4 Hospital System initial structural model

Class diagram
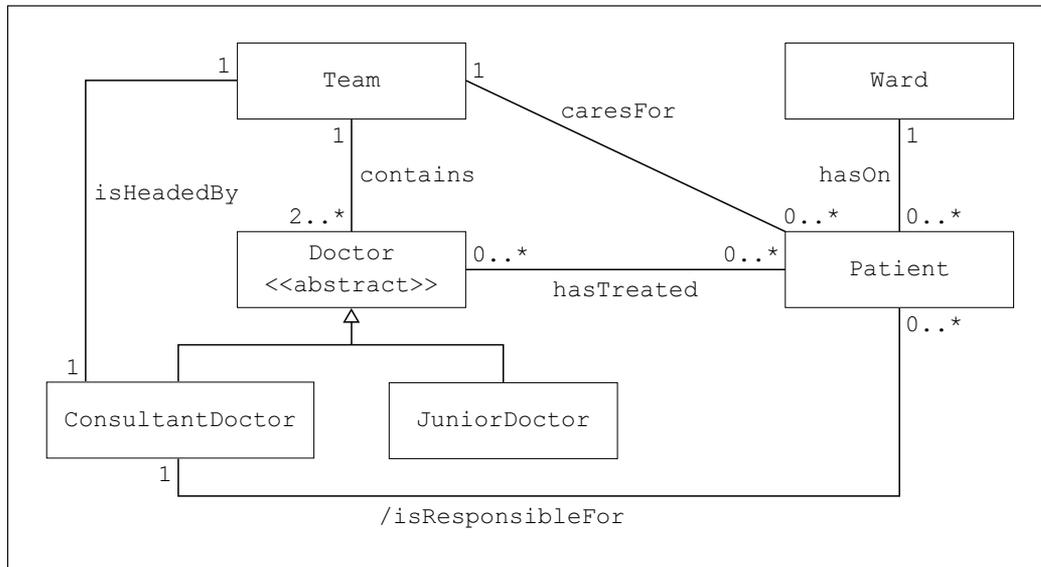

Figure 2   Class diagram for the Hospital System initial structural model

Class descriptions

Class   Ward   A hospital ward

      Attributes

      name   The unique name of the ward

      type   Whether the ward is for male or female (M or F) patients

      capacity   The maximum number of patients that can be on the
                        ward at any one time

      /numberOfFreeBeds The number of free beds on the ward

Class   Patient   A patient in the hospital

      Attributes

      name   The name of the patient

      /sex   The sex (M or F) of the patient

      dateOfBirth   The date of birth of the patient

      /age   The age of the patient in years

Class	Team	A team of doctors

Attributes

code	The unique code of the team

Class	Doctor	A doctor at the hospital Abstract: generalises JuniorDoctor and ConsultantDoctor

Attributes

name	The name of the doctor

Class	JuniorDoctor	A junior doctor at the hospital Specialises Doctor

Attributes

grade	The grade (1, 2 or 3) of the junior doctor

Class	ConsultantDoctor	A consultant doctor at the hospital Specialises Doctor

Attributes

None

Invariants

1. The sex attribute of any Patient object has the same value as the type attribute of the linked Ward object.

2. For each Patient object, the value of its age attribute is equal to the difference (in years) between the current date and the value of its dateOfBirth attribute.

3. For each Ward object, the value of its numberOfFreeBeds attribute is equal to the value of its capacity attribute minus the number of Patient objects to which it is linked.

4. Each Team object is linked to at least one JuniorDoctor object for which the grade attribute has a value of 1.

5. The ConsultantDoctor object linked to a Team object via isHeadedBy is linked to the same Team object via contains.

6. The ConsultantDoctor object linked to any Patient object via isResponsibleFor is linked via isHeadedBy to the Team object to which that Patient object is linked.

7. If aPatient is any Patient object, then any Doctor object linked to aPatient is also linked to the Team object which is linked to aPatient.