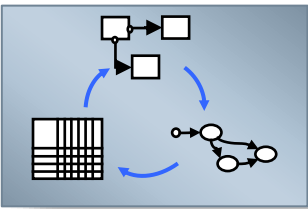


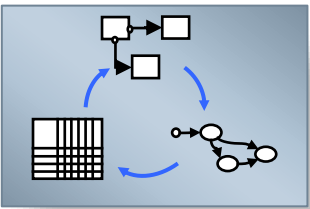
This is an exercise from the Merode course at KU Leuven.
The solution is given as an EDG (part of a Merode model)



Case Description

In hospitals, doctors prescribe examinations for patients. Different types of examinations exist, such as "cardiologic test", "echography", "radiology", "scanner", ... Every single examination is of only one type. Not all possible types of examinations are allowed for all hospitals. For example, some hospitals have no permission for executing NMR scans. A hospital can apply for permission for types of examination.

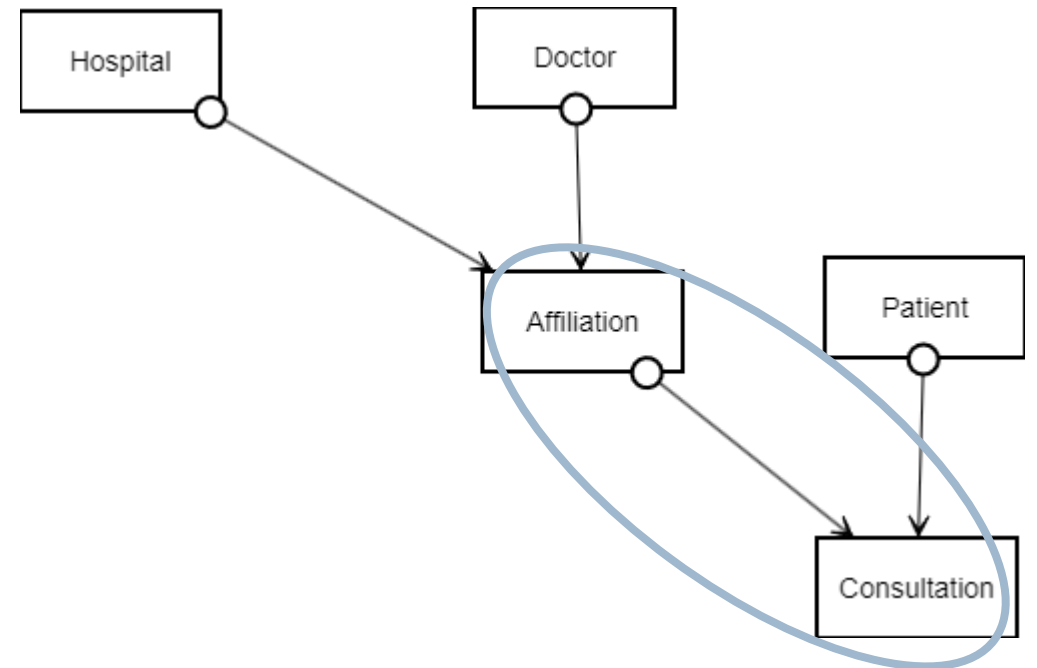
Suppose the hospital wants to improve & monitor the quality of treatments. In order to do so, per type of problem, a treatment plan is defined. A treatment plan lists the advised types of examinations. When a patient comes with a particular problem, the diagnosis is posed by a doctor affiliated to the hospital visited by the patient. The doctor will define an actual treatment based on an existing treatment plan for the identified problem. The actual treatment of the patient can deviate from the standard treatment plan: it can consist of both advised examinations and freely chosen medical actions. Also, examinations are not necessarily at the same hospital: a doctor can send a patient to another hospital if his/her own hospital doesn't have a permission for the desired examination. By registering all this information, the hospital wants to ensure that examinations are only performed according to permissions, and monitor how much actual treatments diverge from advised treatment plans.



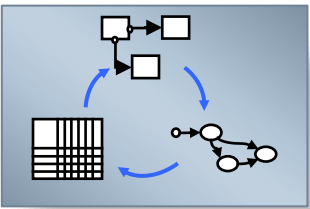
EDG

A consultation is a visit by a patient to a doctor that affiliated to a hospital.

→ The Consultation is dependent on the Affiliation, not on the Doctor

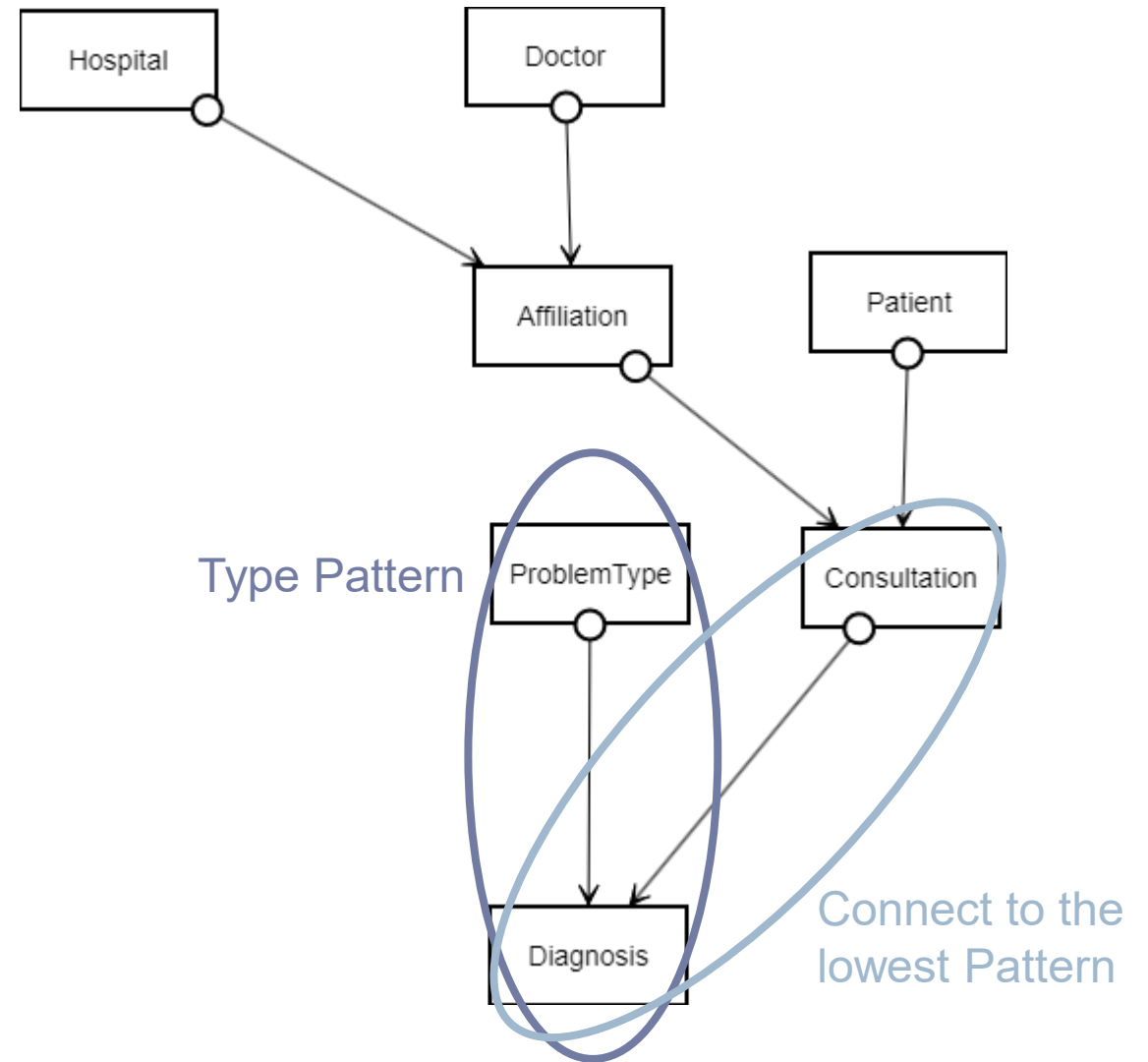


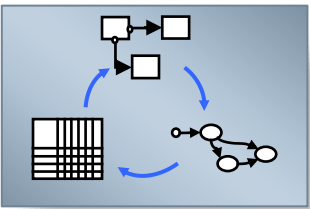
Connect to the lowest Pattern



EDG

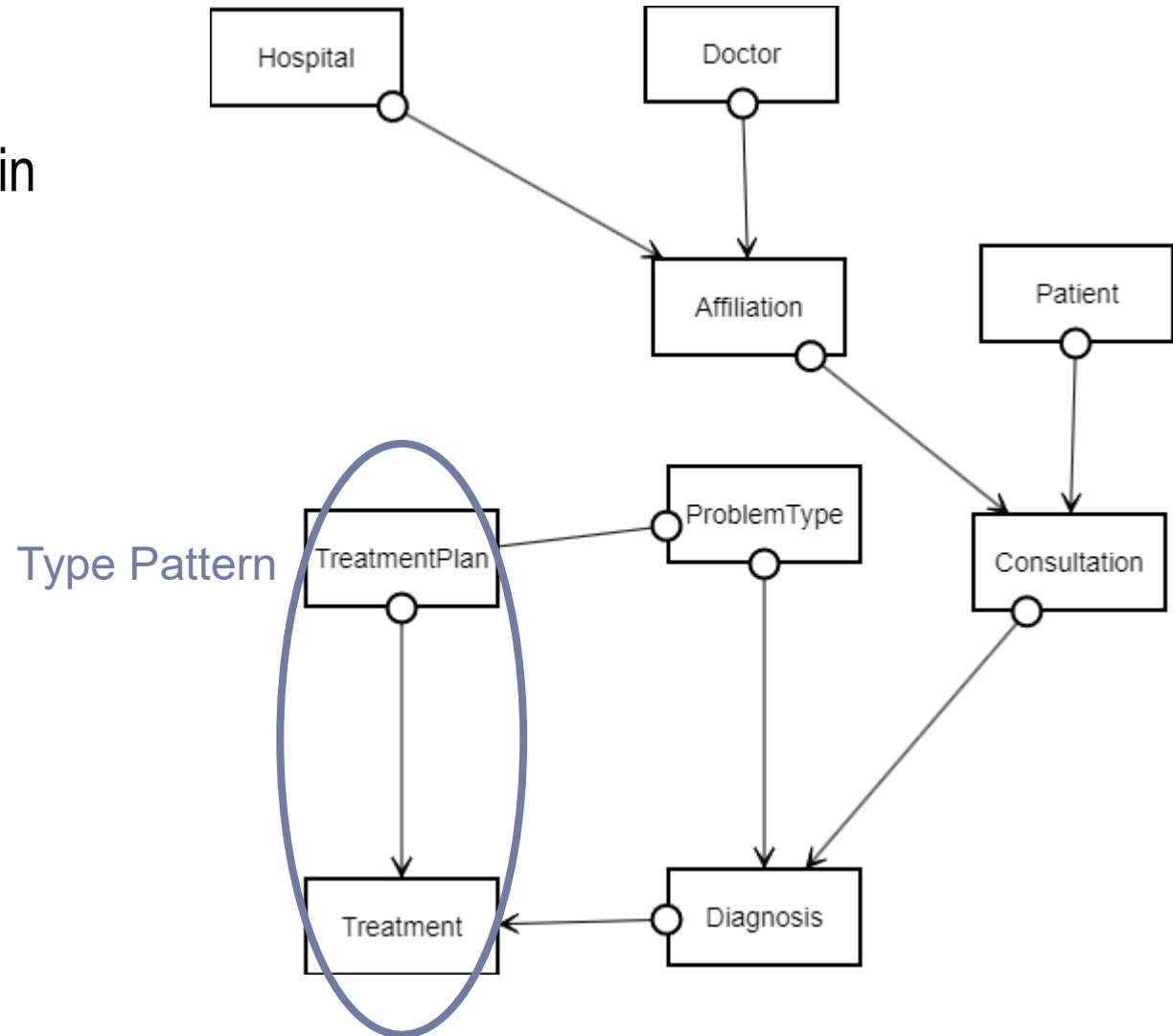
- A Diagnosis is a problem of a certain ProblemType.
- A Diagnosis is dependent on the Consultation where the diagnosis is made.
- Indirectly, the Diagnosis is also dependent on the Patient and the Doctor that made the diagnosis.

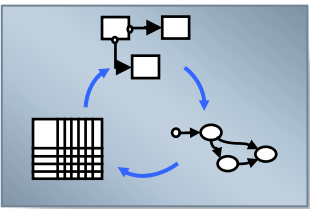




EDG

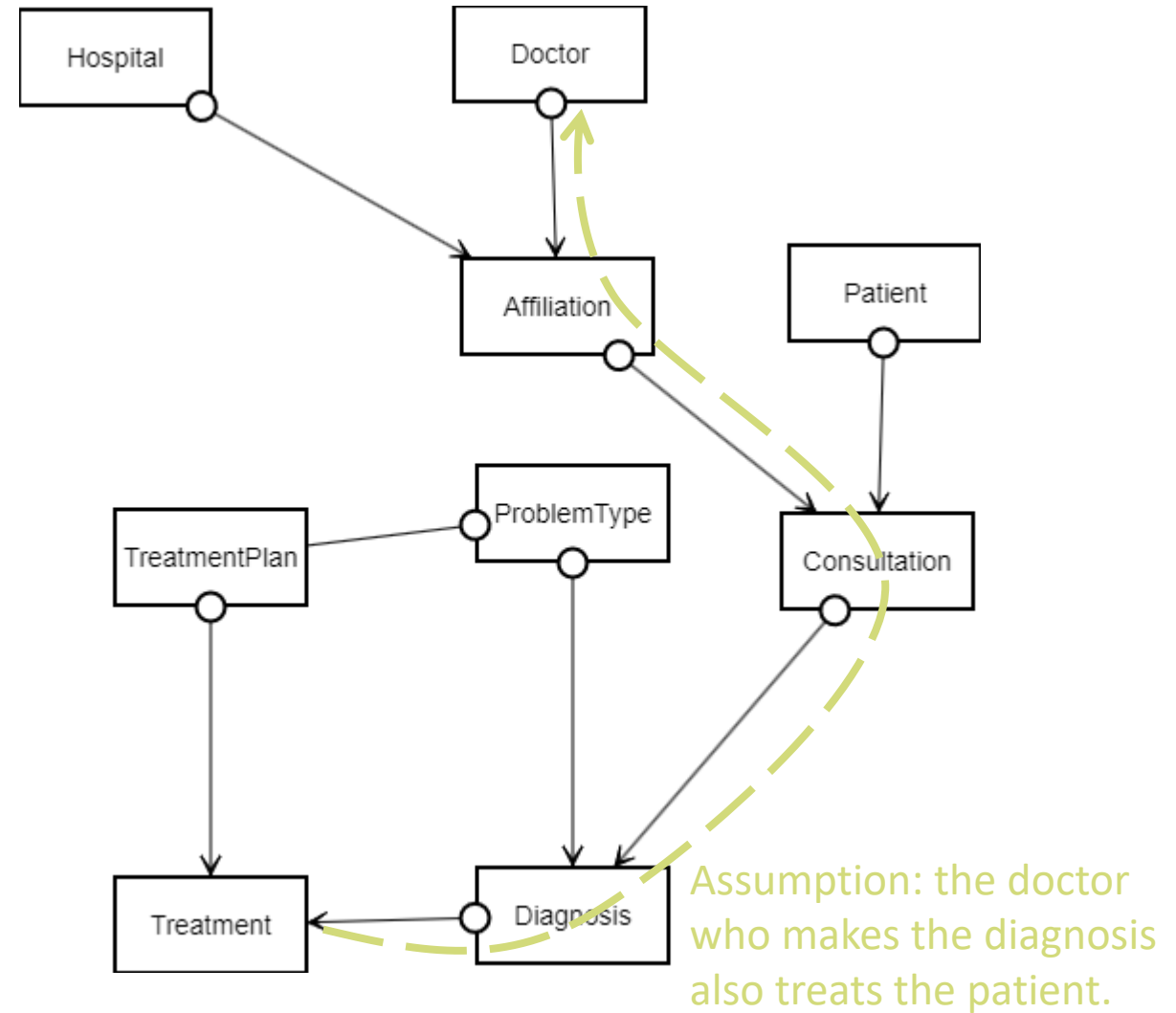
- A TreatmentPlan belongs to a certain ProblemType
- A Treatment belongs to a certain Diagnosis
- A Treatment is based on a TreatmentPlan

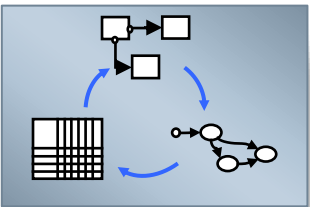




EDG

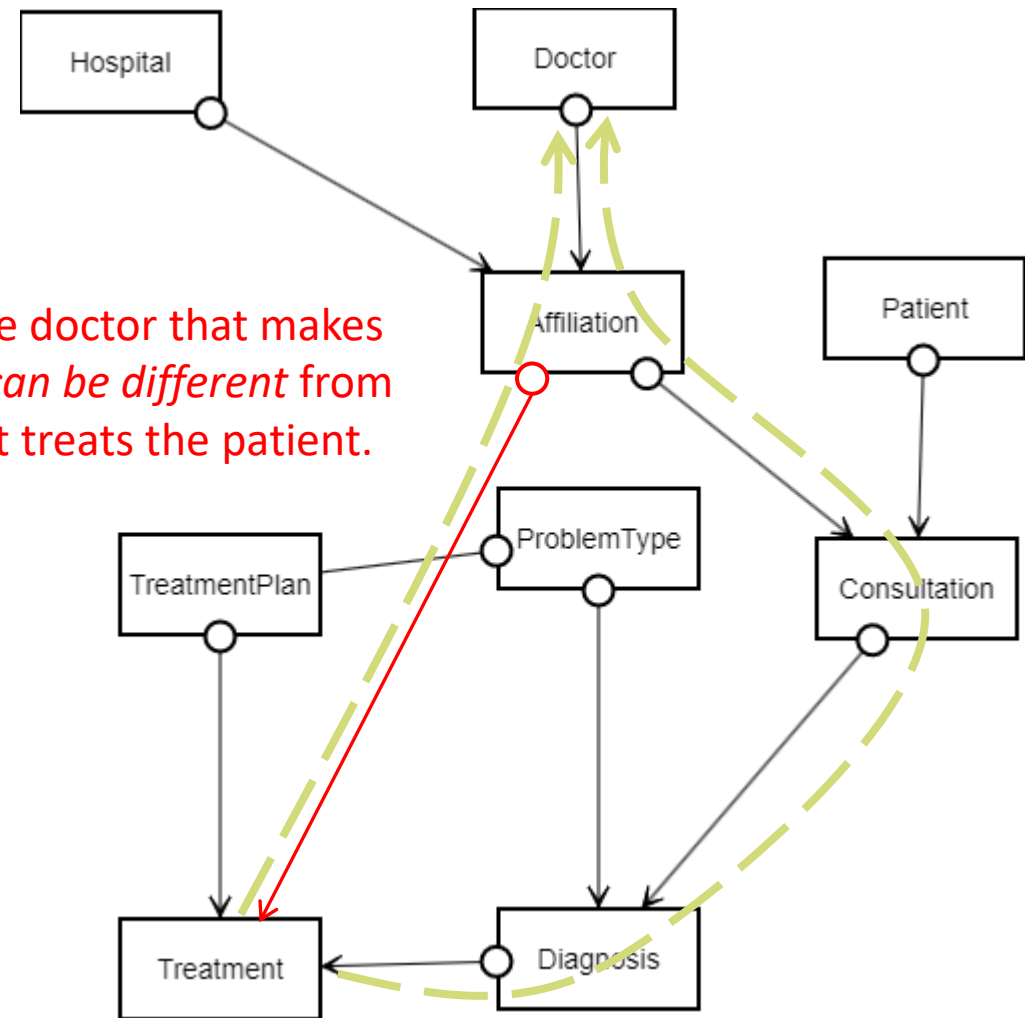
Assumption: the doctor who makes the diagnosis also treats the patient.

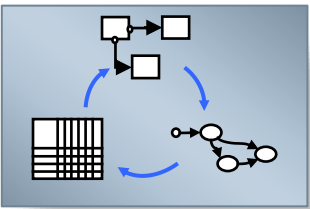




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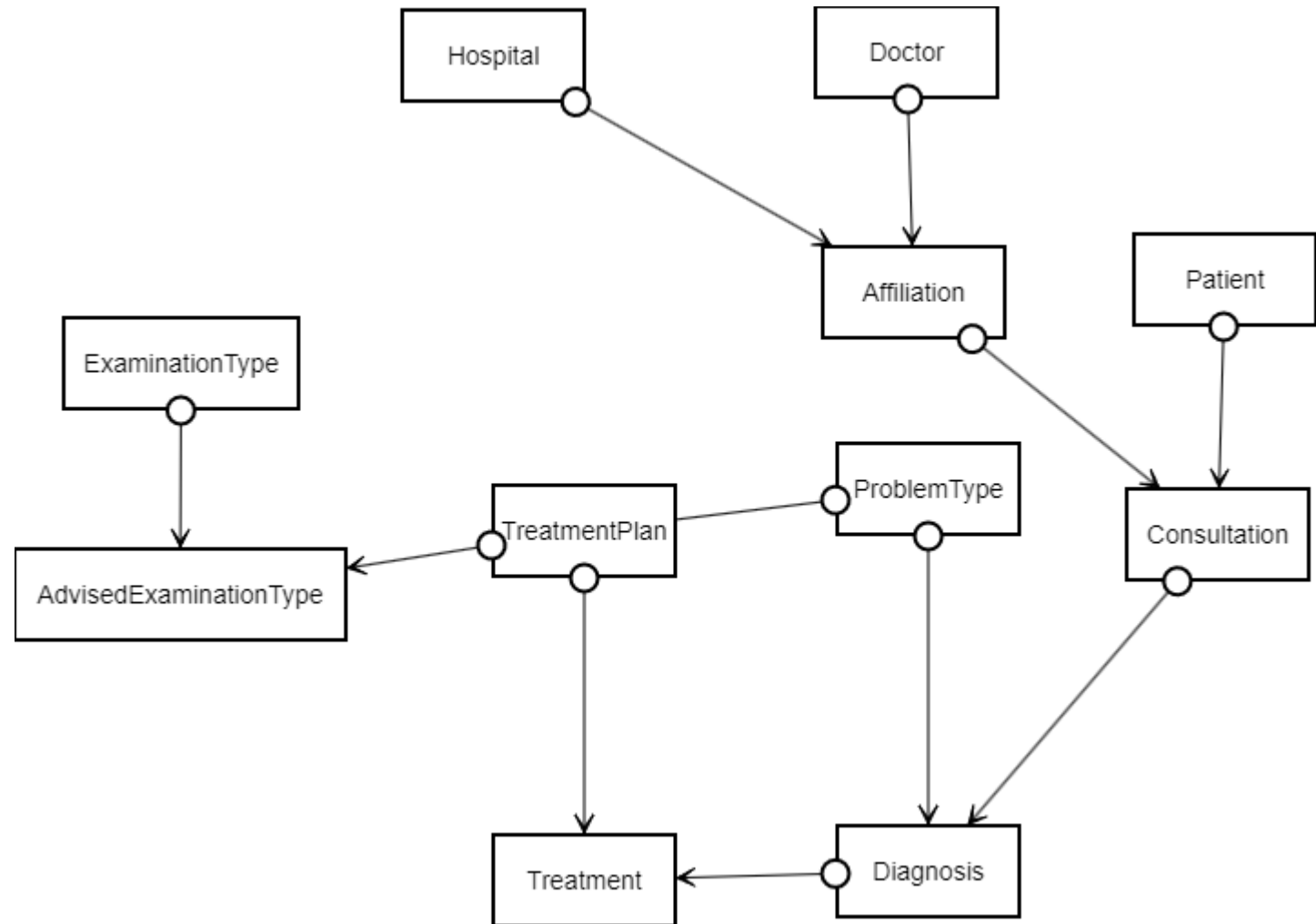
Alternative: the doctor that makes the diagnosis *can be different* from the doctor that treats the patient.

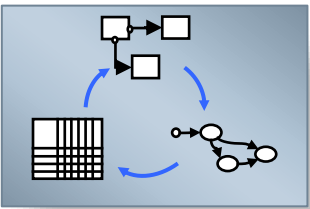




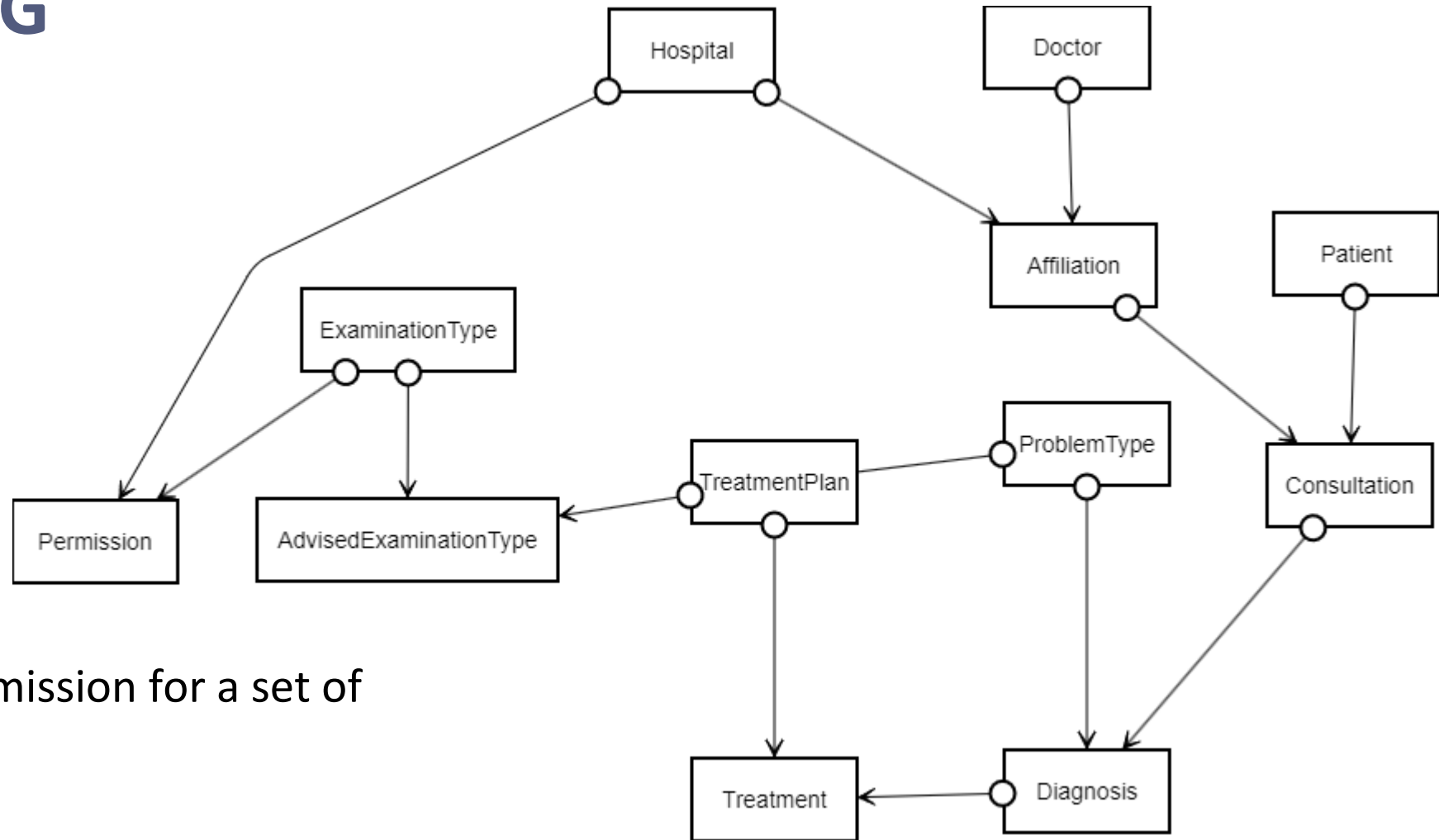
EDG

A TreatmentPlan consists of a number of advised ExaminationTypes

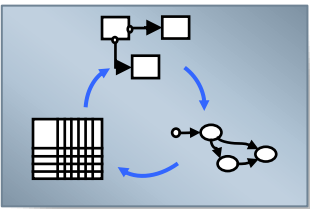




EDG



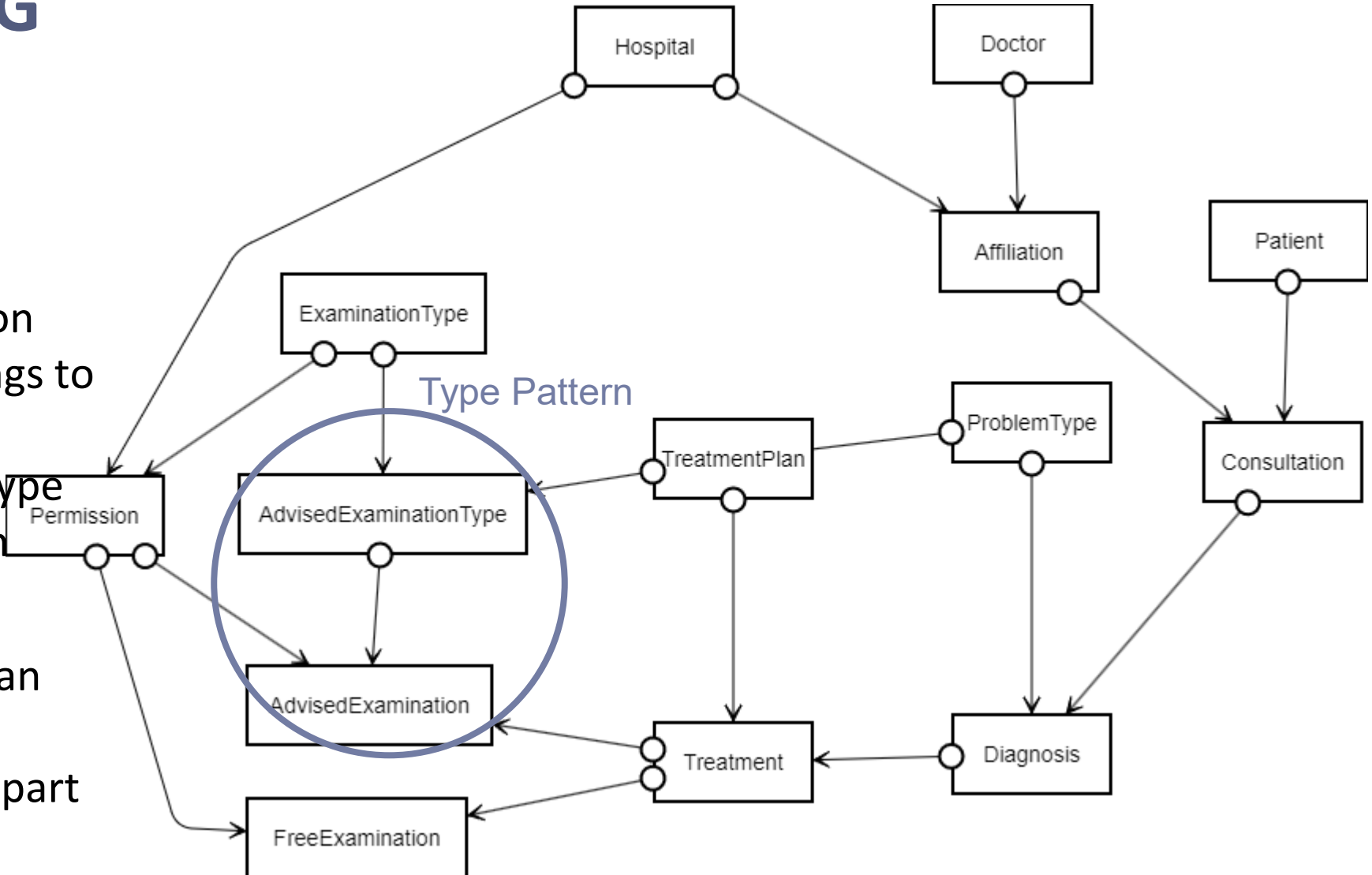
A Hospital has Permission for a set of ExaminationTypes

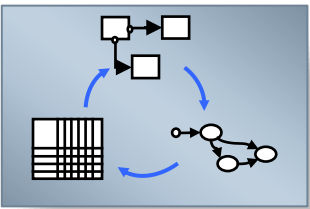


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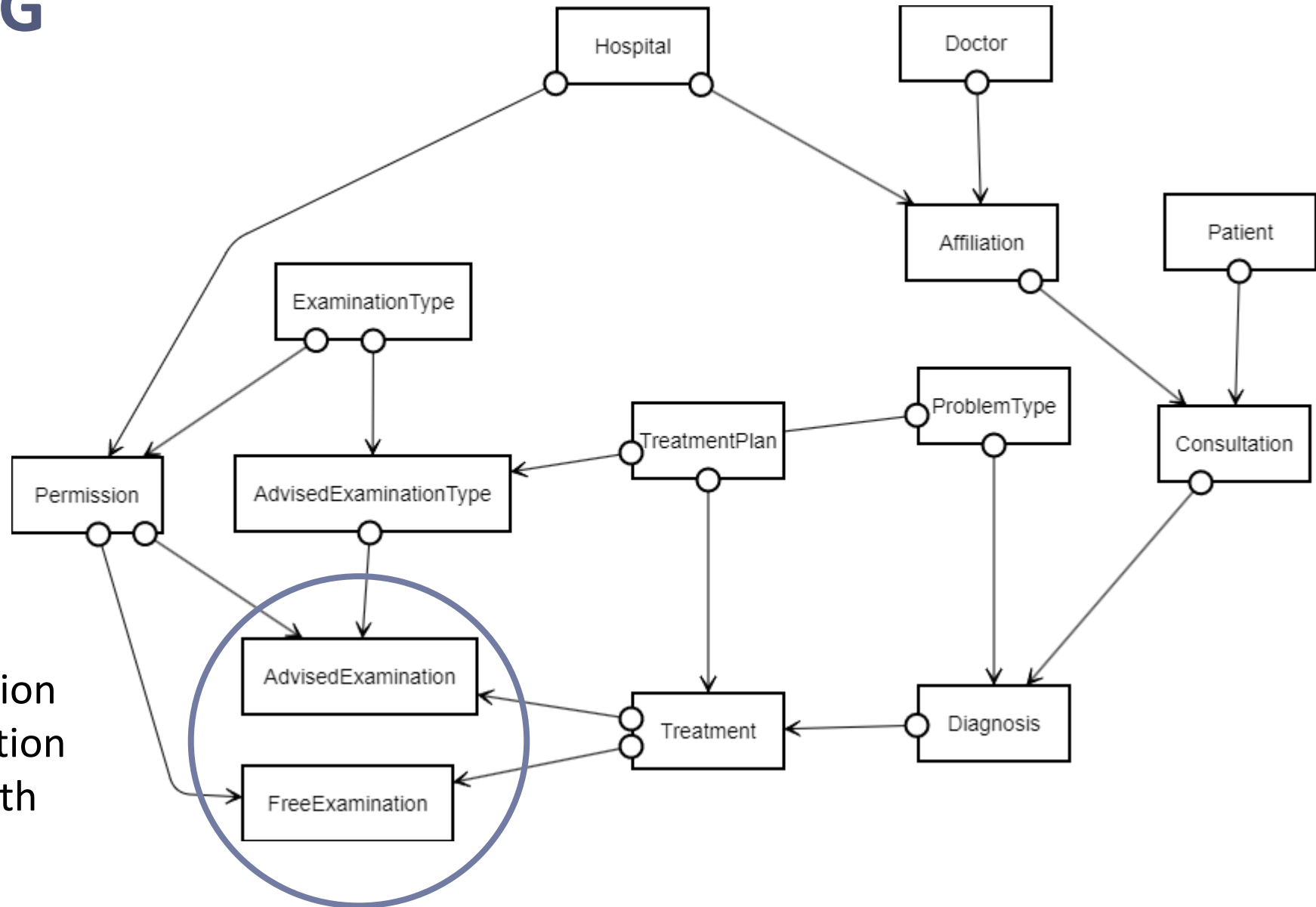
An AdvisedExamination for a Treatment belongs to an AdvisedExaminationType for the TreatmentPlan

A FreeExamination is an examination for a Treatment that is not part of the TreatmentPlan

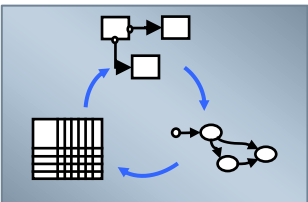




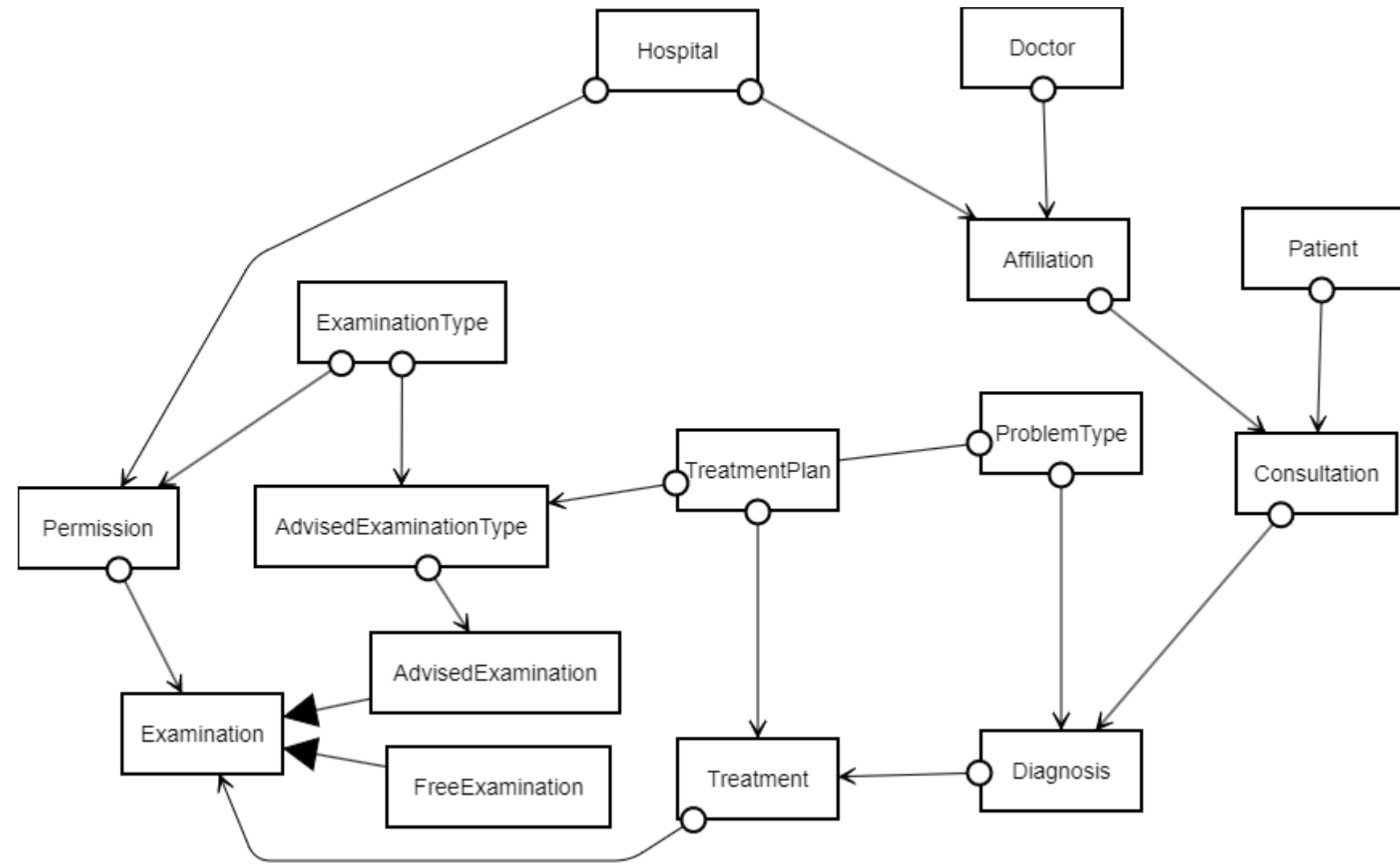
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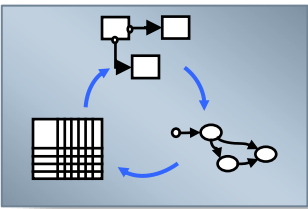


The AdvisedExamination and the FreeExamination could be modelled with inheritance.

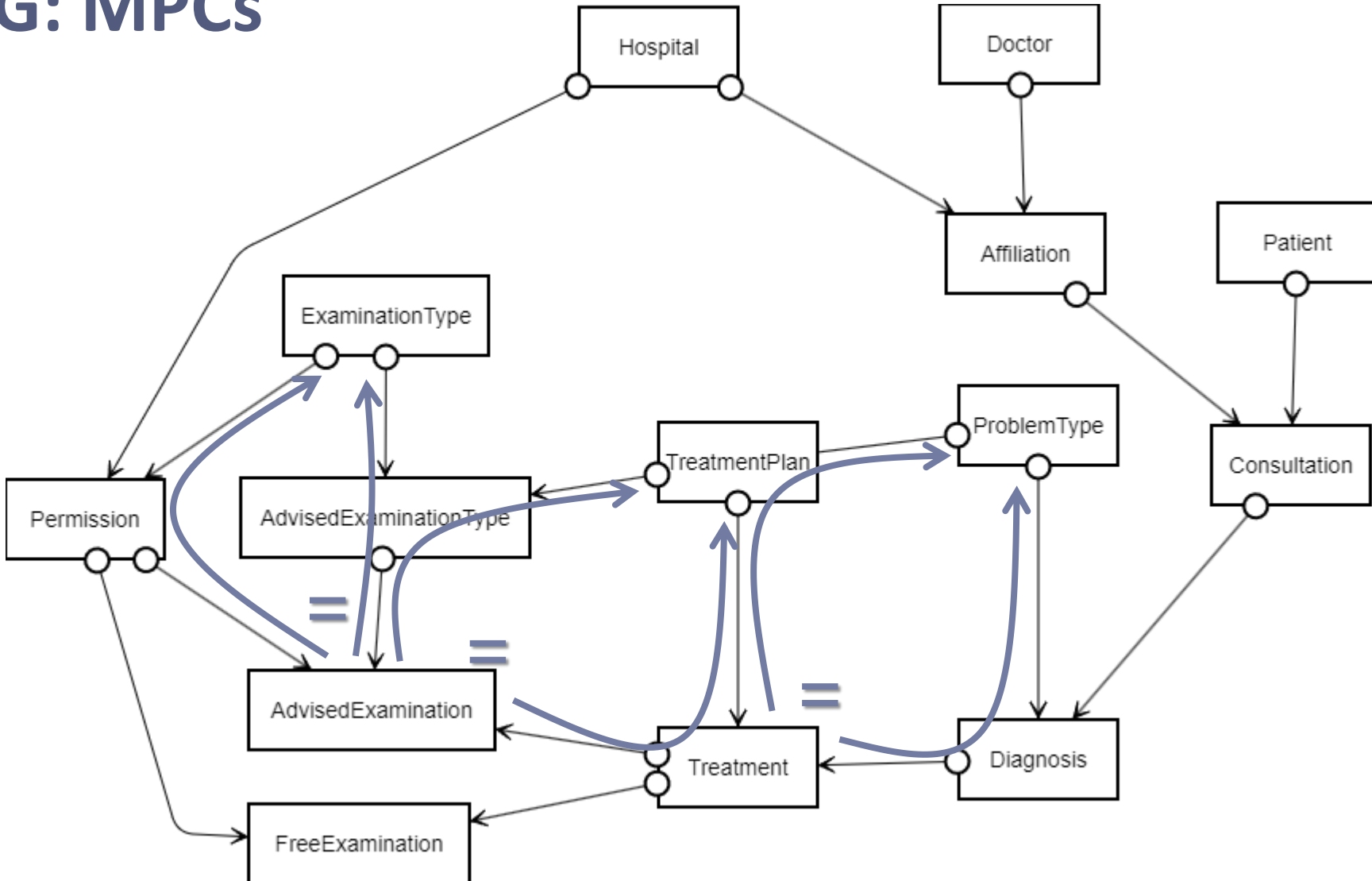


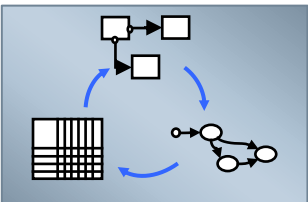
EDG with Inheritance





EDG: MPCs



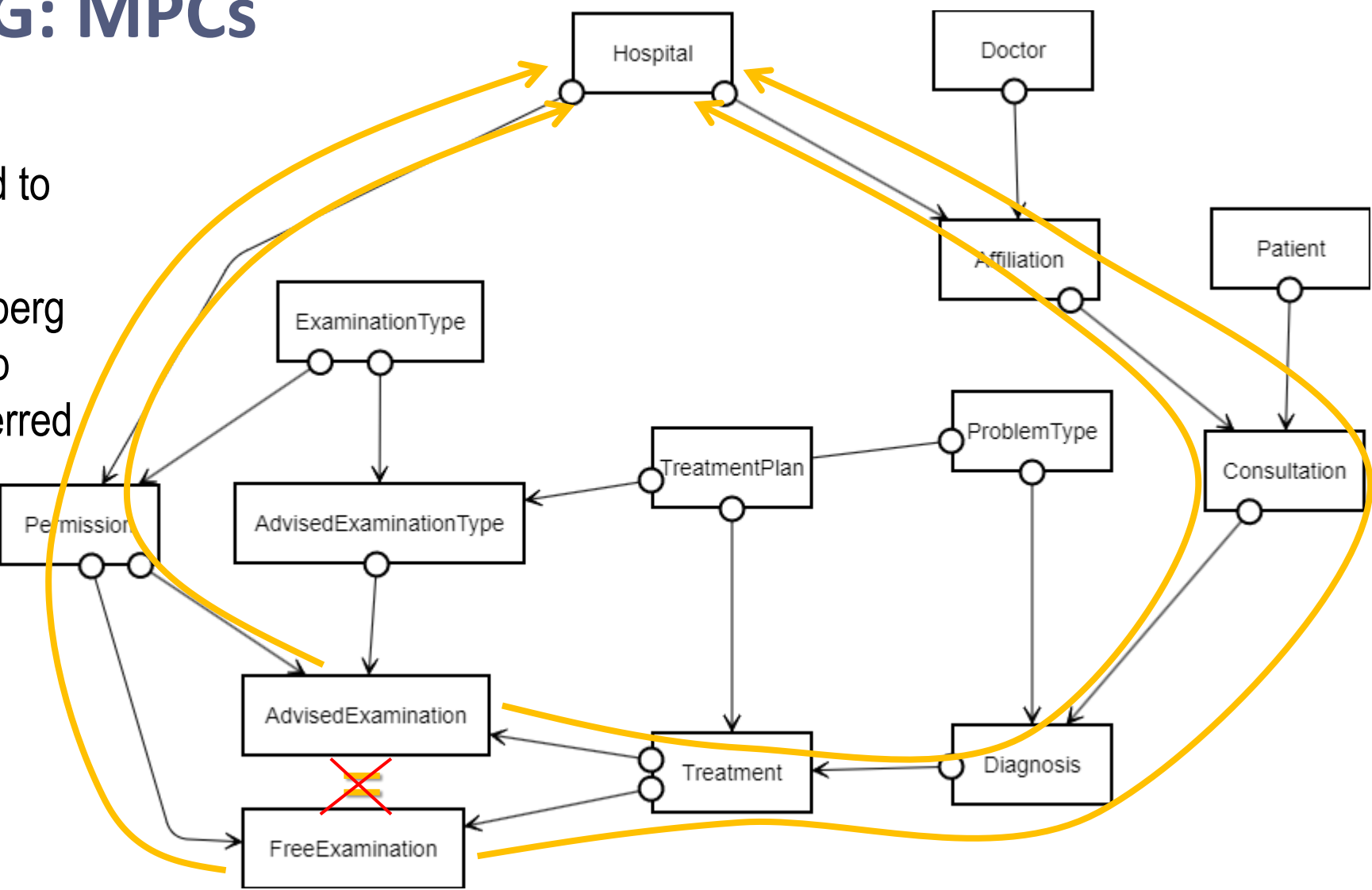


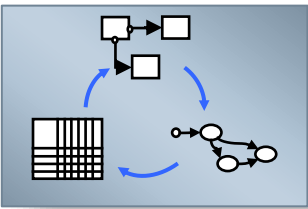
EDG: MPCs

No MPC for Hospital:

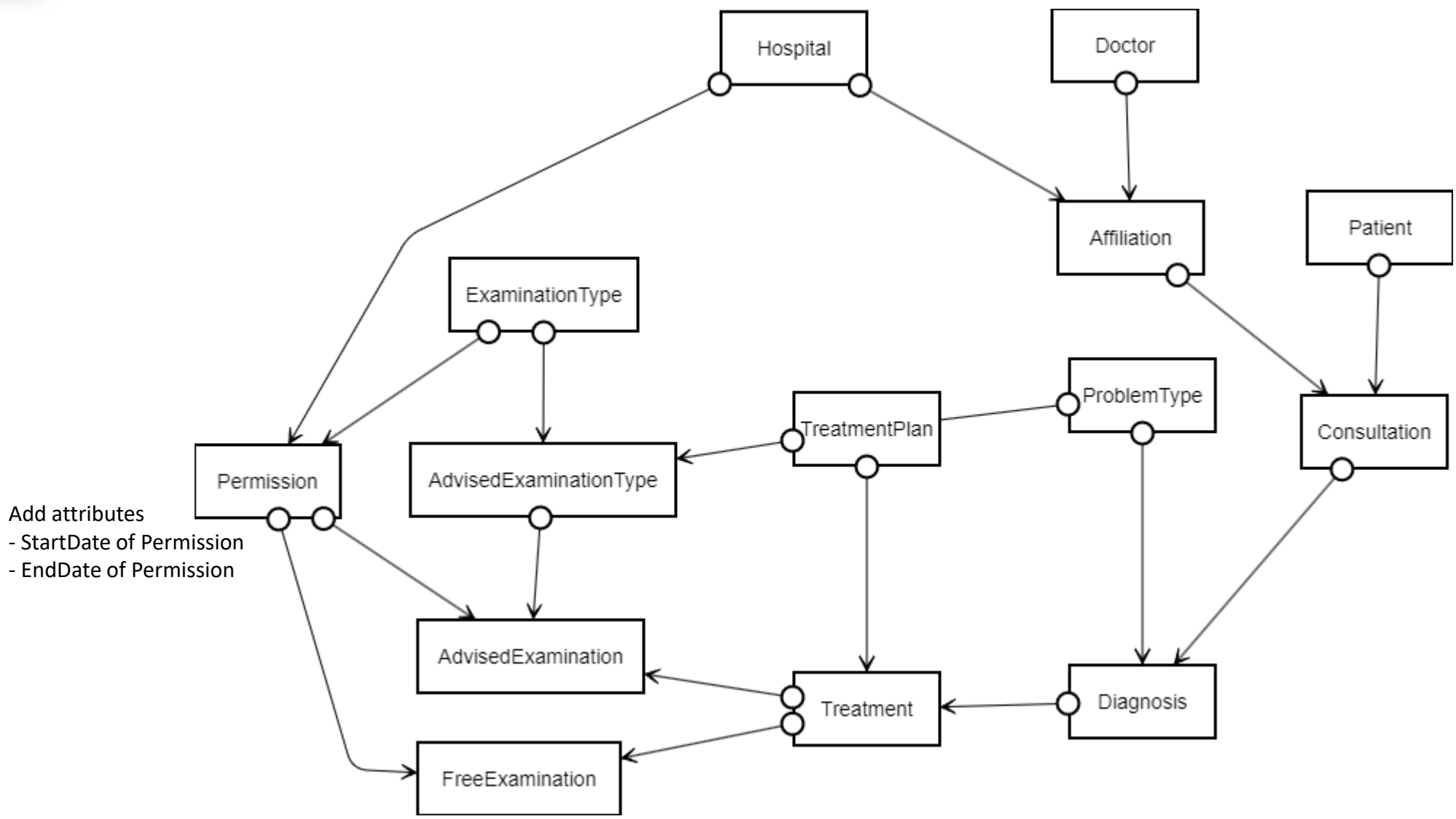
A patient can be referred to another hospital.

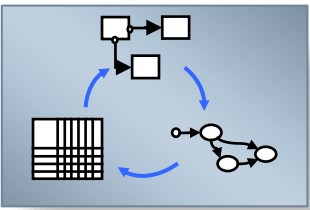
e.g. Tom goes to Pellenberg but Pellenberg can't help him. Therefore he is referred to UZ Leuven





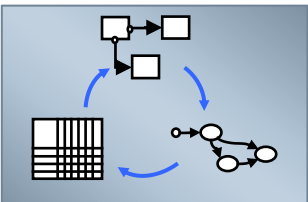
Final Solution



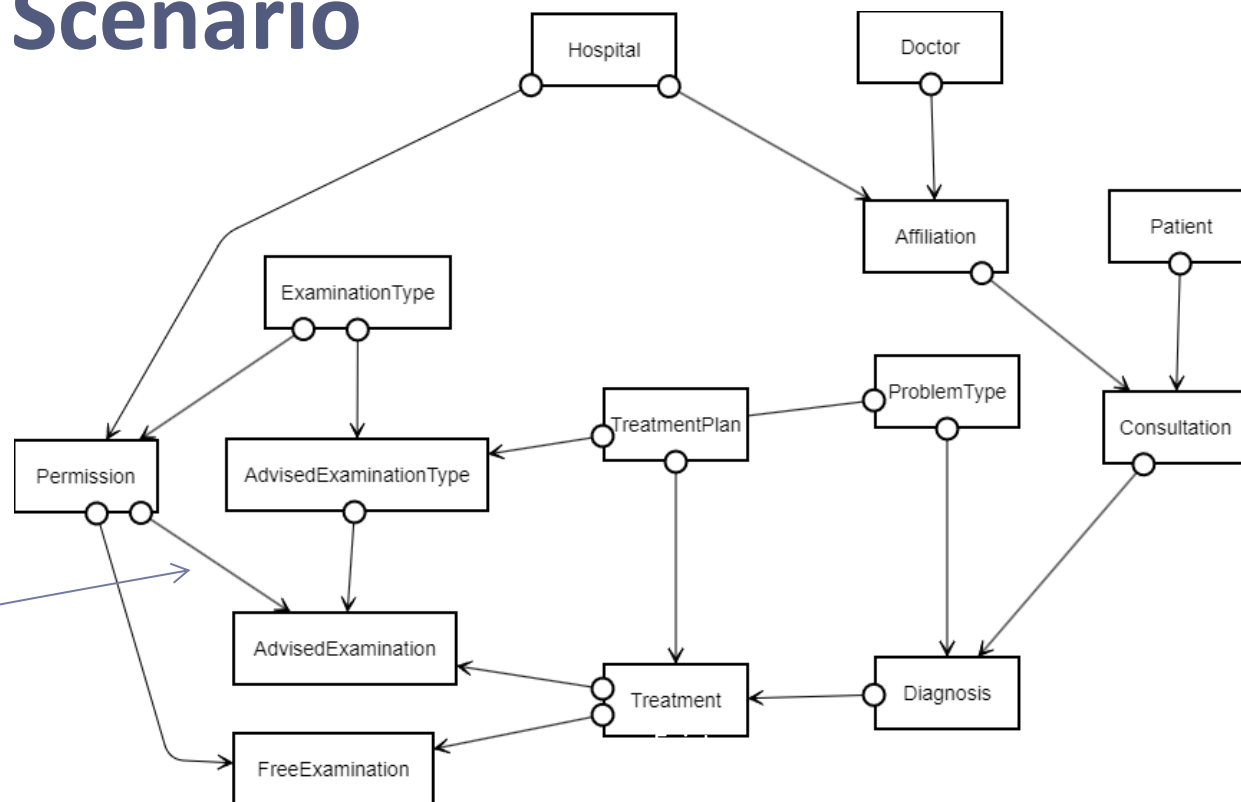


Assignment

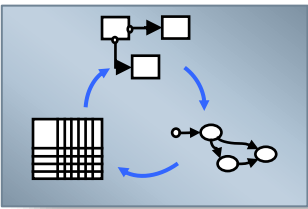
Generate the model and test the following scenario (if your model contains inheritance, you might encounter issues with the code generator).



Execution of Scenario



9. When he does so, "Dr. Who" takes an "Echography" and judges that it is not required for "Tom" to do a "Revalidation". "Tom" can just go home.
10. A few hours after "Tom" got home, the ceiling of the room where the "Echography's" took place, broke down. The "Echography" machine had to be moved to "UZ Leuven". So, from now on, "Pellenberg" is not able to perform "Echography's" anymore. However, "UZ Leuven" is.
11. The manager of "Pellenberg" asks you to list all the treatments that took place in the whole history of the hospital. Make sure that the "Echography" Examination of "Tom" appears in this list.



Possible Solution

