# Information Systems and Databases

**First Semester 2017/2018**

## Part 1

**Grupo 39**

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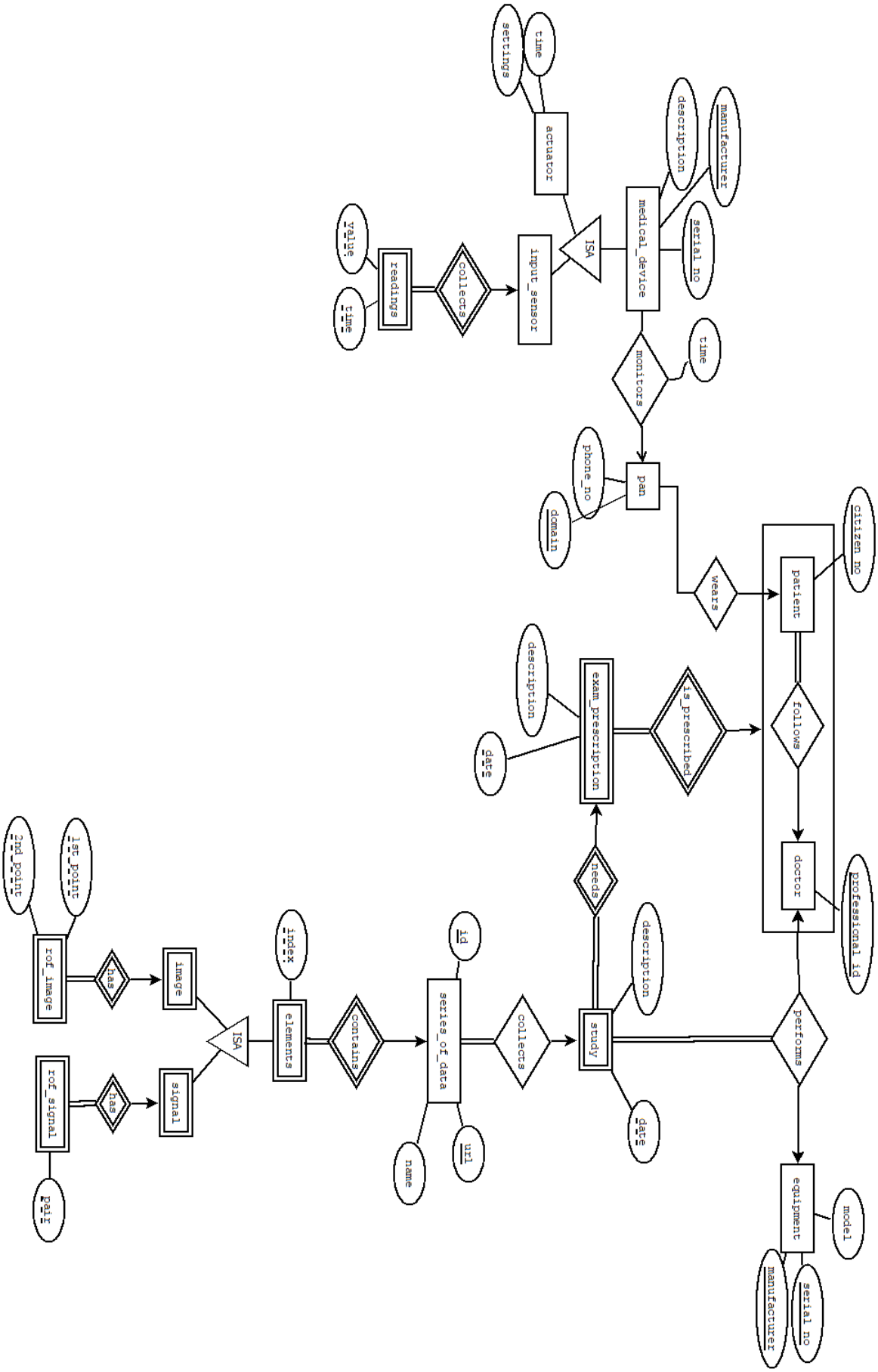
# 1 E-R Model


settings
time
actuator
description
manufacturer
value
time
readings
collects
input_sensor
ISA
medical_device
serial no
monitors
time
phone_no
domain
pan
wears
patient
citizen no
follows
description
date
exam_prescription
is_prescribed
doctor
professional id
needs
description
id
index
2nd_point
1st_point
roi_image
has
image
ISA
elements
contains
series_of_data
collects
study
date
performs
roi_signal
has
signal
pair
name
url
equipment
model
manufacturer
serial no

# 2 Relational Model

In this section the previous diagram is converted into a set of tables in the following relational model:

$table_1(\underline{column_2}, column_3, column_4, \ldots)$
$column_2 : \mathrm{FK}(table_2)$
$column_3, column_4 : \mathrm{FK}(table_3)$
$\ldots$

## 2.1 Entities

$medical\_device(\underline{serial\_no}, \underline{manufacturer}, description)$

$pan(\underline{domain}, phone\_no)$

$patient(\underline{citizen\_no})$

$series\_of\_data(\underline{id}, \underline{url}, name)$

$equipment(\underline{serial\_no}, \underline{manufacturer}, model)$

$doctor(\underline{professional\_id})$

$elements(\underline{url\_index}, index)$

## 2.2 ISA

$elements(\underline{url}, \underline{id}, \underline{index})$
$url, id : \mathrm{FK}(series\_of\_data)$

$actuator(\underline{serial\_no}, manufacturer, time, settings)$
$serial\_no, manufacturer : \mathrm{FK}(medical\_device)$

$input\_sensor(\underline{serial\_no}, \underline{manufacturer})$
$serial\_no, manufacturer : \mathrm{FK}(medical\_device)$

$readings(\underline{serial\_no}, \underline{manufacturer}, \underline{value}, \underline{time})$
$serial\_no, manufacturer : \mathrm{FK}(medical\_device)$

$exam\_prescription(\underline{citizen\_no}, \underline{professional\_no}, \underline{date}, decription)$
$citizen\_no : \mathrm{FK}(patient)$
$professional\_no : \mathrm{FK}(doctor)$

$study(\underline{professional\_no}, \underline{serial\_no}, \underline{manufacturer}, \underline{date}, description)$
$professional\_no : \mathrm{FK}(doctor)$
$serial\_no, manufacturer : \mathrm{FK}(medical\_device)$

$image(\underline{id}, \underline{url})$
$url, id : \mathrm{FK}(series\_of\_data)$

$signal(\underline{id}, \underline{url})$
$url, id : \mathrm{FK}(series\_of\_data)$

$rof\_image(\underline{id}, \underline{url}, \underline{1stpoint}, \underline{2ndpoint})$
$url, id : \mathrm{FK}(series\_of\_data)$

$rof\_signal(\underline{id}, \underline{url}, \underline{pair})$
$url, id : \mathrm{FK}(series\_of\_data)$

## 2.3 Relationships

*collects*(*value*, *time*, *serial_ no*), *manufacturer*
*value*, *time* : FK(*readings*)
*manufacturer*, *serial_ no* : FK(*medical_ device*)

*monitors*(*domain*, *serial_ no*), *manufacturer*, *time*
*domain* : FK(*pan*)
*manufacturer*, *serial_ no* : FK(*medical_ device*)

*wears*(*citizen_ no*, *domain*)
*citizen_ no* : FK(*patient*)
*domain* : FK(*pan*)

*is_ prescribed*(*date*, *citizen_ no*, *professional_ id*)
*date* : FK(*exam_ prescription*)
*citizen_ no* : FK(*patient*)
*professional_ id* : FK(*doctor*)

*needs*(*citizen_ no*, *professional_ id*, *date*)
*date* : FK(*study*)
*citizen_ no* : FK(*patient*)
*professional_ id* : FK(*doctor*)

*performs*(*date*, *serial_ no*), *manufacturer*, *professional_ id*)
*professional_ id* : FK(*doctor*)
*date* : FK(*study*)
*serial_ no*, *manufacturer* : FK(*equipment*)

*follows*(*citizen_ no*, *professional_ id*)
*citizen_ no* : FK(*patient*)
*professional_ id* : FK(*doctor*)

*collects*(*id*, *url*), *date*)
*id*, *url* : FK(*series_ of_ data*)
*date* : FK(*study*)

*has*(*index*, *1stpoint*, *2ndpoint*)
*index* : FK(*elements*)
*1stpoint*, *2ndpoint* : FK(*image*)

*has*(*index*, *pair*)
*index* : FK(*elements*)
*pair* : FK(*image*)