**Mining Machine Monitoring and Management System - Design Document**

**Project Description**

The Mining Machine Monitoring and Management System is a **Node.js + Express + MongoDB** backend application with an **HTML5 frontend** designed for real-time tracking, management, and maintenance of **ASIC and GPU mining machines**. The system provides users with an interface to **monitor** key performance metrics such as **hashrate, temperature, model, status, customer, and mining pools**. Additionally, users can perform **CRUD operations** on mining machines using their **IP addresses** to ensure optimal management.

**CRUD Operations**

* **Create**: Add new mining machines, including model, initial status, and customer details.
* **Read**: View and track all mining machines' real-time status and performance data.
* **Update**: Modify machine operational status, customer assignments, and mining pool settings for resale.
* **Delete**: Remove inactive or decommissioned machines from the system.

**User Personas**

**1. Shuhan Dong – Operation Engineer**

**Responsibilities:**

* Monitors and maintains mining machines.
* Ensures optimal performance and minimizes downtime.

**Pain Points & Needs:**

* Requires a way to track all mining machines in the farm.
* Needs a list of faulty machines by **IP addresses** for **timely repairs**.

**2. David – Professional Broker**

**Responsibilities:**

* Manages newly purchased mining machines.
* Focuses on **ownership transfer** and **optimizing mining operations**.

**Pain Points & Needs:**

* Needs to update **customer information** and **switch mining pools** to ensure efficiency.
* Requires a way to reassign machines quickly to new customers.

**3. Kevin – Parts Management**

**Responsibilities:**

* Oversees **asset tracking** and **inventory control**.
* Audits mining machines regularly to remove outdated or missing units.

**Pain Points & Needs:**

* Requires a system to **clear out inactive machines** to maintain an updated inventory.
* Needs a streamlined way to remove **disappeared or decommissioned machines** from the system.

**User Stories**

**Shuhan Dong – Operation Engineer**

* *As an operation engineer, I want to see a list of all mining machines with their real-time performance data so that I can identify any faulty machines quickly.*
* *As an operation engineer, I want to filter mining machines by IP address and status so that I can prioritize urgent repairs.*

**David – Professional Broker**

* *As a broker, I want to update customer ownership details for mining machines so that asset transfers are correctly reflected in the system.*
* *As a broker, I want to change the mining pool assignment for my machines so that they are operating under the most profitable settings.*

**Kevin – Parts Management**

* *As a parts manager, I want to remove inactive or disappeared mining machines from the system so that only operational units remain listed.*
* *As a parts manager, I want to generate periodic reports on machine status so that I can track inventory efficiently.*