

### **Final Coursework:**

The final coursework consists of two parts: **business modeling** and **application development**. The phased submission method is adopted, that is, business modeling is homework 2 (**deadline**: November 18, 12:00 pm), and application development is homework 3 (**deadline**: December 22, 12:00 pm).

The final coursework is **group work**, with **2-3 students** in each group. The final submissions should include a **description of the division of labor** and the **percentage of contribution** of each team member.

The description of the reference business is attached. The reference business is for reference only, and each group can tailor or increase the business according to the situation.

### **(1) Homework 2: Business modeling and process optimization**

**Goal:** To understand the enterprise-level business modeling process through the establishment of business models in different types of enterprise models.

**Tools:** Petri net modeling software **PIPE**

#### **Requirements:**

- (a) Submit a complete analysis design, including:
  - **Business Analysis:** From the business, identify the core process and establish a **process model**.
  - **Functional scene recognition:** Analyze the interaction of each role from the advancement of the process, give the entity interaction diagram to complete the identification and modeling of the **functional scene**.
  - **Use case construction:** Build a use case diagram and give a list of corresponding **functional tasks**.
  - **Data flow identification:** Analyze and discover the data flow and related data relationships, and give a **class diagram** including master data, transaction data, status data, and other types of data.
  - **State and Control Behavior Recognition:** Build a **state diagram** to analyze and establish state changes in data objects.
- (b) Use **Petri net** tool (PIPE) to describe the application scenario of the product and establish the corresponding **application process model**.

The application process should reflect the core processes of the enterprise and demonstrate its value-added model (such as Make to Order, MTO; Assemble to Order, ATO and Make to Stock, MTS). Business process modeling should involve no less than 4 internal and external roles, no less than 7 activities, and must have a sequence, selection, and loop structure.
- (c) Build and simulate the process model by petri net software.

Set parameters by yourself and analyze and describe the critical path, performance indicators and resource capabilities of the process.

### **(2) Homework 3: Web-based service application construction**

**Goal:** To understand and be familiar with service-based front-end development based on IST Lab RMP platform through enterprise model establishment and service system configuration.

**Tools:** IST Lab RMP Platform

**Requirements:**

- (a) Iterate over the design of the homework 2, focusing on the **data model** of the system and the **technical architecture**.
- (b) Give the description of **computational logic** or **business logic** processing method of the core processing method.
- (c) Implement the web pages and app.
- (d) Provide a doc file which contains screenshots of all the models in the design and a description of the core processing method. Provide a demo video to demonstrate your system.