



**UNIVERSITI KUALA LUMPUR
Malaysia France Institute**

**FINAL EXAMINATION
JANUARY 2014 SESSION**

SUBJECT CODE : FSB38204
SUBJECT TITLE : SOFTWARE ENGINEERING
LEVEL : BACHELOR
TIME / DURATION : 3 HOURS
DATE :

INSTRUCTIONS TO CANDIDATES

- 1. Please read the instructions given in the question paper CAREFULLY.**
- 2. This question paper is printed on both sides of the paper.**
- 3. Please write your answers on the answer booklet provided.**
- 4. Answer should be written in blue or black ink except for sketching, graphic and illustration.**
- 5. This question paper consists of ONE (1) section, Section A. Please, answer five (5) questions only.**
- 6. Answer all questions in English.**

THERE ARE 5 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

SECTION A (Total: 100 marks)**INSTRUCTION: Answer five (5) questions only.****Please use the answer booklet provided.****Question 1**

- (a) Define the term software engineering. State two (2) types of software products. (5 marks)
- (b) Determine the type of application for the following statements.
- i. These are systems that collect data from their environment using a set of sensors and send that data to other systems for processing.
 - ii. These are application systems that run on a local computer, such as a Personal Computer, PC. They include all necessary functionality and do not need to be connected to a network.
 - iii. These are software control systems that control and manage hardware devices. (3 marks)
- (c) List four (4) attributes that all professional software should have. (2 marks)
- (d) Sketch the software process model called incremental developmental. This approach interleaves the activities of specification, development and validation. The system is developed as a series of versions (increments), with each version adding functionality to the previous version. (6 marks)
- (e) Software processes are categorized as either plan-driven or agile processes. Distinguish between plan-driven and agile processes. (4 marks)

Question 2

- (a) Discuss five (5) principal stages of the waterfall model that consists of requirements definition; system and software design; implementation and unit testing; integration and system testing; and operation and maintenance.

(10 marks)

- (b) Translate the following sentences into uses cases for the Patient Management System (PMS).

The actors involved in an interaction are called *OutPatient* and *DocSpecialize*. *View Record* and *Edit Record* are classes of interaction that link to the actor, *DocSpecialize*. *CheckUp* is class of interaction that link to the actor, *OutPatient*.

(5 marks)

- (c) Explain why systems developed as prototypes should not normally be used as production systems.

(5 marks)

Question 3

You are required to develop simulation on Staff Attendance System using Fingerprint Technology (SASFT) for Universiti Kuala Lumpur Malaysia France Institute (UniKL MFI). SASFT is using fingerprint technology to authenticate every staff by using their fingerprint in order to get an accurate record. The fingerprint technology is cheaper and easy to implement compared to other biometrics technology. The fingerprint only authenticates the validated staff. SASFT with the fingerprint features can make the system secure because no staff can record their attendance except to be authenticated by the system.

- (a) As a software manager, you have to interact with stakeholders through interviews and observation in order to gather information about required system and existing, and distilling the user and system requirements. Identify four (4) system stakeholders for the (SASFT).

(4 marks)

- (b) As a software manager, you are required to prepare Software Requirement Specification (SRS) document to develop simulation for SASFT. The SRS document shall contain the following information :

- i. Introduction
- ii. User requirements definition
- iii. System requirements specification
- iv. System architecture

(16 marks)

Question 4

- (a) The Health Care-Patient Management System (HC-PMS) is an information system that maintains information about patients suffering from health problems and the treatments that they have received. You are required to propose a use cases in the HC-PMS. The HC-PMS is involving the role 'Medical Receptionist' where the actor is able to do registration, unregister, view information, transfer data and contact patient. (6 marks)

- (b) Figure 1 shows all states and stimuli for the microwave oven. Identify five (5) states and explain the role of each state specified. The answer should use the tabular description.

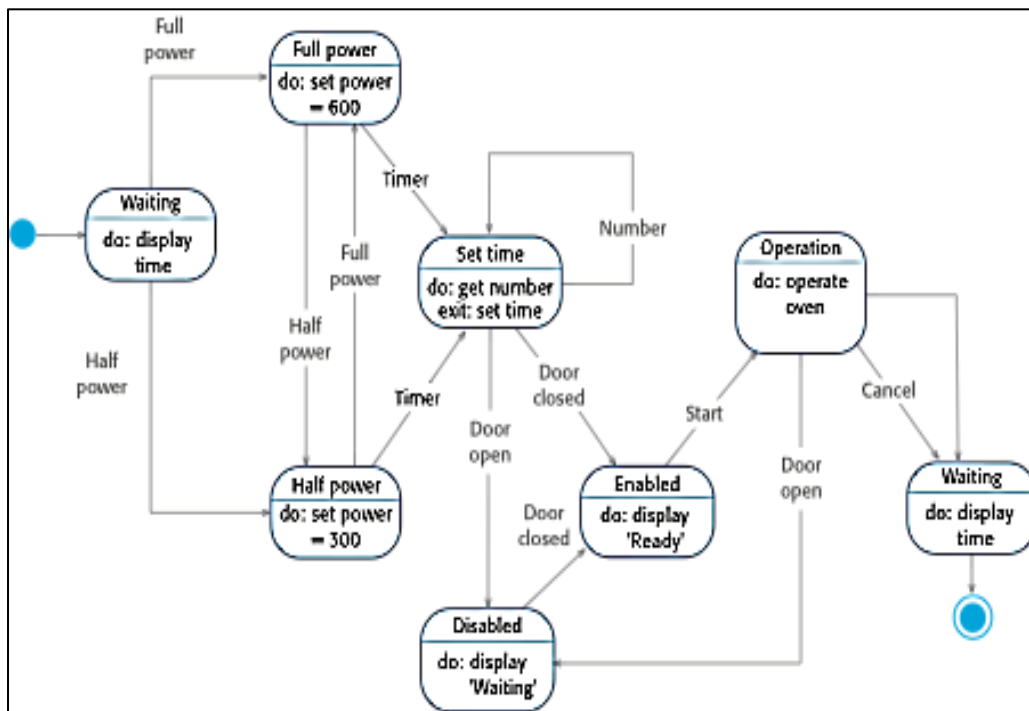


Figure 1: state diagram of a microwave oven

(10 marks)

- (c) Graphical notation/models such as activity/use case/sequence/classis/state diagrams are used when developing system models. Explain two (2) ways in which these graphical models are commonly used.

(4 marks)

Question 5

- (a) List and explain two (2) distinct goals of testing process. (4 marks)
- (b) State two (2) advantages of software inspection over testing. (4 marks)
- (c) Software architecture is important because it affects the performance, robustness, distributability and maintainability of a system. Explain the advantages of designing and documenting software architecture based on the following viewer. (4 marks)
- i. Stakeholder communication
 - ii. System Analysis
- (d) Given this scenario of a packing robot control system; (5 marks)
- "This robotic system can pack different kinds of object. It uses a vision component to pick out objects on a conveyor, identify the type of objects, and select the right kind of packaging. The system then moves objects from the delivery conveyor to be packaged".
- Sketch the architecture of a packing robot control system.
- (e) Architectures may be documented from several different perspectives or views. Identify three (3) possible perspectives or views. (3 marks)

Question 6

- (a) Discuss the difference between generic software product development and custom software development. (4 marks)
- (b) State three (3) software engineering code of ethics and professional practice that has been published by IEEE/ACM 1999. (3 marks)
- (c) Sketch a generic layered architecture that consists of four (4) layers. (4 marks)
- (d) Explain the term of web server, application server and database server.

(3 marks)

- (e) Figure 2 shows weather station state diagram. Explain how the system state specified as follows responds to requests for various services.
- i. System state is Shutdown
 - ii. System state is Running
 - iii. A reportWeather() message is received

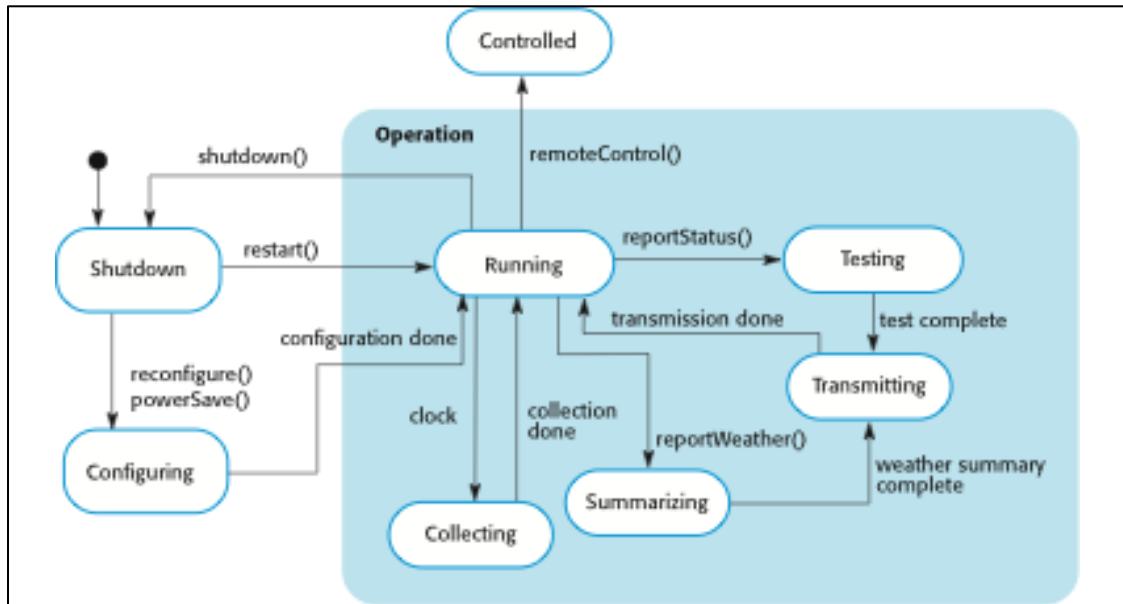


Figure 2: Weather station state diagram

(6 marks)

END OF QUESTIONS