

# Enhanced Entity Relationship Model

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# Modell

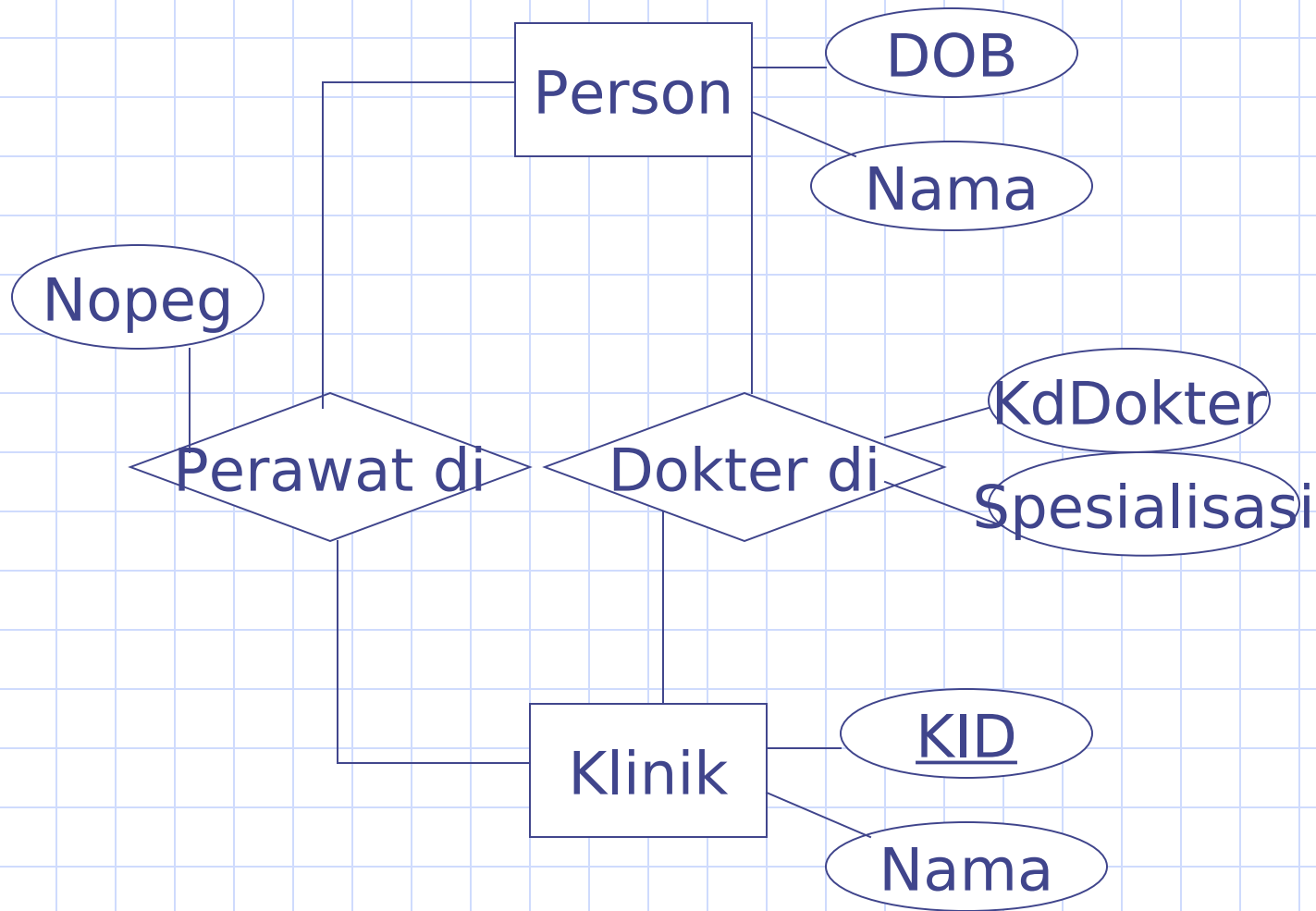
- As close as possible to the modeled world
- Hard to understand if there are too many constructs that are rarely used
- Some important concepts are not captured by ER

# Class



- Each student entity is an object with the same properties/attributes
- The box can be extended to represent object of the same *class*, that is a collection of thing of the same type
- An object belongs to a class or a member of a class

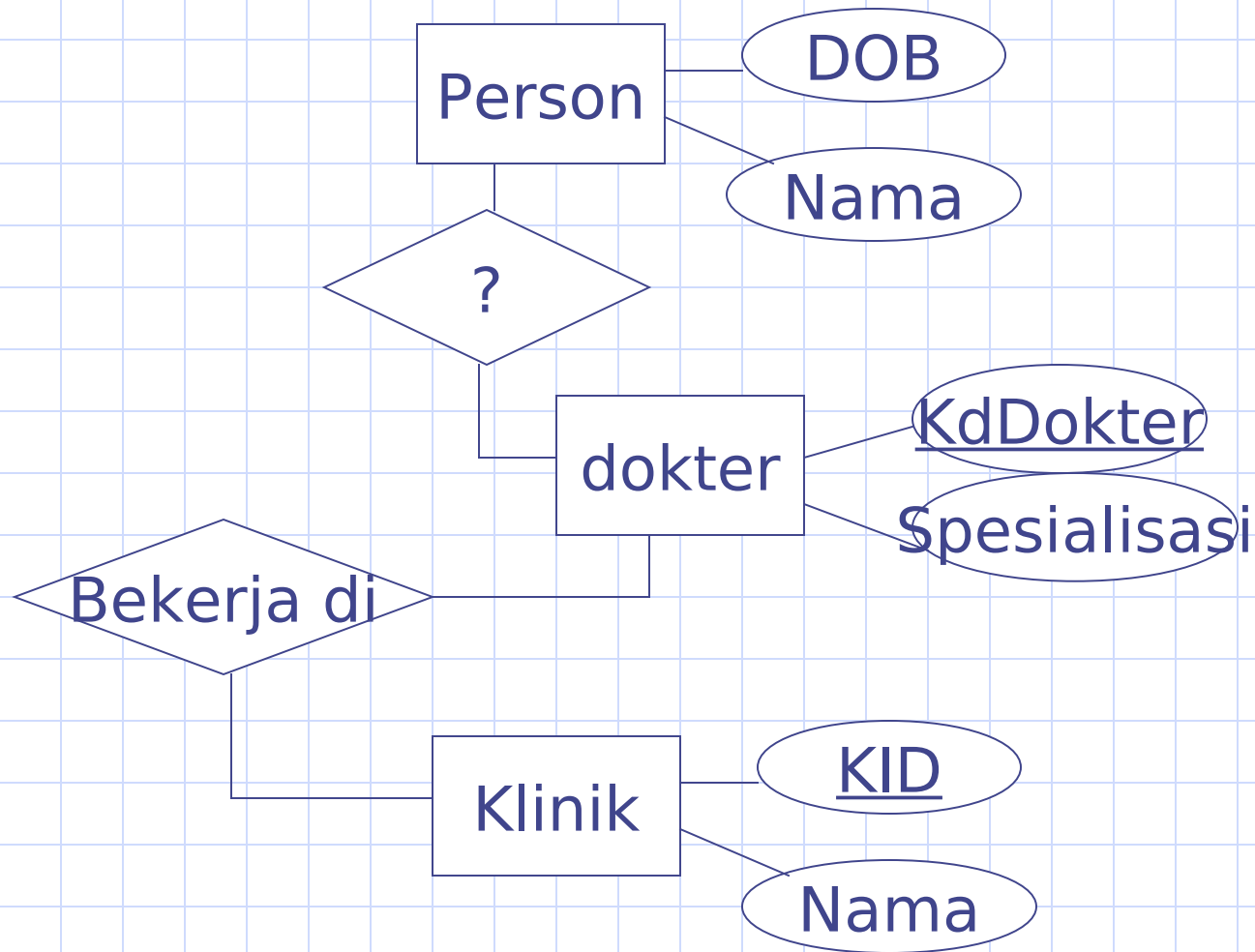
# Class



# Class

- It is not elegant
  - ◆ Perawat and Dokter are not directly represented as an entity
  - ◆ NoPEG and KdDokter are not keys
  - ◆ The relationship represents classes
- It should be better to have perawat and dokter as classes (entities) rather than relationship

# Class...



# Class...

◆ But,

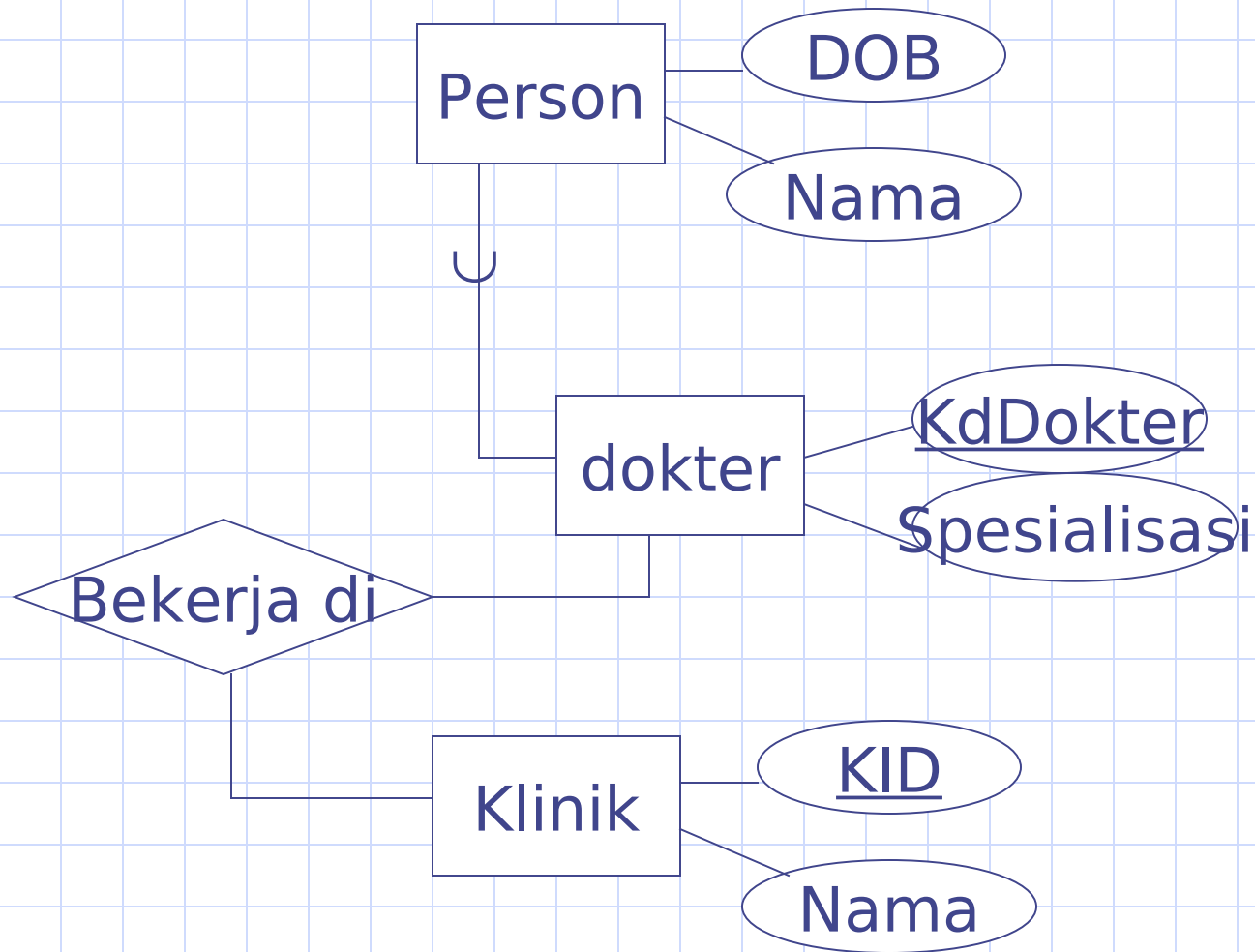
- What is the meaning of relationship between person and dokter?
- Is dokter is also person?
- Dokter has *name* and *DOB* through relationship

# Specialisation

- Relationship such as person-dokter, person-perawat are examples of *classes with subclasses*
- A subclass is a specialisation of a class
- Therefore
  - ◆ Some persons are dokter
  - ◆ Dokter is a subclass of person
  - ◆ Each dokter has all the attributes of person (DOB,nama)
  - ◆ Not all person has the attributes of dokter
- Dokter inherits the properties of person (subclass inherits the attributes from its superclass)



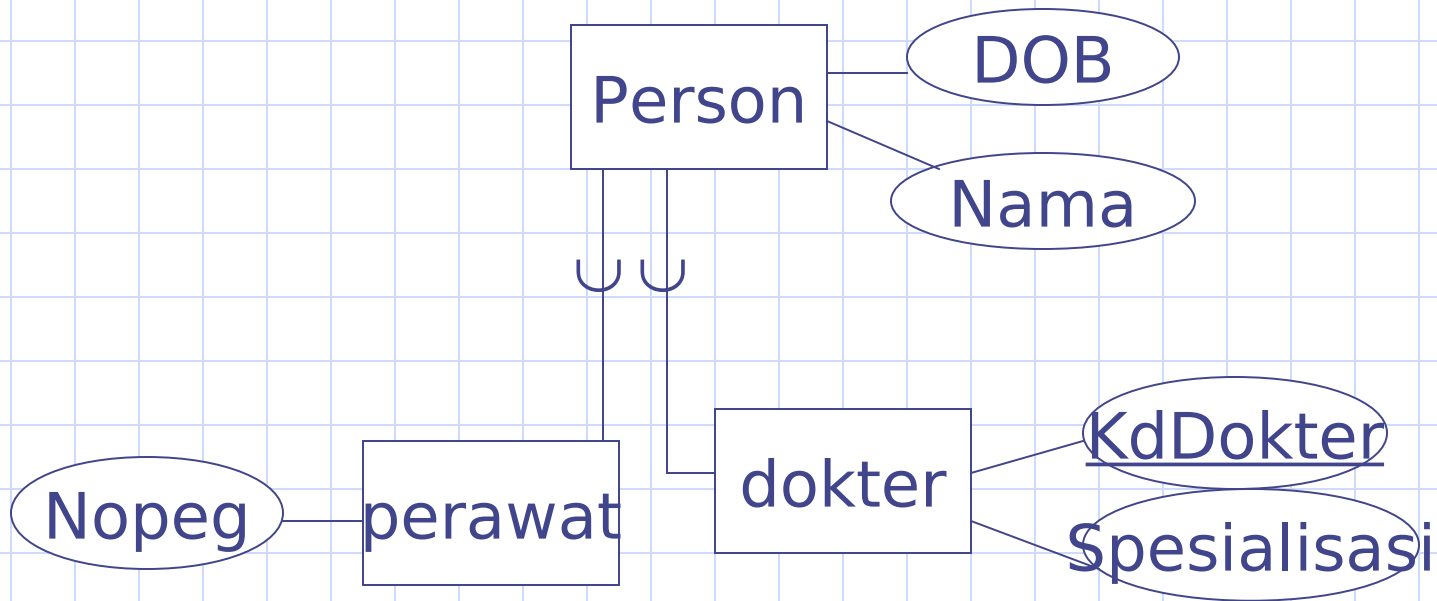
# Specialisation in EER



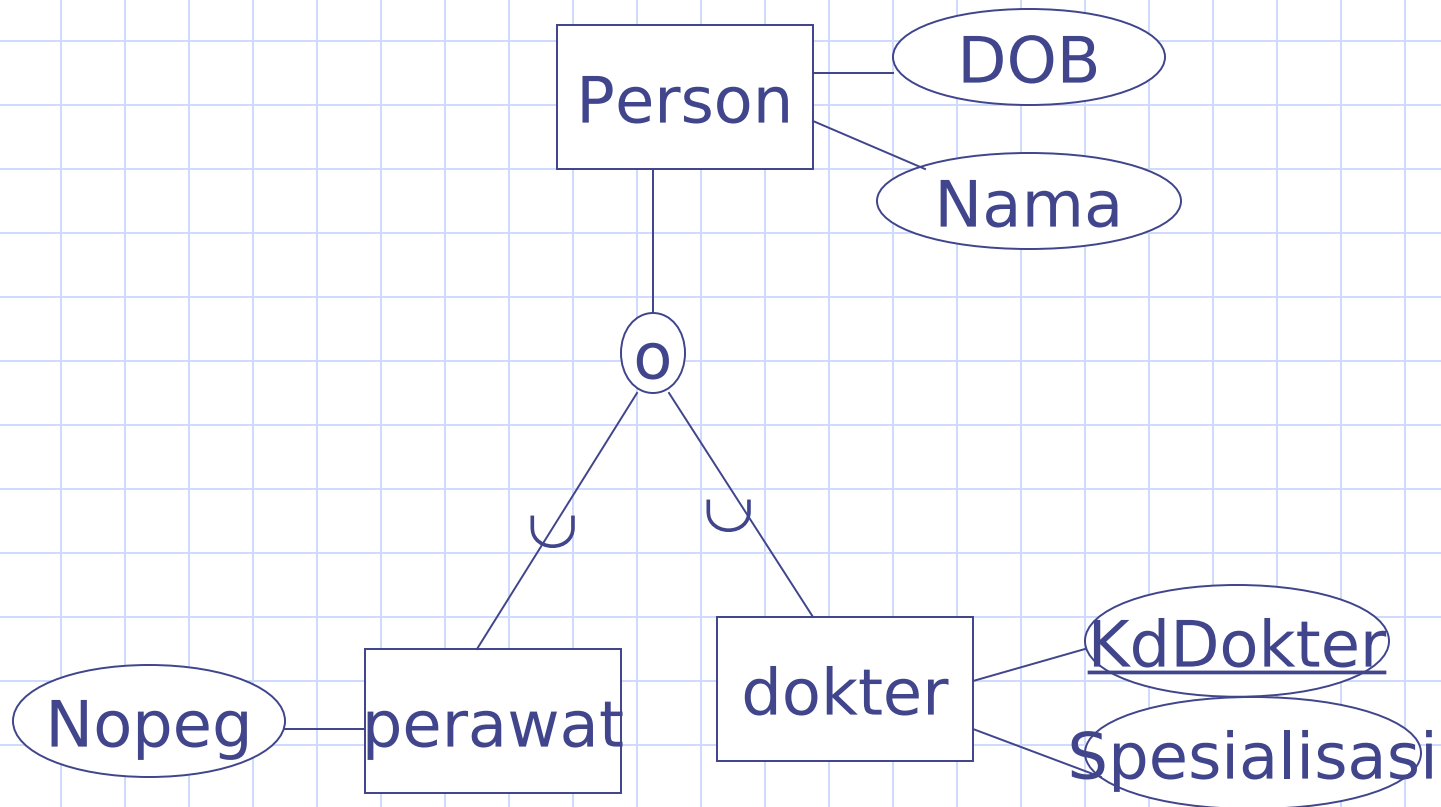
# Specialisation in EER...

- A dokter is also a person
- A dokter has attributes: DOB, nama, kdDokter, spesialisasi
- A person which is not a dokter has only DOB and nama attributes
- Generalisation
  - ◆ A person is a generalisation of a dokter

# Overlapping subclasses

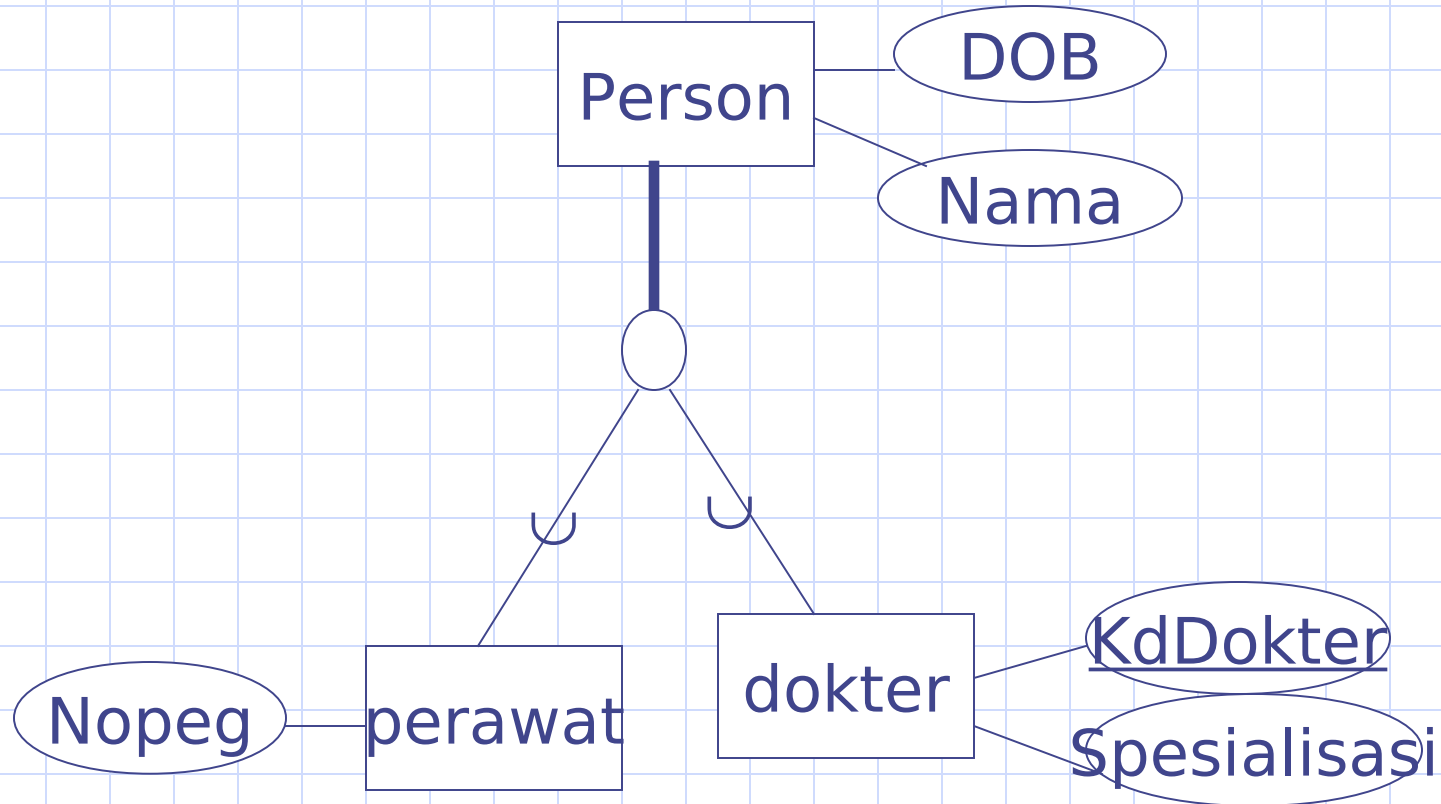


# Overlapping subclasses...



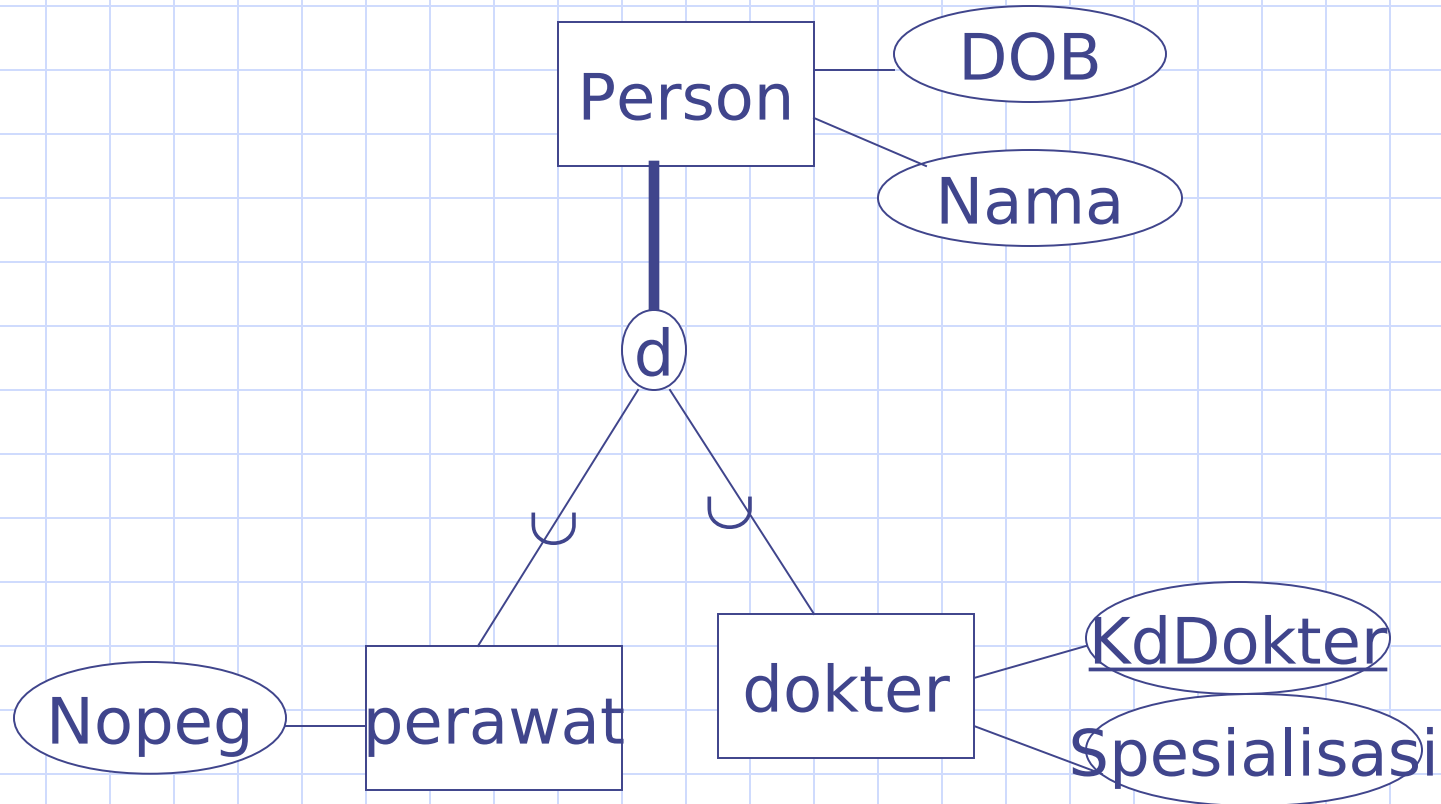
# Participation

- A superclass can totally participate in a specialisation Relationship (mandatory)
- A person must be a perawat or a dokter or both



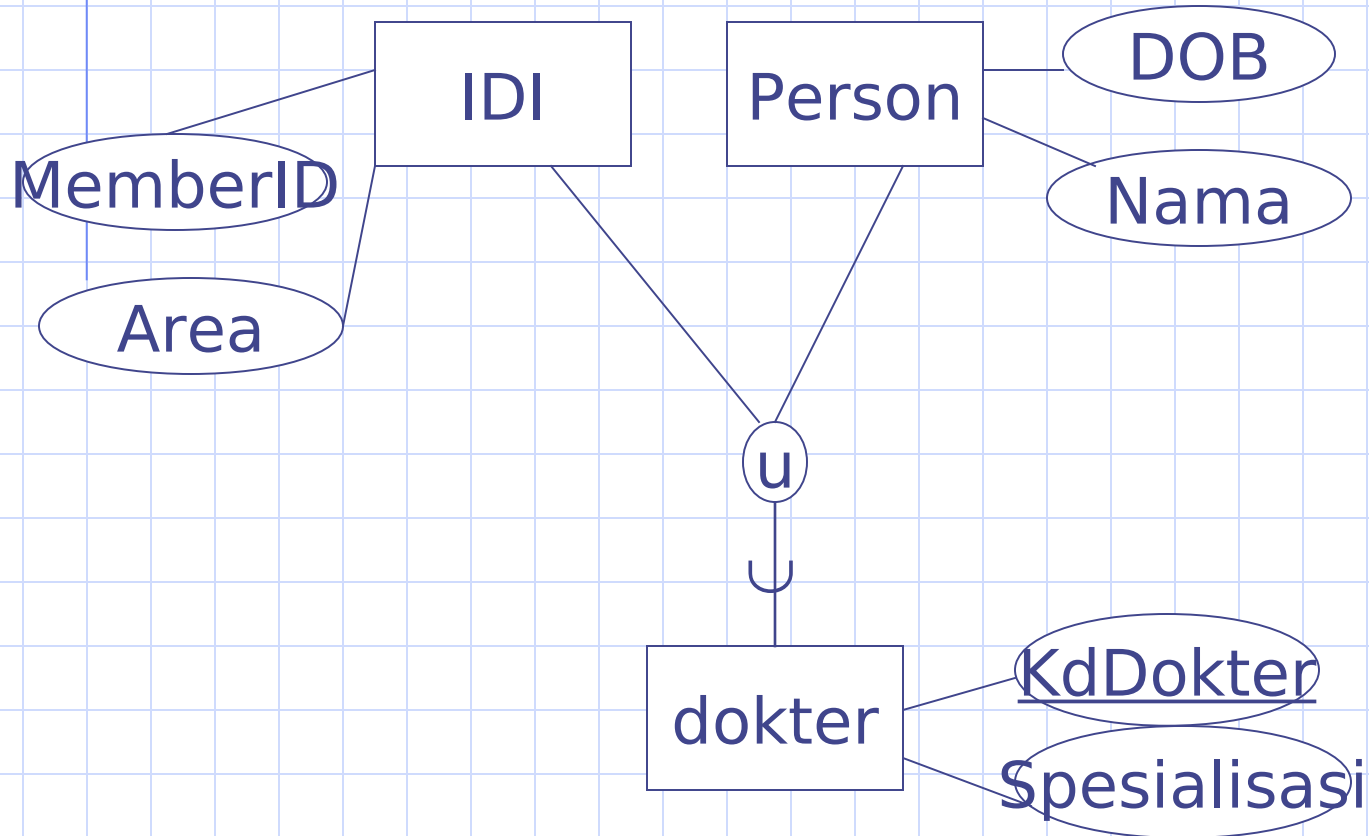
# Disjoint subclasses

- In some cases, member of a class can be just one subclass or another, but not both
- A person is either a perawat or a dokter



# Union inheritance

- A subclass can inherit the properties of more than one superclasses



# EER to relations

- ◆ For a class C and subclasses S and T
  - Create a relation for C and for each of S and T; the relation for S and T includes the key of C
  - Create a relation for each of S and T; both relations contain the attributes of C (desirable when C totally participates in S and T)
  - Create a single relation with the attributes of C, S, and T with null values