

EC Websites Development 2022 Assignment 3

(Due Date: Oct 19, 2022)

INSTRUCTIONS : This assignment consists of two questions. The answers of the questions have to be written in English. You need to edit the answers by a word processing software, like MS WORD or Pages.

Submit the answer file to the following Gmail account before October 19, 2022: 00:00. That is to say, your answer file has to arrive the Gmail account on or before October 18, 2022. Note that the email heading and the filename of the answer file have to be conformed to the following formats.

Email: johnsum.nchu@gmail.com
Email heading: ECWD2022_Assignment03_studentID
Filename: ECWD2022_Assignment03_studentID

If your answer file is edited by Pages, a word processing software running on MacOS, please convert your file in PDF format.

Reminder: Please double check your writing to ensure that there is no any obvious grammatical mistake or spelling mistake. If there is, your assignment will get zero score.

1 Questions

Question 1: App Download

List the steps for an operations procedure for the APP download process. The format of the operations procedure has to be conform to the format of the order placement process and the order fulfilment process as depicted in the Assignment 2.

For the steps in your APP download process, you could refer to the sequence diagram as shown in Figure 1. If you have your own operations design, you need to add your sequence diagram in your answer file to aid your list of steps.

Question 2: Replenishment

Imagine that you are running an online retail fashion shop. To ensure that the stock level of an item for sell is sufficient for future sales, prediction of the future sales (say the sales volume in the next month) and replenishment are thus two necessary processes.

APP Download Process

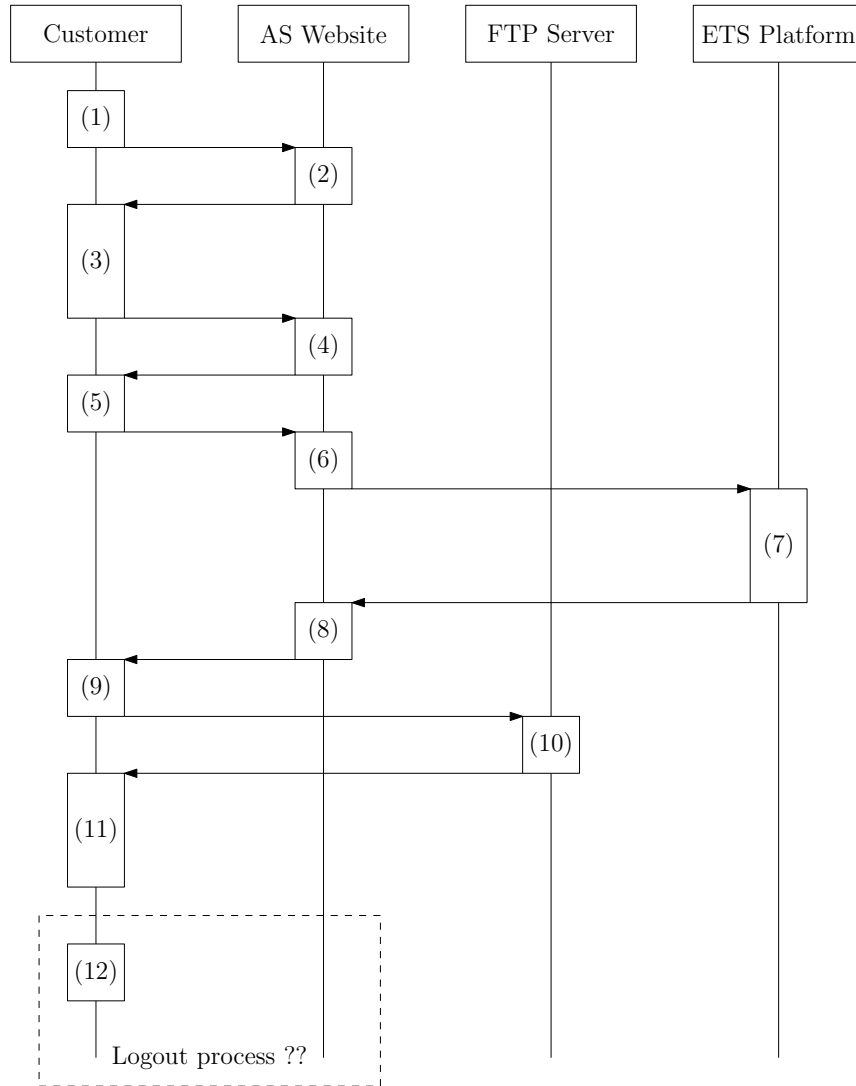


Figure 1: App download process.

Generally speaking, replenishment process starts from the time when the future sales has to be analyzed. It ends up at the time when the items have been arrived the logistic center and a worker in the logistic center has updated in the corresponding information system for such information.

- (a) Now, you need to list the steps for this replenishment process with an aid of the sequence diagram for this process. Again, the format for the list of steps has to conform to the format of the order placement process and the order fulfilment process as depicted in the Assignment 2.
- (b) Follow your operations design in (a), identify the steps in which can be streamlined (and even automated) by websites and information systems.
- (c) For each of the step identify in (b), describe in detail how the task can be streamlined (and even automated) by websites and information systems.

To answer this question, you could assume that the trigger of a replenishment process is *time-driven* or *event-driven*. For the case of *time-driven*, the process is assumed to be initiated at particular time instances, like the first day of a month or the first day of a week. For the case of *event-driven*, the process is assumed to be initiated at the time that the logistic center information system has found that the stock level of an item is above but close to the safely level.

In your answer, please specify which assumption is applied to your operations design. Clearly, you need to add all the assumptions which are necessary for your design is workable.

2 Design for a Replenishment Process

A possible design for the replenishment process is shown in Figure 2. In this design, a number of assumptions have to be made.

- The replenishment process is initiated by the logistic center information system (LCIS). A program in the LCIS has been scheduled to be running at 22:00 each day.
- A worker in the EC logistic center will log in the LCIS every working day for the list of items with low stock level.
- A worker in the factory will log in the factory information system every working day for the list of replenished items and the list of non-defective items being delivered to the EC firm.

Figure 3 lists the detail steps to be accomplished in the operations design as shown in Figure 2.

3 Remarks on Sequence Diagrams

Sequence diagram is a diagram showing in detail the interactions amongst the participants in an operation (equivalently process). In the area of software engineering, information system development or system analysis and design, the participants include the users of the system and the information systems interacting with the systems. The users are human whose tasks cannot be automated or replaced by software.

In operations design, the participants in an operation include a lot of human players. They could include the customers, the human workers in the accounting department, the human workers in the logistic center and even the human workers in the suppliers.

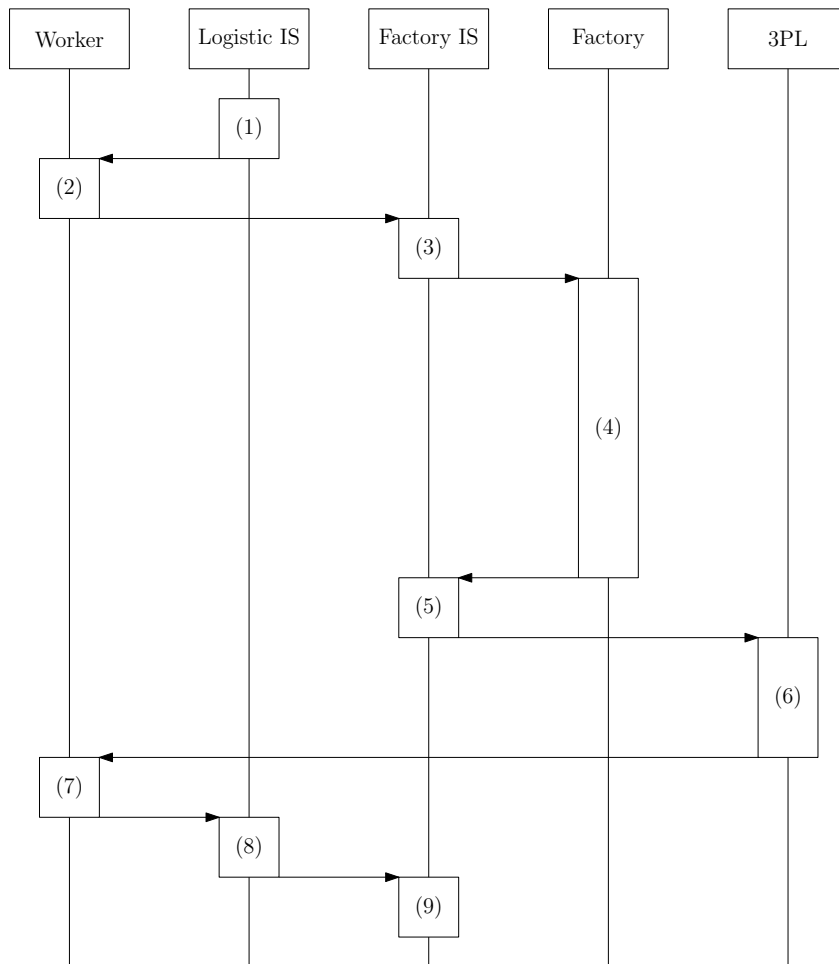


Figure 2: Replenishment process.

Replenishment Process

- Step 1: 1.1: LCIS checks from the DBMS the stock level of each item for sale.
1.2: LCIS compiles a list of items whose stock levels are low.
- Step 2: 2.1: A worker check the list of items with low stock levels.
2.2: A worker decides a list items to be replenished.
2.3: The list of items is sent to the FIS.
- Step 3: 3.1: The FIS updates the request in the DBMS.
3.2: The FIS informs the factory for the production.
- Step 4: 4.1: Factory produces the requested replenishment.
4.2: A worker in the factory updates the production status to the FIS.
- Step 5: The FIS informs a 3PL for delivery.
- Step 6: 6.1: The 3PL arrives the factory and collects the items.
6.2: The 3PL delivers the items to the logistic center of the EC firm.
- Step 7: 7.1: A worker in the EC logistic center checks the items for defective.
7.2: A worker puts the item to its shelf.
- Step 8: 8.1: If an item is not defective, its bar code will be scanned.
That is to say, its information is thus entered in the LCIS.
8.2: The LCIS informs the FIS for those non-defective items.
- Step 9: The FIS updates its DBMS for those non-defective items.
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Figure 3: List of the steps for the operational design as shown in Figure 2.

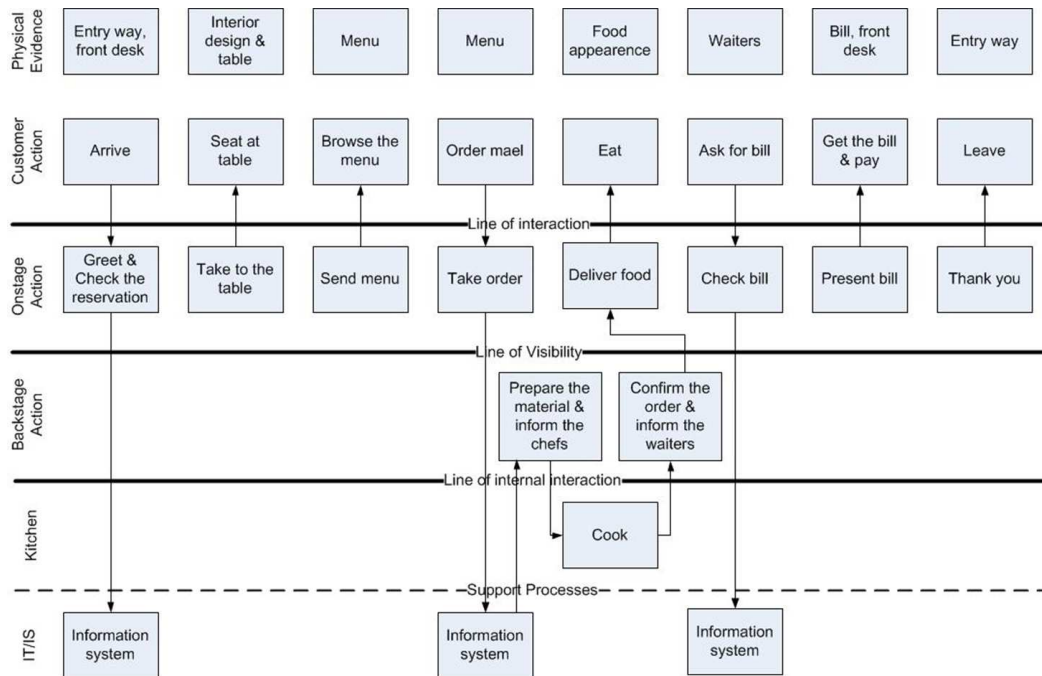


Figure 4: Service blueprint for a dining service.

3.1 Service blueprint and Gantt chart

One should be aware that the sequence diagram is not a new type of diagram. Student graduated with management major should have already learnt it in the courses like *Operational Management*, *Service Marketing* and *Introduction to Management*. In *Operational Management*, this diagram is in essence the *Gantt chart* that you have learnt. In *Service Marketing* or *Service Management*, it is essentially the *service blueprint* diagram. Figure 4 shows a service blueprint for a dining service. It starts from the moment when the customers have arrived an restaurant and ends up at the moment when the customers have left.

3.2 Sequence diagram with management activities

One importance of the sequence diagrams is to let the management staffs to set up the *quality factors* (equivalently the key performance indices) for all the business processes. As a result, quality management processes could be designed for every operational process so as to ensure the *process quality* associated with the operational process. Hopefully, *process quality improvement* could be facilitated.

As an example, Figure 5 shows the sequence diagram for the dining service as shown in Figure 4. In this figure, management process and other supporting processes have not been introduced. It simply follows the activities depicted in Figure 4. The sequence diagram for the dining service together with the associated activities for management process is shown in Figure 6.

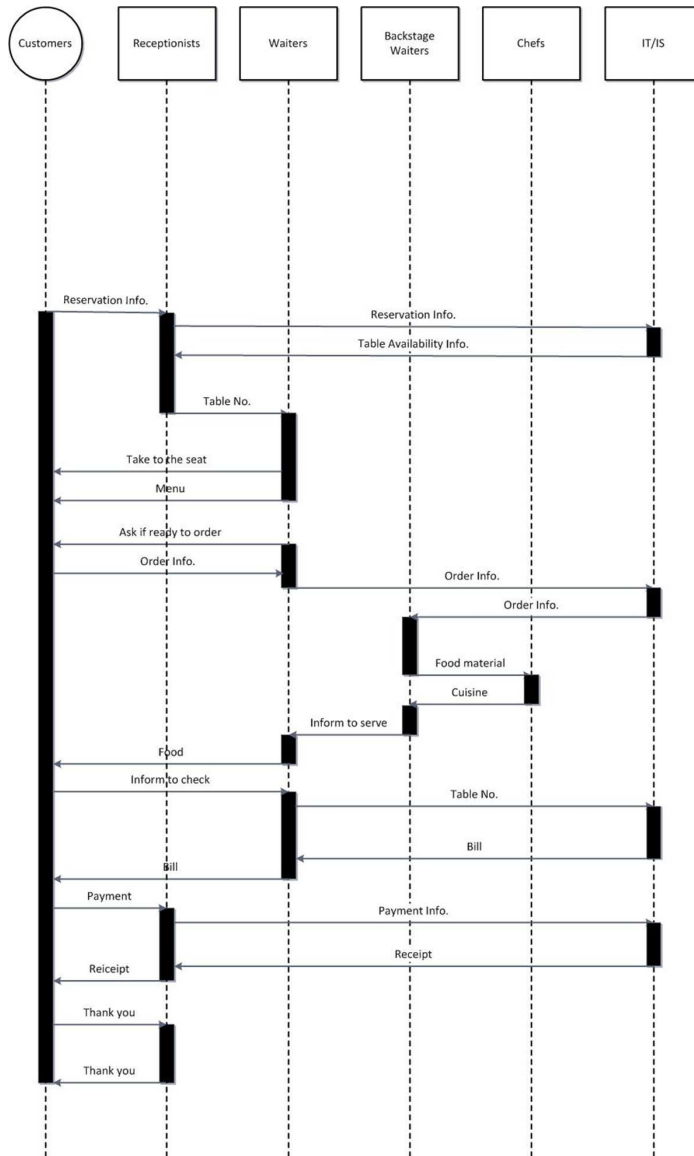


Figure 5: Sequence diagram for the dining service as shown in Figure 4.

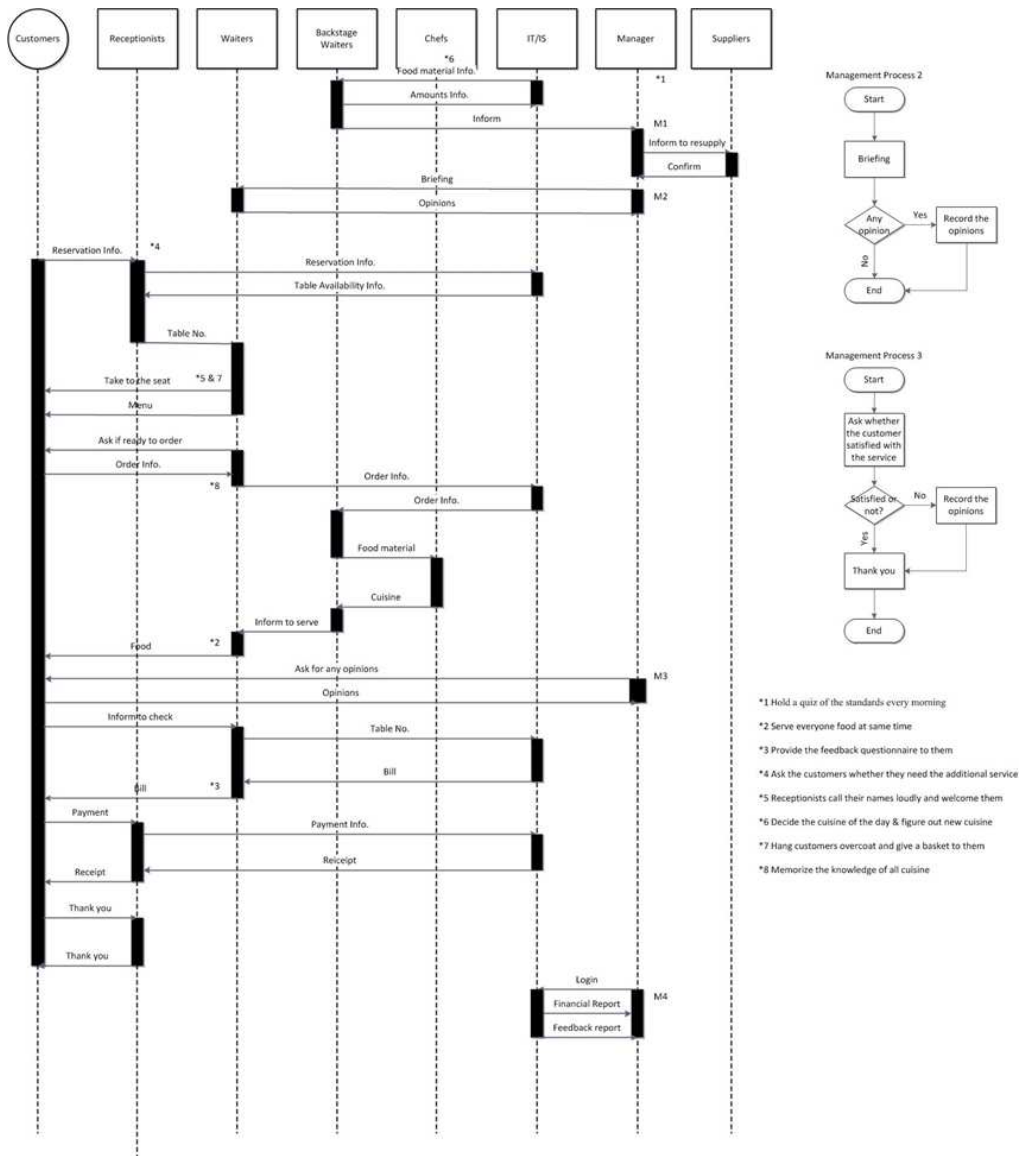


Figure 6: Sequence diagram for the dining service and the associated management process.