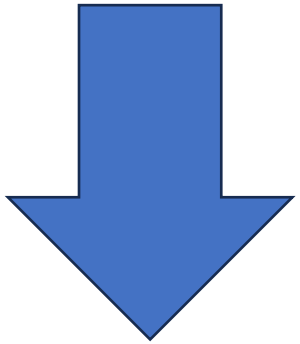
Software Lifecycle

ER = Entity Relationship



ERD

- **Identifying Entity**
- **Understanding the Relationships between Entities**
- **Drawing a Chart ERD**

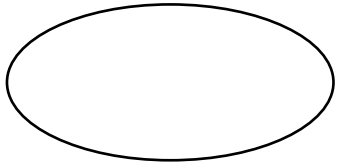
Identifying Entity

Entity = Anything about which the system must store information, based on its responsibilities.

ERD:

1. **Rectangle** 

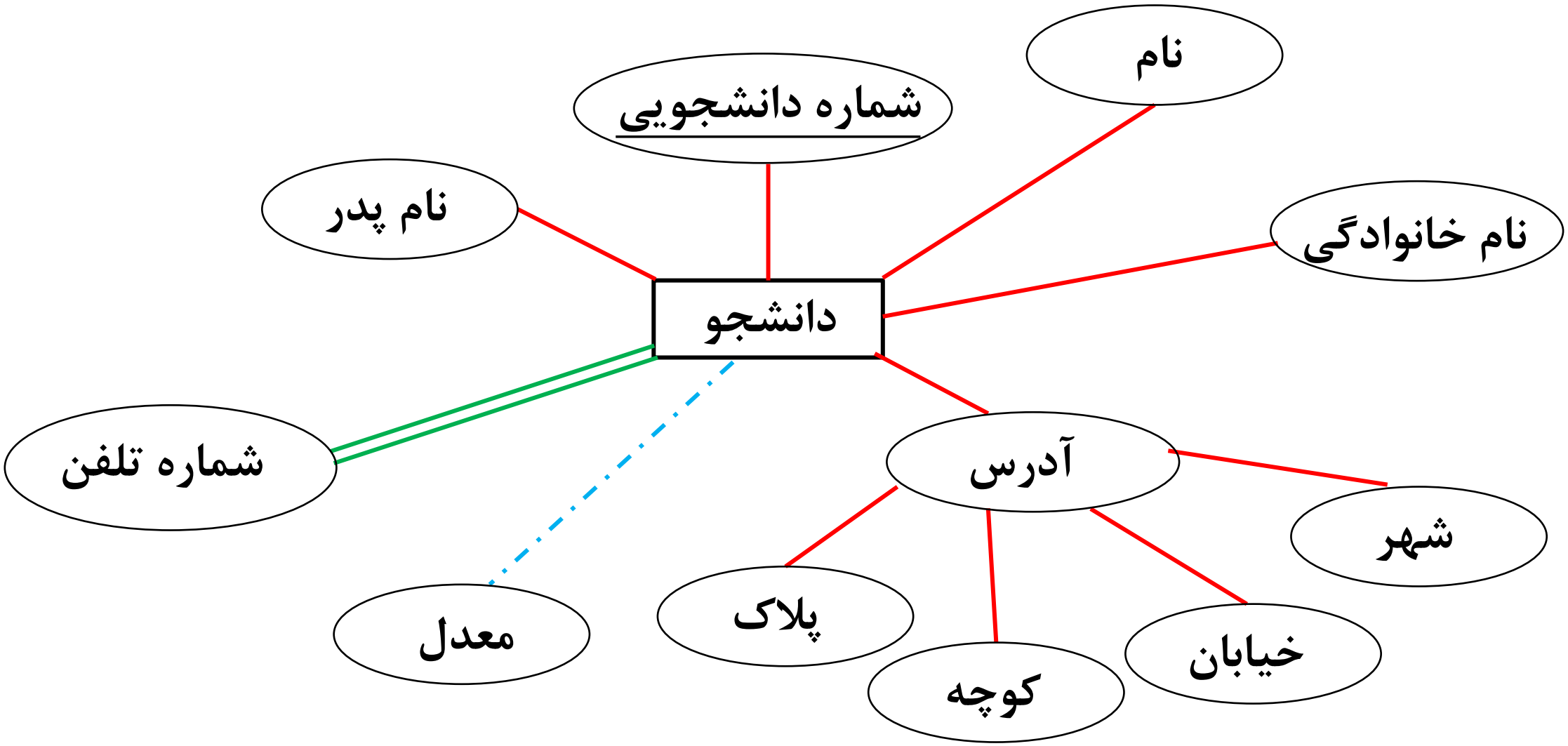
2. **Singular Noun**

3. **Ellipse** 

Entity = Entity Set

Entity ≠ Entity Instance

Identifying Entity



Classification of Attributes

Category 1:

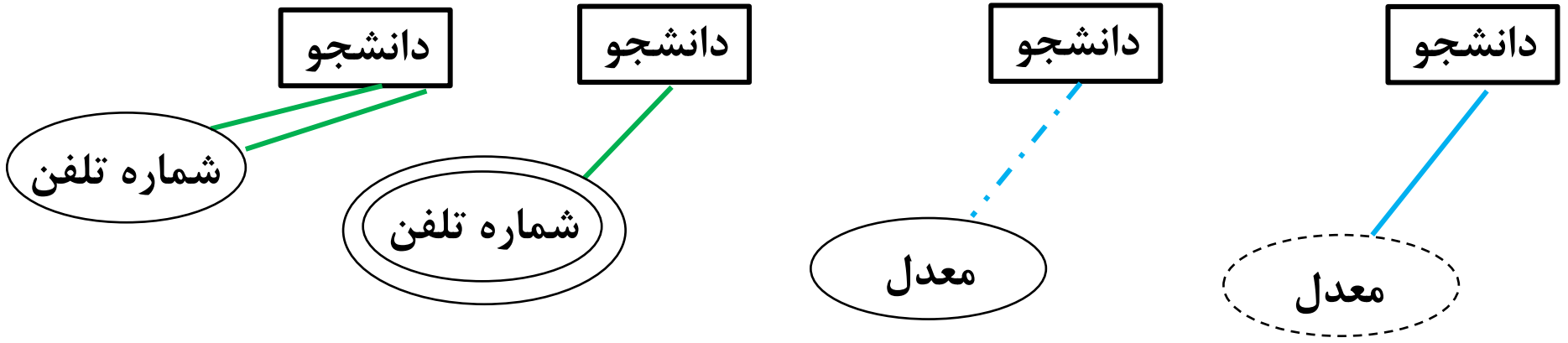
- **Simple**
- **Compound**

Category 2:

- **Single Value**
- **Multi Value**

Category 3:

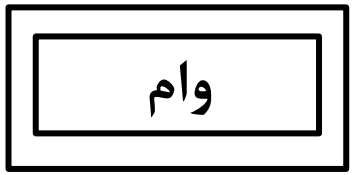
- **Derivative**
- **non-derivative**



Types of Entity

Type 1:

➲ **Weak Entity**



Type 2:

➲ **Strong Entity**



Understanding the Relationships between Entities

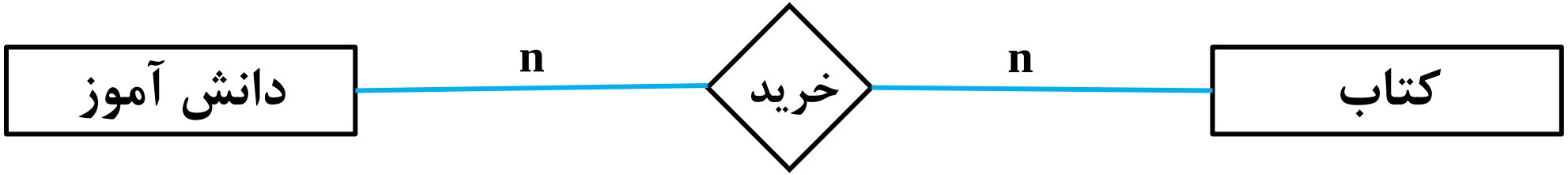
Main Elements:

1) **Relationship Name**

2) **Degree of Relationship**

3) **Cardinality of Relationship**

Relationship Name



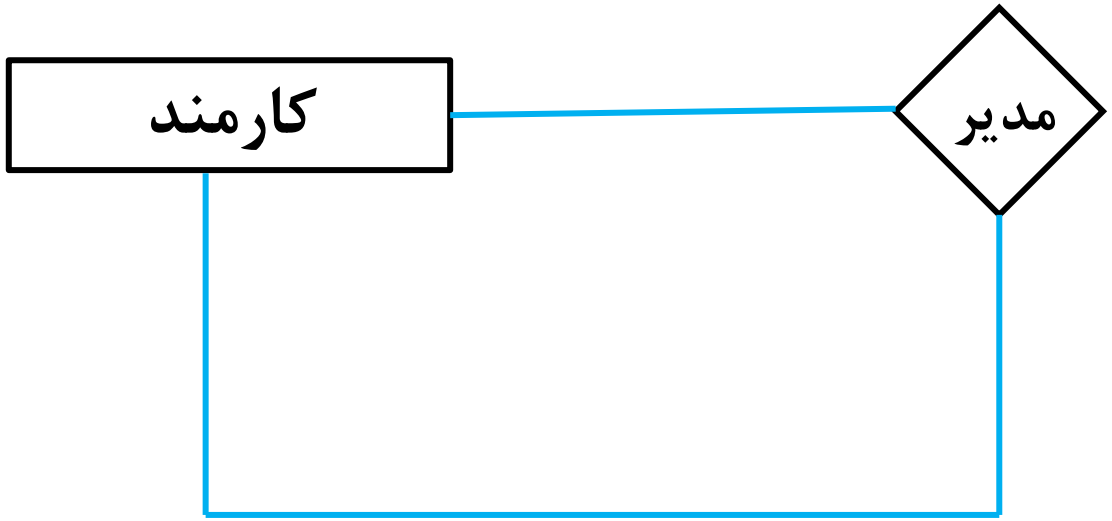
Degree of Relationship

Types of Degree:

- **Degree 1**
- **Degree 2**
- **Degree 3**
- **Degree 4**

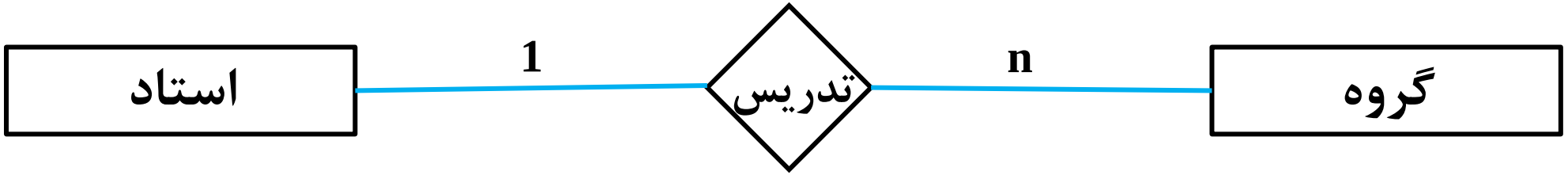
Degree of Relationship

Degree 1:



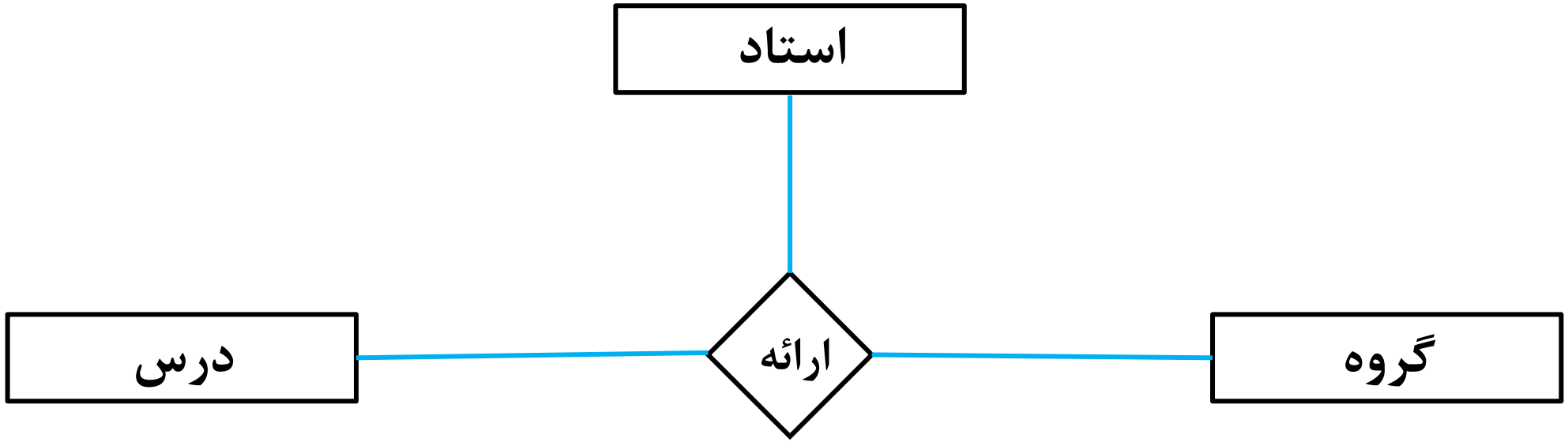
Degree of Relationship

Degree 2:



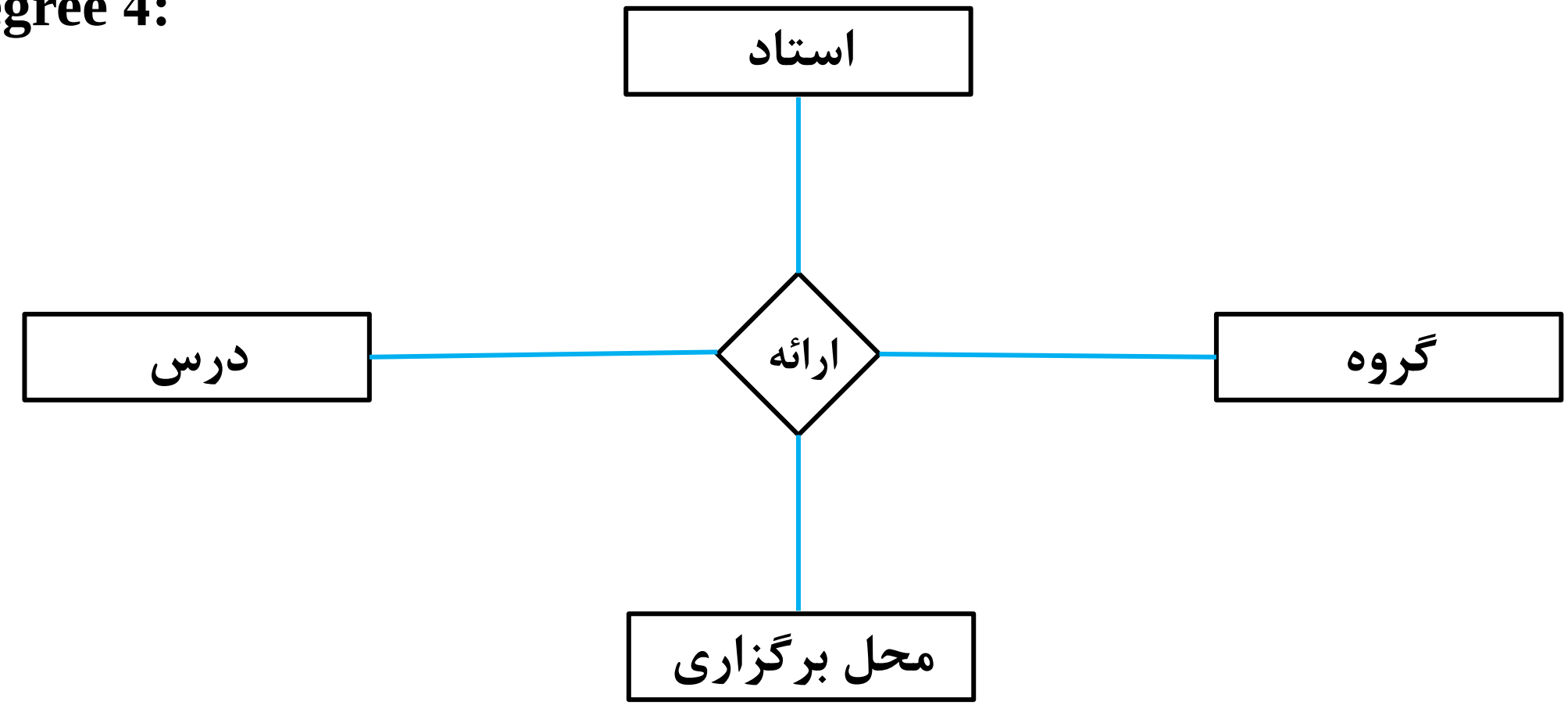
Degree of Relationship

Degree 3:



Degree of Relationship

Degree 4:



Cardinality of Relationship

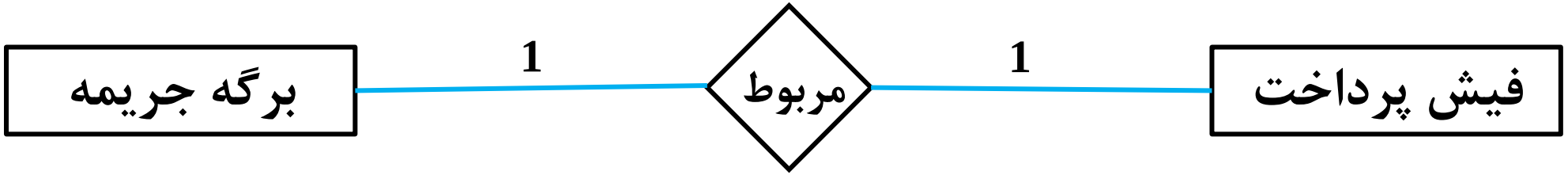
Types of Cardinality:

1) 1 : 1

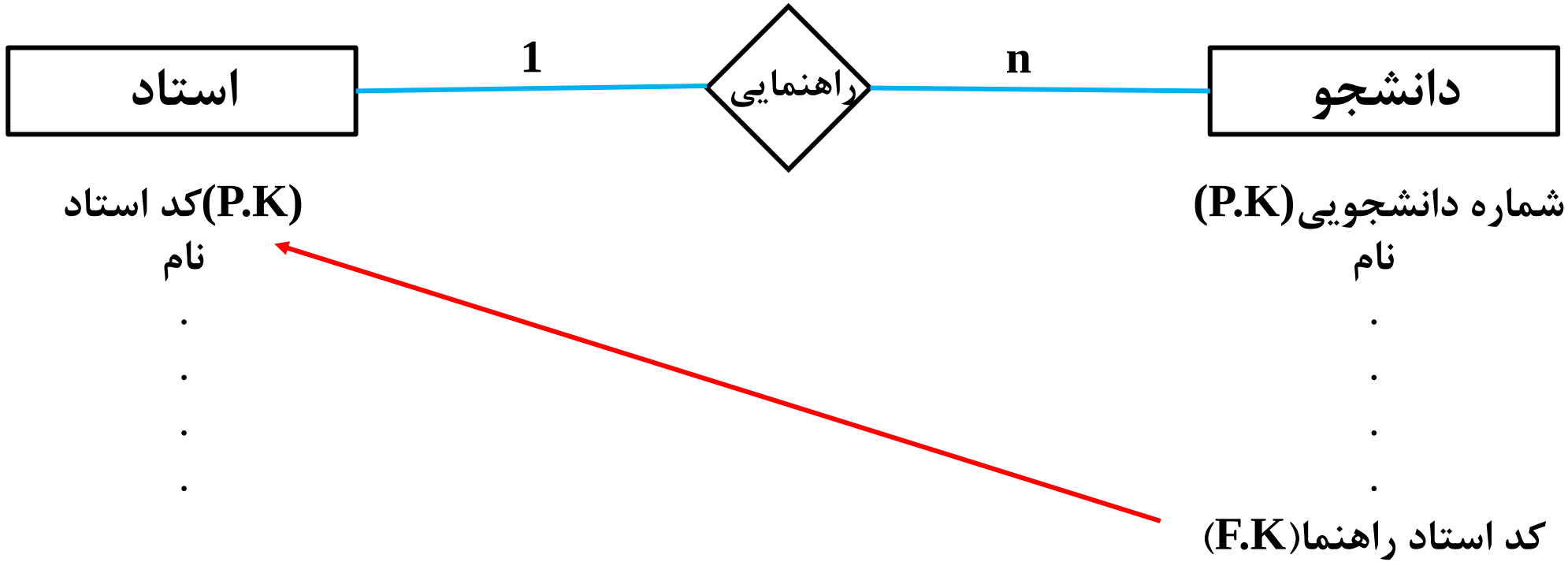
2) 1 : n

3) n : n

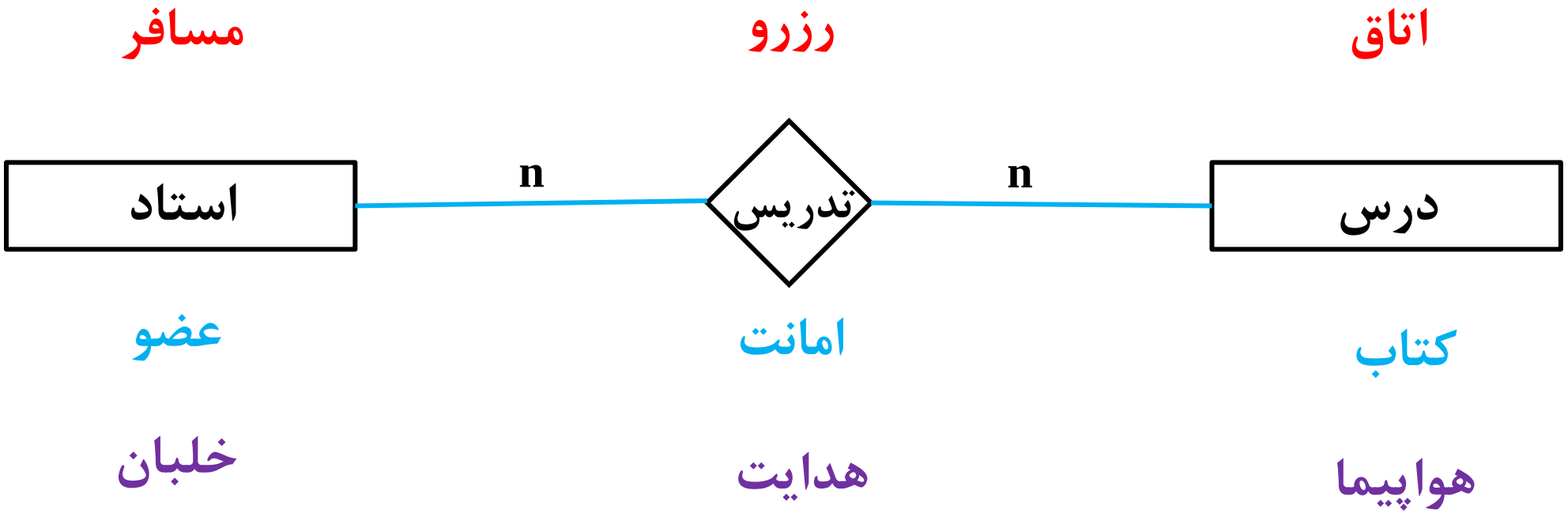
1 : 1



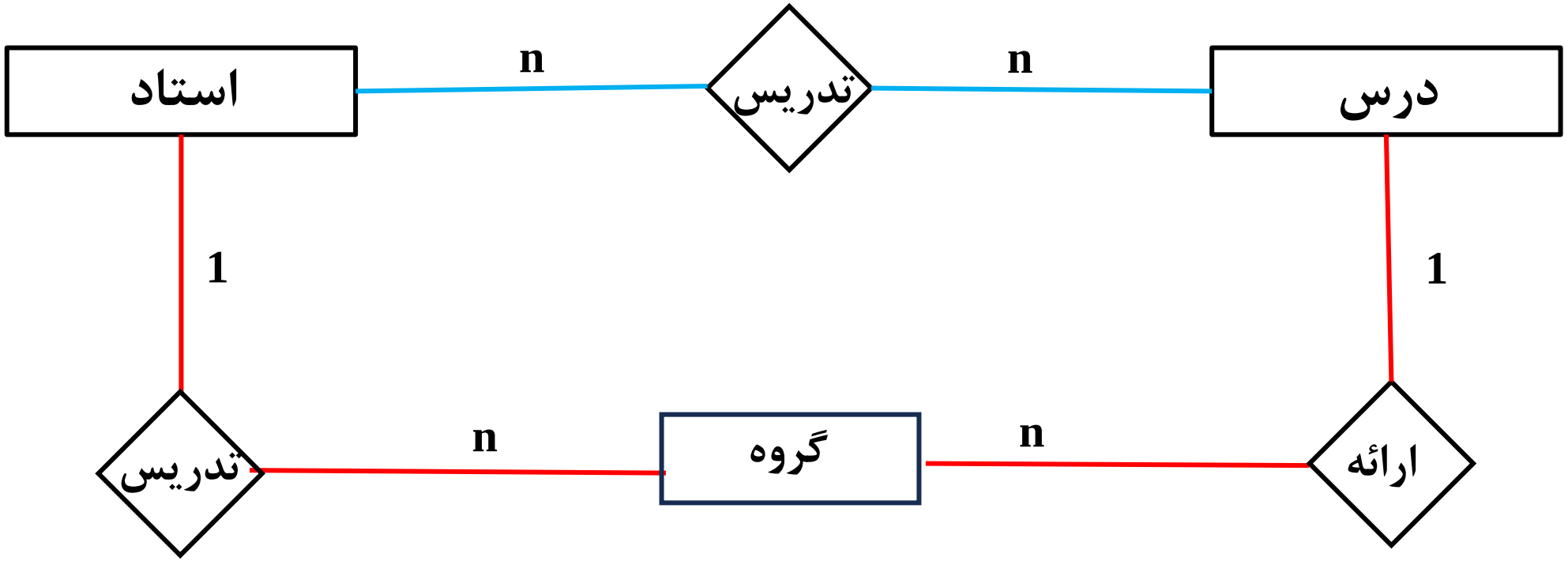
1 : n


استاد
1
راهنمایی
n
دانشجو
کد استاد(P.K)
نام
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.
شماره دانشجویی(P.K)
نام
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.
کد استاد راهنما(F.K)

n : n


مسافر
رزرو
اتاق
استاد
n
تدریس
n
درس
عضو
امانت
کتاب
خلبان
هدایت
هواپیما

n : n



رزرو

امانت

پرواز