



The Open University

Mathematics and Computing: Level 2
M256 Software development with Java

M256

Handbook

3

Hospital System requirements document

The requirements document for the Hospital System

System domain

In the hospital, there are a number of wards, each of which may be empty or have on it one or more patients. There are two types of ward, male wards and female wards. A ward can only have patients of the specified sex on it. Every ward has a fixed capacity, which is the maximum number of patients that can be on it at one time (i.e. the capacity is the number of beds in the ward). Different wards may have different capacities. 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 organised into teams, each of which has a unique team code (such as Orthopaedics A, or Paediatrics). Each team is headed by a consultant doctor who is the only consultant doctor in the team; the rest of the team are all junior doctors, at least one of whom 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 on a single ward and 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.

Use cases

The Hospital system will provide support for the administration of the hospital by allowing hospital administrators to do the following.

A Admit Patient. The administrator provides the system with the patient's name, sex and date of birth and identifies the team that cares for the patient.

The system identifies a ward of the appropriate type with empty beds; if there is a choice of such wards one of those with the largest number of empty beds is chosen.

If there is no appropriate ward with empty beds the administrator is informed of this fact.

If there is an appropriate ward with empty beds the system does the following two things.

- 1 It records:
 - ▶ the patient's name, sex and date of birth;
 - ▶ that the patient is under the care of the given team;
 - ▶ that the consultant that heads the team is responsible for the patient;
 - ▶ that the patient is on the ward.
- 2 It informs the administrator of the ward to which the patient has been admitted.

- B Treat Patient.** The administrator identifies the patient and the doctor; the doctor must be in the team that cares for the patient. The system records that the doctor has treated the patient.
- C Discharge Patient.** The administrator identifies the discharged patient. All information relating to that patient is removed from the system.
- D Transfer Patient.** The administrator identifies the patient and the new ward. The new ward should be of the appropriate type and have at least one free bed. The system records:
 - ▶ the removal of the patient from their current ward;
 - ▶ the admission of the patient to the new ward.
- E List Ward's Patients.** The administrator identifies the ward. For each patient on the ward the system displays the patient's name and age in years.
- F List Team's Patients.** The administrator identifies the team. For each patient cared for by the team the system displays:
 - ▶ the patient's name;
 - ▶ the name of the ward that the patient is on.
- G List Patient's Treatment.** The administrator identifies the patient. The system displays:
 - ▶ the name of the consultant responsible for the patient;
 - ▶ the team code of the team that cares for the patient;
 - ▶ the name of each doctor who has treated the patient and, for each such junior doctor, their grade (1, 2 or 3).

Acceptance tests

- A** Test that, when there is an appropriate ward available:
 - ▶ the admission of a patient is recorded correctly;
 - ▶ the administrator is informed of the ward to which the patient has been allocated.

Test that, when no appropriate ward is available, an attempt to record the admission of a patient results in the administrator being informed that there is no appropriate ward available.
- B** Test that the treatment of a patient, by a doctor on the team that cares for the patient, is recorded correctly.
- C** Test that the discharge of a patient is recorded correctly.
- D** Test that the transfer of a patient to an appropriate ward with an empty bed is recorded correctly.
- E** Test that a list of patients on a ward is produced correctly when there are no patients on the ward.

Test that a list of patients on a ward is produced correctly when there are some patients on the ward.
- F** Test that a list of patients cared for by a team is produced correctly when there are no patients cared for by the team.

Test that a list of patients cared for by a team is produced correctly when there are some patients cared for by the team.
- G** Test that a list of a patient's treatment is produced correctly when no doctors have treated the patient.

Test that a list of a patient's treatment is produced correctly when some doctors have treated the patient.