to scrum

## Manage Users

Add new users to scrum

Remove users

## Reports

Node Report, Module Report, Reservation History Report, Card Report

Unused devices

Node Utilization Report-Ongoing

## Email Support