 **UNIVERSITY OF ENERGY AND NATURAL RESOURCES, SUNYANI.**

**DEPARTMENT OF INFORMATION TECHNOLOGY AND DECISION SCIENCES**

**COURSE: ENTERPRISE RESOURCES PLANNING (INFT 454)**

**GROUP 5**

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**System Design Document**

**Introduction**

The ERP system is designed for **Shoplight**, a mini manufacturing company that specializes in producing clothes and perfume. The system integrates and streamlines various business processes, including Inventory Management, Production Planning, Sales, Purchasing, Finance, HR, and Reporting. The objective is to enhance operational efficiency and support informed decision-making, specifically tailored to the needs of a company in the fashion and fragrance industry.

**System Architecture**

* **Architecture Overview**: The ERP system will adopt a modular architecture with a centralized database, connecting all modules relevant to Shoplight’s operations. The client-server model will ensure efficient data processing and real-time access across departments.
* **Data Flow**: The system’s data flow will be designed to accommodate the dual nature of Shoplight’s product lines—clothes and perfume. For example, the Inventory Management module will differentiate between fabric and fragrance materials, while the Production Planning module will handle distinct manufacturing processes for each product line.

**Module Specifications**

1. **Inventory Management**:
   * **Clothes**: Track fabric types, quantities, and reordering needs based on production schedules and sales forecasts.
   * **Perfume**: Monitor essential oils, alcohol, and packaging materials, with alerts for low stock levels.
   * **Reports**: Generate inventory reports that distinguish between the two product lines, providing insights into material usage and stock movement.
2. **Production Planning and Control**:
   * **Clothes**: Schedule garment production by tracking fabric availability, labor resources, and machine capacity. Implement quality checks at various stages, such as cutting, stitching, and finishing.
   * **Perfume**: Manage the blending and bottling processes, ensuring that batch sizes align with demand and raw material availability. Track production batches to maintain consistent quality.
   * **Scheduling**: Integrate production schedules for both product lines, allowing for optimized resource allocation and minimizing downtime.
3. **Sales and Order Processing**:
   * **Order Management**: Handle orders for both clothes and perfume, with automated order entry, invoicing, and shipping coordination.
   * **Customer Segmentation**: Maintain customer profiles, including preferences for clothing styles or specific fragrances, enabling targeted marketing and personalized service.
4. **Purchasing and Supplier Management**:
   * **Supplier Database**: Manage supplier relationships for different materials, such as fabric suppliers for clothing and fragrance oil suppliers for perfume.
   * **Order Tracking**: Ensure timely procurement of materials, considering lead times and production schedules for both clothes and perfume.
5. **Finance and Accounting**:
   * **Cost Tracking**: Allocate costs separately for clothing and perfume production, including raw materials, labor, and overheads.
   * **Financial Reports**: Generate detailed financial statements that reflect the profitability of each product line, aiding strategic decision-making.
6. **Human Resources Management**:
   * **Departmental Roles**: Maintain employee records specific to their roles in clothing or perfume production, such as tailors, designers, perfumers, and bottling technicians.
   * **Payroll Processing**: Automate payroll based on department-specific metrics like hours worked, overtime, and bonuses.
7. **Reporting and Analytics**:
   * **Custom Dashboards**: Provide real-time analytics tailored to Shoplight’s dual product lines, such as sales trends for clothing versus perfume, inventory turnover rates, and production efficiency.
   * **Key Performance Indicators (KPIs)**: Track KPIs that reflect the performance of each product line, such as garment production efficiency, fragrance batch consistency, and profit margins.

**Integration Capabilities**

* **Existing Systems**: The ERP system will integrate with Shoplight’s existing tools, such as design software for clothing and formulation software for perfume, using APIs for seamless data exchange.
* **Data Import/Export**: The system will support CSV imports for bulk data entry and exports for detailed external analysis, ensuring compatibility with Shoplight’s current practices.

**Security Measures**

* **Data Encryption**: Sensitive data, such as design files, formulations, and financial records, will be encrypted both at rest and in transit.
* **User Authentication**: Multi-factor authentication (MFA) will be required for users accessing sensitive modules, such as product formulation and financial records.
* **Access Control**: Role-based access control (RBAC) will restrict access to specific data and functionalities based on employee roles within the clothing or perfume departments.

**Scalability**

* **Future Growth**: The system is designed to accommodate future expansion, such as introducing new product lines or increasing production capacity. New modules can be seamlessly added, and the database architecture will support growing data volumes.