# Lab Exercises – Service Oriented (SOA/MSA) and Event Driven Architecture (EDA)

1. Build a simple Home automation application with event driven architecture using event table, subscriber table and action table for controlling lights, fans and AC in a house
2. Build a simple e-commerce application with event driven architecture depicting online shopping scenario – item search and selection, place order, order fulfilment through inventory check, kick off a back-office process of shipping, inform customer about delivery dates etc.
3. Build a simple To-Do Manager application using the Microservice Architecture. Whole application is divided into a set of services that specialize in doing a specific task using a simple set of protocols. All the communication between different services occur over the network. Consider two services in the application namely the User service and the To-Do service:

* User Service: The user service provides a RESTful endpoint to list the users in our application and also allows to query the user lists based on their usernames. This service shall run on port 5000 of server.
* To-Do Service: The ToDo service provides a RESTful endpoint to list all the lists as well as providing the list of projects filtered on the basis of usernames. This service shall run on port 5001 of server.

1. Let's take a scenario where you are creating an e-commerce store that uses Microservices pattern.

For a typical product say an iPhone on an e-com store, the details page displays:

* Basic Information about the product
* Your Purchase History
* People who bought iPhone, also bought cases
* Deals & Discounts associated with the iPhone
* Merchant Data
* Shipping Options
* Product Testimonials and so on and so-forth. Additionally, a sample product details page will have multiple versions of the interface to cater to web, mobile and a REST API for use by 3rd party applications.

In a microservices pattern, the data is spread over multiple services. In this case, it can be

* Product Detail Service
* Merchant Service
* Payment Service
* Deals & Discount Service
* Inventory Service
* Pricing Service
* Review Service
* Recommendation Service How would these individual services be accessed?

The solution need to be implemented is an API Gateway, which serves as the single entry point for all clients and calls specific Microservices spread across the entire infrastructure as per requirement.