
# FACULTY OF COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

## DEPARTMENT OF SOFTWARE ENGINEERING AND INFORMATION SYSTEM

SSE4350 - SOFTWARE ARCHITECTURE

Group Assignment

PROGRAMME : BACHELOR OF SOFTWARE ENGINEERING

LECTURER : DR. MAHMOUD SAID

GROUP MEMBERS:

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1. Identify Quality Attributes for the system proposed
    - Performance
        - System must be able to handle 100 transactions per second for the food reservation and food ordering service. These transactions are processed with an average latency of 3 seconds.
        - Time taken for the system to load a page must not exceed 5 sec when the user chooses the page for sign up, log in, view the menu, track incomes, order food, and so on.
        - Time taken for the system to verify the validity of UPM residents during the sign up process must not exceed 5 sec.
        - System must calculate daily, weekly and monthly income and store it in the FRFDS database by 2 am so that hawkers are able to track the latest income every day.
    - Security
        - System should provide a secured login interface
        - System should allow only hawkers to modify their own food menu
        - System should only allow user to update their own personal details and extra personal details
        - System should only allow user to view their own food order
        - System should encrypt data of credit/debit card while requesting verification
    - Availability
        - This system should be available from 7 am to 9.30 pm 7/52, except for the public holidays where the cafe is not opening.
        - The downtime for this system should not exceed 1 hour as scheduled.
    - Usability
        - System should be available in different languages
        - System should allow users to retrieve forgotten password
        - System should be able to save contact information and address for future orders
        - System should use high-quality images of food along with image zooming feature
        - System interfaces should have easy navigation guide for first-time user
        - System should show error messages that is simple to understand when the wrong action is taken by the users

2. Suggest and describe tactics to achieve the Quality Attributes

- Performance
  Resource demand: System must be able to increase the efficiency of computation, minimize the computational overhead, manage event rate and control frequency of sampling.
  Resource management: System must be able to introduce concurrency, maintain multiple copies and increase available resources.
  Resource arbitration: System should be able to schedule and synchronise the policy.
- Availability
  Detect faults: The system must be able to perform sanity checking, condition monitoring, exception detector and self-test from time to time to detect the faults in the first instance.
  Recover from faults: For preparation and Repair, the system must be able to perform exception handling, rollback, software update and reconfiguration. After that, state resynchronization, escalating restart and non-stop forwarding should be performed as a reintroduction.
  Prevent faults: Lastly, to prevent faults from happening, transactions, predictive model and exception prevention should be performed.

- Security
  Detecting attacks: The system must be able to detect intrusion, service denial and message delay. Moreover, the system must be able to verify message integrity in order to detect attacks.
  Resisting attacks:  The system should be able to perform actors authentication, actors authorization, actors identification, data encryption, access limitation and exposure limitation to resist incoming attacks.
  Recovering from attacks: The system should be able to maintain audit trail and restore lost data.

- Usability
  Design time tactics: Separate user interface from the rest of the system using model-view-controller method
  Run time tactics (user initiative): system should allow cancel request.