

Note:

- a. STRU already has a computerised inventory management system that links all the distributed outlets. This can be reused in the proposed online platform.
- b. The solution should allow further improvements to include order delivery through a delivery force that would carry a PDA-based solution to accept credit cards and cash.

Exercise

1. Propose an architecture to realise the online platform in the SriToysRus Ltd (STRU) scenario given above.
 - a. Identify the layers/tiers of the architecture.
 - b. List the components of each layer/tier.
 - c. Sketch / draw the overall architecture with clear labels for tiers and components.
2. List out and briefly describe the architectural patterns used in the proposed architecture.
3. Based on the description of the above scenario, identify a legacy system that needs to be included in the architecture and discuss a method to integrate the legacy system into the overall solution.
4. List high-level sub-systems of the proposed architecture.
5. Identify and describe an interaction/integration in the architecture where Asynchronous Communication is more suitable than Synchronous communication.

Middleware Architecture (IS3108/SCS3203)

Scenario-Based Class Assessment - 2023

Duration - 2 Hours

Scenario - SriToysRus Ltd

SriToysRus Ltd (STRU) is a Sri Lankan based company that specialises in promoting toys to children below 12 years of age. The company has 15 branches across the island and sells toys that are either imported or manufactured locally. Due to the high demand in sales within Colombo, the company has already planned to open several new branches in a few major cities. The management of the company is interested in extending the reach of the business using Internet technology. They are interested in exposing the overall inventory to the public using an Internet-based application. Some of the key functionalities expected out of this system are listed below.

- Users should be able to search for toys available for sale through the system.
- Detailed descriptions of the selected toys such as category, brand, country of origin, price, discounts, age limits, educational aspects, etc, should be clearly displayed.
- The users should be able to create personalised accounts to register and login to in the system.
- The personalised account/profile will assist to have a personalised view/history of the system - E.g. past purchases, wish list, etc. Users should be able to register their credit cards and perform purchases online.
- The purchases done online through the STRU platform will be delivered to the users' registered addresses. The delivery of the purchased goods to the users will be done by an existing delivery company that already has a platform to track and monitor the overall distribution process.

A centralised inventory control system should be maintained so that the sale of products either through the online platform or the outlets reflects the correct view of available stock. A user should be able to repetitively select and add products to an online cart that could be later checked out through a single submission. The payment aspect using the credit card should be implemented in a secure manner by integrating it to an existing payment gateway.