SFCS - Smart Food Court System

The university is currently has one food court located in its Ly Thuong Kiet campus and is going to build another one in Di An campus. All food courts consist of a number of vendors at food stalls or service counters. Meals are ordered at one of the vendors and then carried to a common area for consumption. The food may also be ordered to take-away. Note that, all food courts are self-service and there is no food delivery service, but may be applied in the future.

When a meal needs time in preparing, or in busy moments, a vendor may provide a pager calling device for notifying the customers when the their food is ready.

Food court at Changi Airport, Singapore (source: Internet)

Pager calling system (source: Internet)

In 2020, the university wish to build a smart food court system (SFCS) to make the university more smart. The system is for customers to order foods at the food courts or before comming to that places.

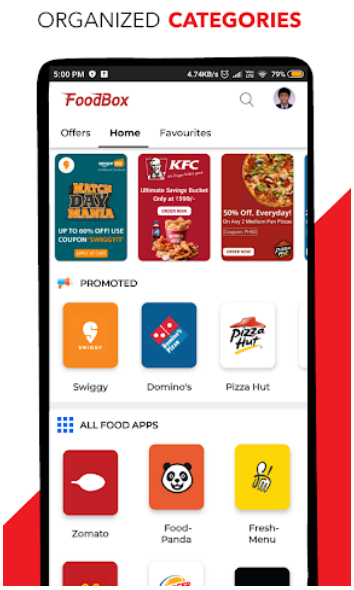
There will be some machine with touch screen around the food court for ordering food. When the payment is made, the order is confirm and will be put in the order list at the food stall kitchen. An order slip will be printed by the machine. The customer can grab a near-by pager that has the number matched with the order number and wait for its notification then goes get the food. He/she can also simply wait at the food stall and then shows the order slip to take the food. Note that, separated orders should be placed for different vendors.

The payment can be made by some online payment service such as Momo wallet, Samsung Pay, Apple Pay, etc. It should be secured to make sure that no important information is leaked to non-authorized persons.

There should be also an mobile app for members of the food court system that allow them to order food before comming to the food courts. In this case, the notification from the kitchen can be pushed to the mobile app instead of the pager. The estimated preparing time of the order can also be informed to the members.

The mobile app has to have an ability to make an online payment or allow members to re-charge and use their payment account for the payment.

Speed up your order by smart technology (source: www.straitstimes.com)



An order app (source: Internet)

Of course, the software system has to have the managing features. For the cooks, they want to see the orders, inform the ready of the food, or inform the system that some food is out-of-order, etc. For the vendor owners, they want to see the (online) report about their stalls, etc. For the managers of the food courts, they want to see the (online) report of the whole food court, etc. For the IT staffs, sometime, they want to put the system in the maintenance mode, that shutdowns all online services, etc.

Project guidelines

1. **Team & teamwork**
   a. Teams are formed freely by students and consist of 3-5 students.
   b. Each team member has to perform all works, including requirement specification, architectural design and detail design and prepare his/her individual reports and submitted them individually and separately.
   c. At the end of the semester, team members have to give feedback to each others and evaluation the individual and team performance.

2. **Team meeting & meeting minutes**
   a. Team meetings should be carried out one a week
   b. The first meeting should be focus on the team communication, commitment, common problems/risks and solving mechanisms …
   c. Meeting minutes are used to keep track of all works.
   d. The first meeting minutes should be handed to the lecturer on week 3

3. **Deliveries (submissions)**
   a. There are 04 individual documents:
      i. #1- requirement document: Functional/Non-Functional requirement and Use-case diagram.
      ii. #2- requirement document: Sequence and Activity/State-chart diagrams

iii. #3-design document: Architectural design
iv. #4-design document: Class and Method design, Class diagram, and a demonstration.

b. All submissions are in .pdf format.
c. Deadlines will be announced on the course e-learning site.

4. Submission #1 detail

Students have to submit the following contents:
- Functional requirements:
  + Use-case diagram for the whole system (group work)
  + Use-case detail/scenario for use-cases (interaction functional requirements) that the student is in-charged/taking care of
  + Other non-interactive functional requirement (bonus)

- Non-functional requirements:
  + General non-functional requirements for the whole system (group work)
  + Other non-functional requirements related to the features that the student is in-charged

5. Submission #2 detail

Students have to submit the following contents:
- Sequence diagrams
- Activity diagrams
- State-chart diagrams

6. Submission #3 detail

Students have to submit the following contents:
- Deployment view (group work)
- Development/Implementation view (individual work)

(references: https://sites.google.com/site/softwarearchitectureinpractice/9-documenting-software-architecture/d-allocation-views/a-deployment-view)

7. Submission #4 detail

Students have to submit the following contents:

- Module interface: programming interfaces used among modules
- Class diagram
- Method descriptions: for all methods in the class diagram
- Sequence diagram: at least one diagram at detail level to explain how your system work (a sequence of interactions by calling methods)
- Activity or state-chart diagram: at detail level to explain how your system work
- (Bonus) Design pattern: show how some design patterns have been applied to your design
- A working demonstration (by a sequence/flow of screens)