INVNENTORY MANAGEMENT SYSTEM

PRESENT BY TEAM 01

Introduction

Inventory Management Database System is a small-sized system which allow database users to store related information on the tables such as product, sale and transaction record. It can store big data of records, manage the multiple users control and performing database backup.

Project vision and objective

We aim to create a simple inventory management database system based on these objective.

Database Design
Database Implementation
Database Population

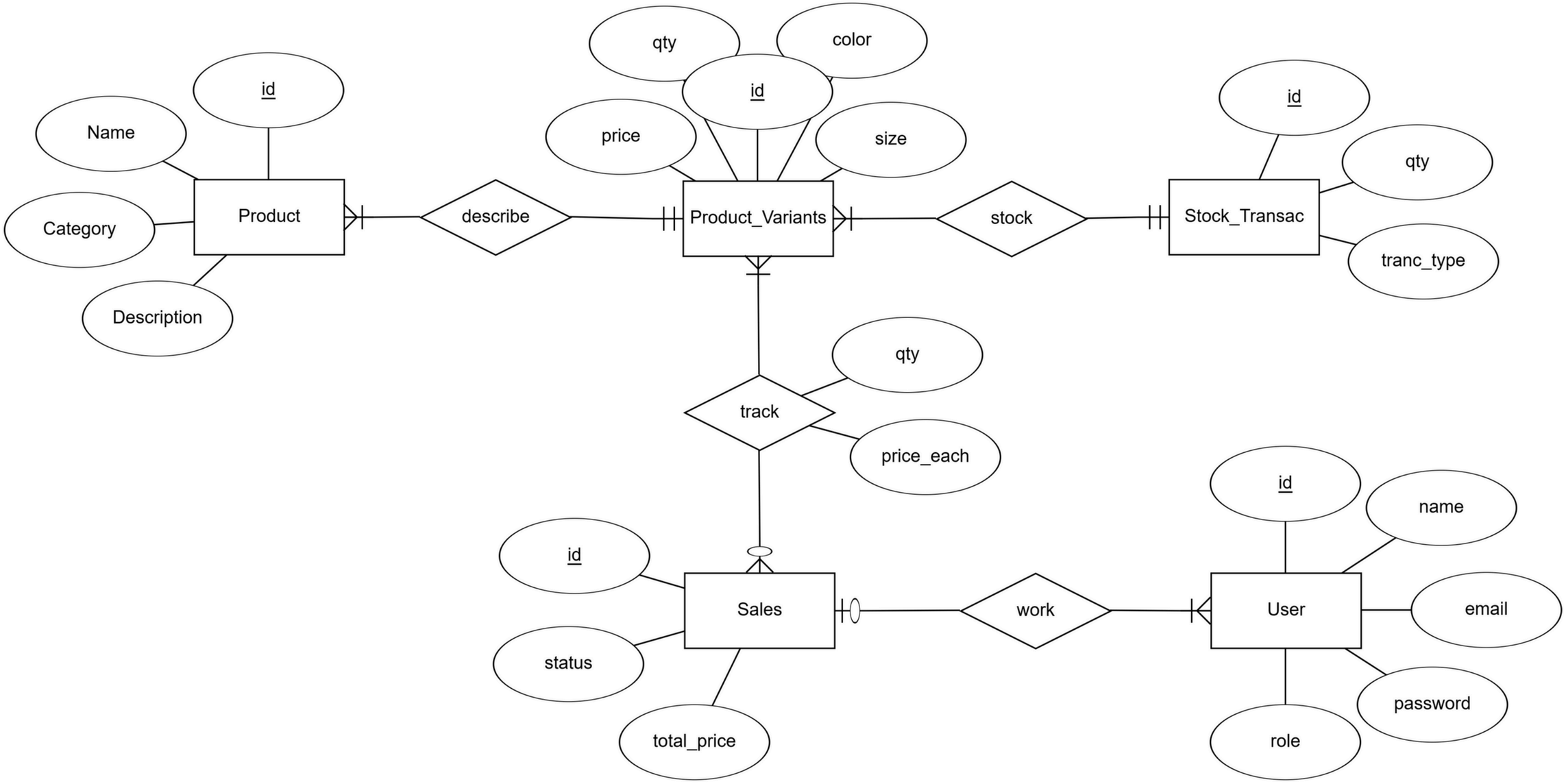
Multiple User Management and Access Control

Backup and Recovery Strategy

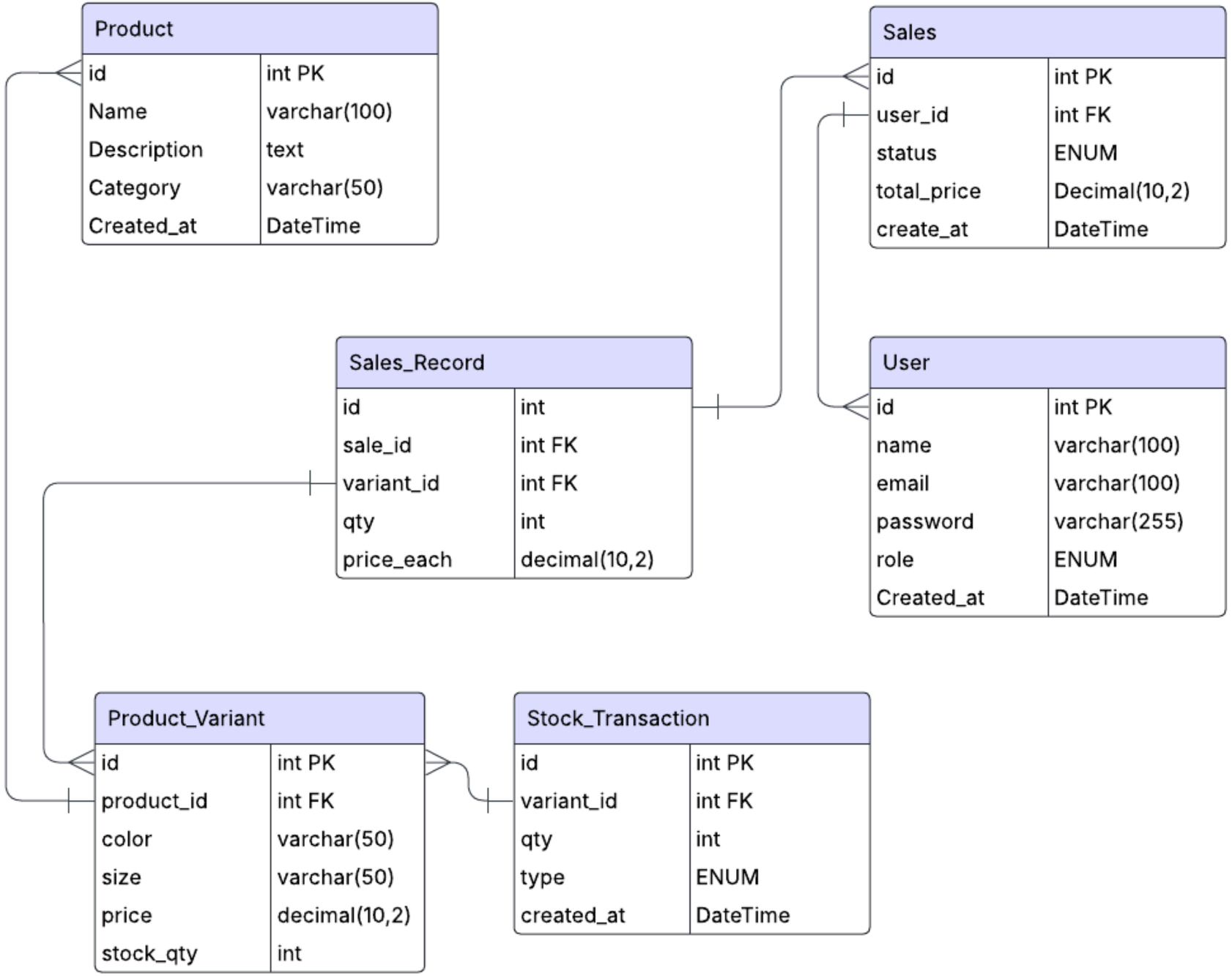
Query Performance and Comparison

Database Server

ERD Diagrams



Relational Tables



Data Implementation

Six tables which are in our inventory database :

- Product
- Product_Variant
- Sales
- Sales_Record
- Stock_Transaction
- User

```sql
CREATE TABLE IF NOT EXISTS User (
    id INT PRIMARY KEY AUTO_INCREMENT,
    name VARCHAR(100),
    email VARCHAR(100),
    password VARCHAR(255),
    role ENUM('admin', 'staff', 'customer'),
    created_at DATETIME
);
```

Data Population

We use python and faker to generate fake data for each tables :

- Product : 100 records
- Product_Variant : 1M records
- Sales : 7000 records
- Sales_Record : 1M records
- Stock_Transaction : 1M records
- User : 50 records

Role Based Access Control

We create 4 roles in order to assign to users. This is the default role in our system. However we can still customize new roles in the frontend platform like interns.

Database_Admin

Full access to system.

Analyst

Read only on all table.

Developer

create, alter, select ,insert, update on all table.

Backup

Read only on all table.

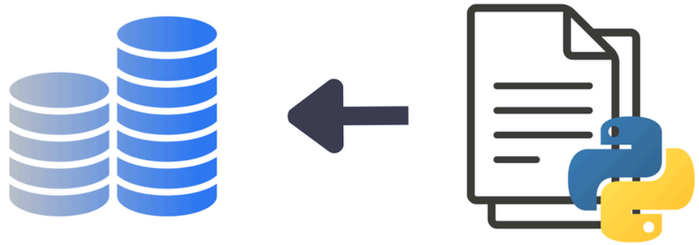
Customize Role

Give any permission to new role

Backups and Recovery Strategy

We build a backup script using python to backup daily on the six tables.

- Backup Python Script
- Bash Script to run Python
- Use Task Scheduler to run bash script daily



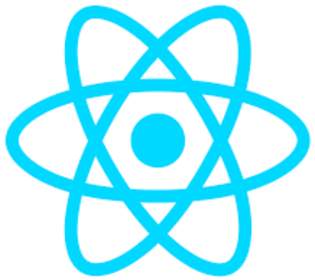
Query Performance & Testing Comparison

We create 10 queries to test without using Indexing Method and the same 10 queries but with indexing method

Database Server

We host database server on one main computer and use Ngrok to convert localhost to TCP.
Another computer can use the TCP link and access to database with given user and password.

TECHNOLOGIES USE



Library & Framework

Programing Language

TECHNOLOGIES USE

IDE and Collaboration Tools

Server Host

CHALLENGES

- Query Optimization with Indexing: the query time are approximately the same when testing small dataset
- Server Hosting in Ngrok: setup Ngrok, wifi problem
- API Integration in User Control: logic are a bit complicated

FUTURE IMPLEMENTATION

- User Activity Logging
- Cloud Hosting
- JWT Autentication

Thank you very much!

PRESENTED BY TEAM 01