

VAT-Based Multi-Level Supply Chain Management System

A Python Simulation of Transparent Tax Tracking
Across Supply Chain Entities

Submitted by :- KAVYA and KAREENA

To : - The IOT academy

Project Overview

- **Project Title:** VAT-Based Multi-Level Supply Chain Management System
- **Purpose:** Automate product flow and VAT calculation across supply chain levels
- **Scope:** Covers manufacturing to consumer journey including VAT tracking
- **Timeline:** 2 weeks (Development, Testing, Final Review)

Problem Statement

- UCT Robotics operates a complete supply chain from manufacturing to retail sales. The company needs a comprehensive VAT management system that tracks products through multiple business levels, calculates VAT at each stage, and manages profit margins throughout the supply chain.

Multi-level Supply Chain Structure

1. **Manufacturing** - Raw materials to finished products
2. **Quality Checking & Approval** - Testing and certification
3. **Packaging** - Final packaging and branding
4. **Wholesaler** - Bulk distribution
5. **Distributor** - Regional distribution
6. **Shopkeeper/Retailer** - Direct sales to consumers
7. **Consumer** - End customer purchase

Project Goals and Objectives

- Goals:
 - Automate multi-level supply chain with VAT tracking
 - Enable accurate transaction logging and receipts
- Objectives:
 - Modular class-based Python system
 - Simulate end-to-end product journey
 - Generate VAT reports and admin dashboards

Methodology and Approach

- Approach:
 - Object-Oriented Python Programming
- Steps:
 - Design supply chain modules as classes
 - Calculate VAT at each stage
 - Simulate real-world scenarios with user inputs
 - Generate receipts and VAT at each level

Project Timeline and Milestones

- Week 1: Planning & Class Design and Code Implementation
- Week 2: Testing & User Input Simulation and Reporting, Documentation, Final Review
- Milestones:
 - - VAT Logic Completed
 - - Transaction Flow Functional
 - - Final Receipt and Report Generated

Conclusion and Next Steps

- Conclusion:
 - Working multi-level VAT supply chain simulation
 - Transparent and accurate pricing and tax flow
- Next Steps:
 - Add database integration
 - Build a user interface
 - Deploy on a server for real-time access