**Department of Computer Engineering**
***Faculty of Engineering***
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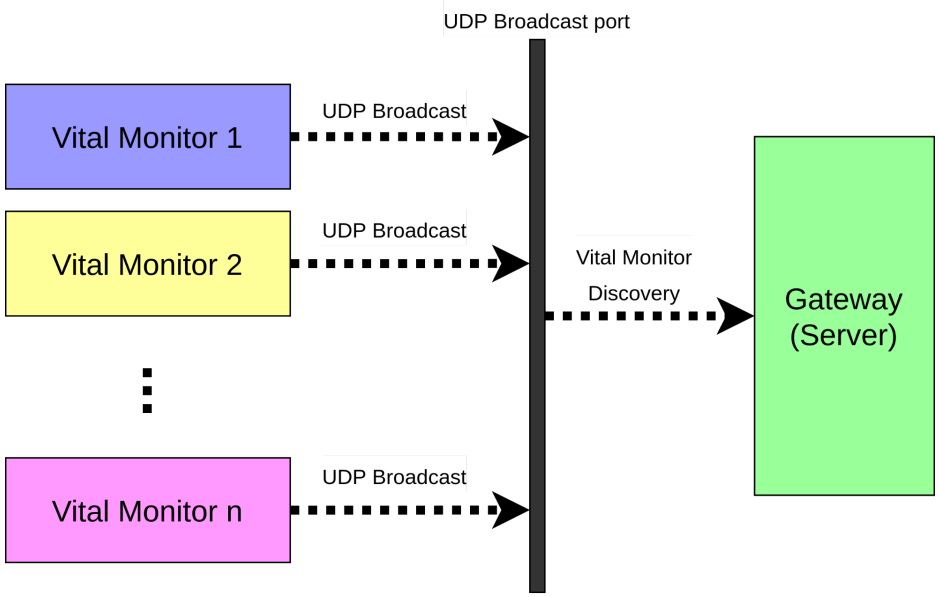
# CO327: Operating Systems

## Project 01 - Vital Monitor System

**Aim:** This project aims to get hands-on experience in a real-world scenario. You will require the knowledge of networking, operating systems, and programming to complete this project.

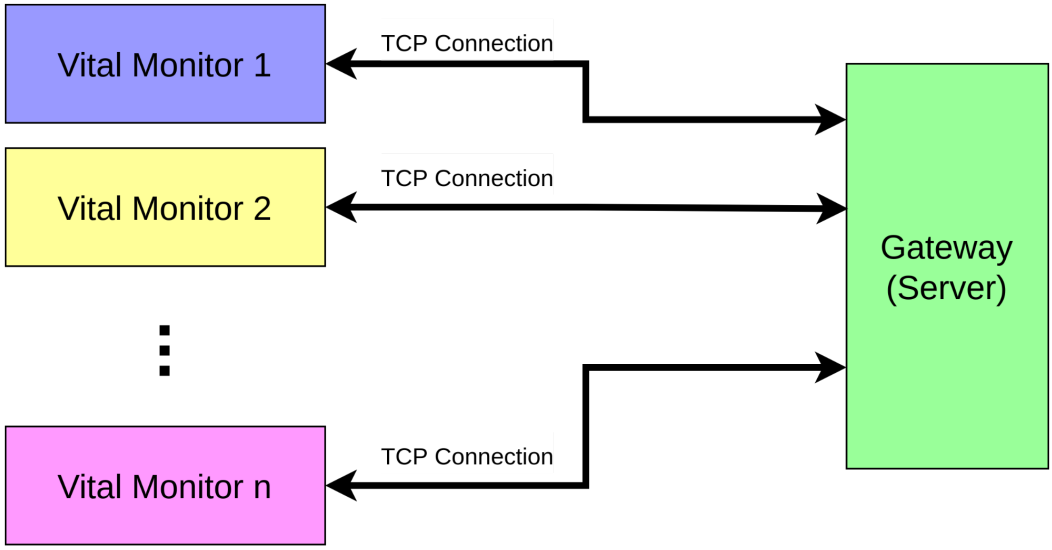
**Background:** This project is based on a real-life scenario. In a hospital, there will be a number of patients whose *vitals* (things like heart rate, blood pressure, etc.) should be monitored. Each patient would be connected to a vital monitor and these monitors will transmit the vital information over a network to a central location. That way nursing staff will be able to monitor many patients and do it remotely – which is useful when the patients are contagious.

**Specifications:** There will be a set of vital monitors running. Each of these vital monitors will have an IP address. These vital monitors will be running on a server. Vital monitors will broadcast their identity to a specific UDP port in the following format: <ip_addr, port, monitor_id>.



Your tasks are as follows.

1) Implement a gateway that discovers all of these vital monitors.
2) For each discovered monitor, the gateway should initiate a TCP connection with the vital monitor. It should use the discovered port number and IP address for this connection. This TCP connection will be used to receive vital information and alarms from vital monitors.




3) Consider thread synchronization where appropriate and implement thread synchronizations in your gateway implementation.

**Evaluation:**

- Design and Architecture
- Correct functionality
- Code quality and good coding practices
- Error handling
- Synchronization