

Birla Institute of Technology & Science, Pilani
Work-Integrated Learning Programmes Division
Second Semester 2015-2016

Mid-Semester Test
(EC-2 Regular)

Course No. : SS ZG514
Course Title : OBJECT ORIENTED ANALYSIS AND DESIGN
Nature of Exam : Closed Book
Weightage : 35%
Duration : 2 Hours
Date of Exam : 28/02/2016 (FN)

No. of Pages	= 2
No. of Questions	= 3

Note:

1. Please follow all the *Instructions to Candidates* given on the cover page of the answer book.
2. All parts of a question should be answered consecutively. Each answer should start from a fresh page.
3. Assumptions made if any, should be stated clearly at the beginning of your answer.

Read the Case Study presented below before you answer the questions that follow:

Country Club Hospitals and Resorts Pvt Ltd is a hypothetical company engaged in the business of improving the quality of life for its members. They have a hospital located close to a posh residential district. The Analyst made the following notes about this hospital:

- In the hospital there are a number of wards each of which may be empty or have on them one or more patients.
- Each ward has a unique name.
- The hospital has an administration department that is responsible for recording information about the hospital's wards and the patients that are on each ward.
- The doctors in the hospital are organized into teams, each of which has a unique team code.
- Each team is headed by a consultant doctor who is the only consultant doctor in the team.
- The rest are all junior doctors at least one of which must be at grade 1.
- Each doctor is in exactly one team.
- The administration department keeps a record of these teams and the doctors allocated to each team.
- Each patient is under the care of a single team of doctors.
- The consultant who heads that team is responsible for the patient.
- A patient may be treated by any number of doctors but they must all be in the team that cares for the patient.
- A doctor can treat any number of patients.
- The system should provide support for the administration department by recording information about:
 - wards, including their name
 - doctors, including their name, address (and for junior doctors their grade) and the way in which they are organized into teams
 - patients, from admission to discharge, including their name, address, date of birth and the ward the patient is on
- Patients are identified by the name of the ward they are on together with their name.
- Similarly doctors are identified by the team code and their name.
- The system should be able to do the following:
 - display the name of the consultant doctor responsible for a patient
 - display the team code of the team caring for a patient
 - list the details of all of the doctors who treated a patient
 - list the details of each patient, including their personal data and the ward they are on.

On admission to the hospital the patient's personal details are recorded together with the name of the ward he/she is on and the team code for the team that is caring for her. When a patient is treated by a doctor the system is given the name of the patient, ward and doctor together with the team code for the doctor. When a patient is discharged the system is given the name of the patient and the ward the patient is on. It should then remove all information relating to that patient.

- Q1 Draw a Use case Diagram for the above Case Study
- (a) Show primary actors and secondary actors and state the reasons for the selection. Also indicate the name of main success scenarios. [3]
 - (b) Identify the use cases to show "extends" and "include" constructions. Explain these constructs and state how you benefit from this construction. [2 + 2 = 4]
 - (c) Identify the use cases to show "generalisation" and "specialisation" relationships between use cases and "generalisation" and "specialisation" primary actors. Explain their use? [2 + 2 = 4]
- Q.2 (a) If you were to conduct an Object Oriented Analysis for this Case Study what artifacts would you use? Explain the steps in your Analysis. [2]
- Q.2 (b) Draw initial Domain Model, model appropriate attributes and associations. [6]
- Q.2 (c) Draw the System Sequence Diagrams for the Scenario; "Discharge of Patient". [4]
- Q.3 (a) If you were to use the Unified Process in which phase would you conduct the Analysis? [2]
- Q.3 (b) Write out the Fully Dressed Use Case text for the scenario: "Admission of Patient". [6]
- Q.3 (c) Draw a state diagram for the "Patient" class. [4]
