FINAL EXAM
SECOND SEMESTER SESSION 2011/2012

COURSE CODE / NAME: STID3023 SYSTEMS ANALYSIS & DESIGN
DATE: 28 JUN 2012 (THURSDAY)
TIME: 2.30 – 5.00 P.M. (2½ HOURS)
VENUE: DSB K.TM & KTB

INSTRUCTION:

1. This book script contains SECTION A for TWELVE (12) questions and SECTION B for THREE (3) questions in TEN (10) printed pages excluding the cover page.

2. Answer ALL the questions in the space provided.

3. You are NOT ALLOWED to remove the examination script from the examination hall.

MATRIC NO: ___________________________  ___________________________
( with word )  ( with number )

IDENTIFICATION CARD NO: ___________________________

LECTURER: ___________________________

GROUP:  TABLE NO: ___________________________

DO NOT OPEN THIS EXAMINATION PAPER UNTIL INSTRUCTED

CONFIDENTIAL
SECTION A (70 MARKS): STRUCTURED QUESTIONS

INSTRUCTION: Answer ALL questions in the provided space.

1. State THREE (3) purposes of Systems Analysis and Design.

(3 marks)

2. Explain TWO (2) purposes of methodology in developing an information system.

(4 marks)

3. Describe THREE (3) personal characteristics that facilitate a systems analyst’s efforts at determining requirements.

(6 marks)
4. Give THREE (3) advantages of using questionnaires in requirement gathering. (3 marks)

5. Describe ONE (1) disadvantage of two-tier architecture and ONE (1) disadvantage of three-tier architectures. (4 marks)

6. Give TWO (2) differences between Form and Report. (4 marks)

7. Installation is the organizational process of turning over from the old information system to the new one. Describe FOUR (4) types of installation. (8 marks)
8. Draw, gives name and describe the use of THREE (3) components for notation in an activity diagram.

(9 marks)

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9. Based on the diagram below, label the suitable stereotype between the use cases and describe the meaning for each stereotype.

(6 marks)
10. Redesign the class diagram below to increase the degree of cohesion for each class. You are allowed to add new classes or delete current classes. (8 marks)
11. Based on the sequence diagram below, draw the related communication diagram.

(8 marks)
12. Draw a state machine diagram that captures possible security light states for the following scenario:

The security light moves between two high level states: **day**, when the lamp is off because of the light; and **night**, when the lamp is controlled by a movement sensor. Transition between these states is controlled by an ambient light level sensor. In the **night** state, when movement is sensed, the lamp is turned on and a timer is started. When movement ceases, the lamp is turned off by the timer within 20 seconds. Note that although the sensors and timers might have thresholds, or return variable readings, in the realm of this state machine they are reduced to valueless events.

(7 marks)
SECTION B (30 MARKS): CASE STUDY

Read the case study below and answer the following questions.

Every student of Mahang University College (MUC) is required to undergo practicum training after fulfilling the program requirements. In the current system, during the fifth semester, the student has to fill up the registration form to suggest their preferred organization. The form will be processed by the practicum staff for organization placement.

Today, the Director of MUC decides to implement an online system for practicum to automate the current process. So, you are required to develop an online practicum system for MUC. This system is designed to help the practicum staff in managing practicum placement, supervisor, and assignment submission of duty report and project evaluation. This system is known as Practicum Online System of Mahang University College (POSMUC).

The following are descriptions of the mentioned functions:

- **Registration of Practicum Location**

  Every student needs to register for practicum location. They have to fill in the registration form for practicum placement. The practicum staff will key in all the information in POSMUC. The information needed are student name, student matric number, student phone number, next of kin phone number, and two preferences/selections of practicum location. The practicum staff keeps all the information into the system. Then, the system generates a suitable organization according to the selected location. The organization selection is based on first come first serve basis. After registering the practicum location, the system will print out the placement slip for each student. The slip consists of student information and organization information.

- **Supervisor’s Assignment**

  After the registration, the practicum staff will key in supervisor’s information for each student. The information are name, contact number, room number and email address.

- **Submission of Duty Report**

  When the student undergo the practicum training, they need to send a duty report form to the MUC by faxing or mailing it within two weeks from the first day of practicum training. When the practicum staff received the form, he will update the status of the student as “REPORTED” in the POSMUC. If the practicum staff does not receive a report duty form, he will update the status as “NOT REPORT”.

- **Project Evaluation**

  Upon completion of practicum, the supervisor will key in the marks in POSMUC. The evaluation criteria are divided into four parts which are project proposal, presentation, report and individual assessment. The system will then calculate a total mark and generate a grade based on the total mark. Total mark and grade are now ready to be reviewed.
1. Draw a Use case Diagram to show all Use Cases and Actors involved for the POSMUC.

(10 marks)
2. Draw a sequence diagram for the given use case specification. You can add any boundary, control or entity classes that you think are necessary.

FLOW OF EVENT

Basic Flow (POSMUC_01_01)

- This use case begins when the practicum staff presses the 'Registration' button.
- The system shall display Registration Form on the screen.
- The practicum staff will key in all the information (name, matric no., phone no.) in the system and press 'Submit' button.
- The system will check all the required information and save it. (E-1: Incomplete information).
- The system will display the list of practicum location.
- The practicum staff will select two practicum locations based on the student selection and press 'Ok' button to save the information.
- The system will generate the suitable organization according to the selected location and print out the placement slip.

(12 marks)
3. Sketch Class Diagram (with attributes, operations, and relationships) based on your answer in question 2.

(8 marks)