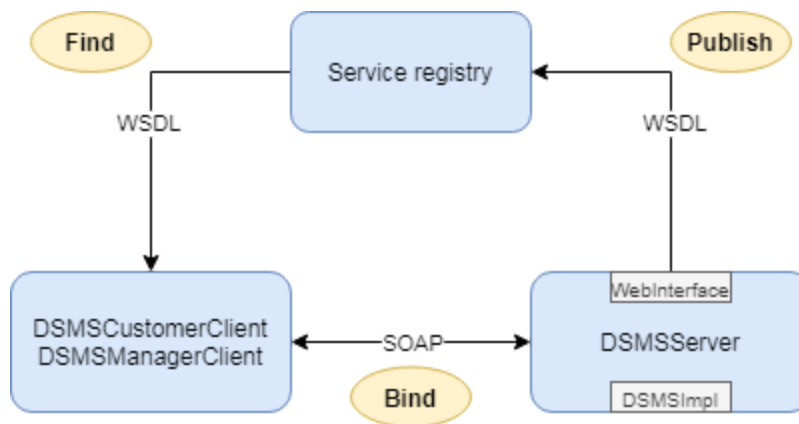# *SOEN 423*

Assignment 3

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1.0 Overview

This assignment was primarily an extension of the second assignment, and thus the methods, data structures, etc. are mostly the same. The difference here is that web services—specifically SOAP—is used in place of CORBA. Interserver communication was still done over UDP/IP.

(Inspiration for this diagram taken from https://dzone.com/articles/soap-web-services-using-cxfjibx-jax-ws)

2.0 Web Services

An interface named `WebInterface` was created with the following methods:

Manager Operations:

> **boolean addItem**(String managerID, String itemID, String itemName, short quantity, double price);
>
> **boolean removeItem**(String managerID, String itemID, short quantity);
>
> **String listItemAvailability**(String managerID);

Customer Operations:

> **double purchaseItem**(String customerID, String itemID, Date dateOfPurchase);
>
> **String findItem**(String customerID, String itemName);

```
boolean returnItem(String customerID, String itemID, Date

dateOfReturn);

boolean exchangeItem(String customerID, String newItemID, String

oldItemID);
```

Further, I created a Date class that contains 3 attributes, all of type `short`: day, month, and year.

The interface definition was then used to generate WSDLs. Each store, QC, ON, and BC, published their own WSDL at a corresponding address: `http://localhost:8080/a3/WebInterface(QC|BC|ON)`. In terms of client and server implementation, one class to start the 3 servers was used, `DSMSServer`, and two classes for the client were used, `DSMSManagerClient` and `DSMSCustomerClient`.

The same driver that was used for the second assignment was used for this assignment.

3.0 Example test scenario

Procedure:

1. Log in as a QC manager and list items

2. Log in as a user from BC

3. Purchase an item that is out of stock in QC and go on the waiting list

4. Log in as a user from ON

5. Purchase the same item that was out of stock in QC and go on the waiting list

6. Log in as a QC manager and add 1 instance of the out of stock item

7. Log in as the BC user who automatically bought the item and return it

8. Log in as an ON user and find said item

9. Log in as a manager and remove said item

10. Log in as a QC user and try to purchase an item that is too expensive from ON

11. Log in as a user from ON and purchase an available item from QC

12. Exchange that item for an item from BC

13. Log in as a user from BC and purchase the same item from BC

14. Perform the concurrency test with the former ON user and the BC user

15. Exit program

4.0 Final remarks

The most challenging part of this assignment was setting up the web service. However, once this was set up, I found the implementation fairly simple, as the general concept of distributed systems remained the same, despite differences in the actual implementation.