Homework n.1 - Bruno Palermo s272052
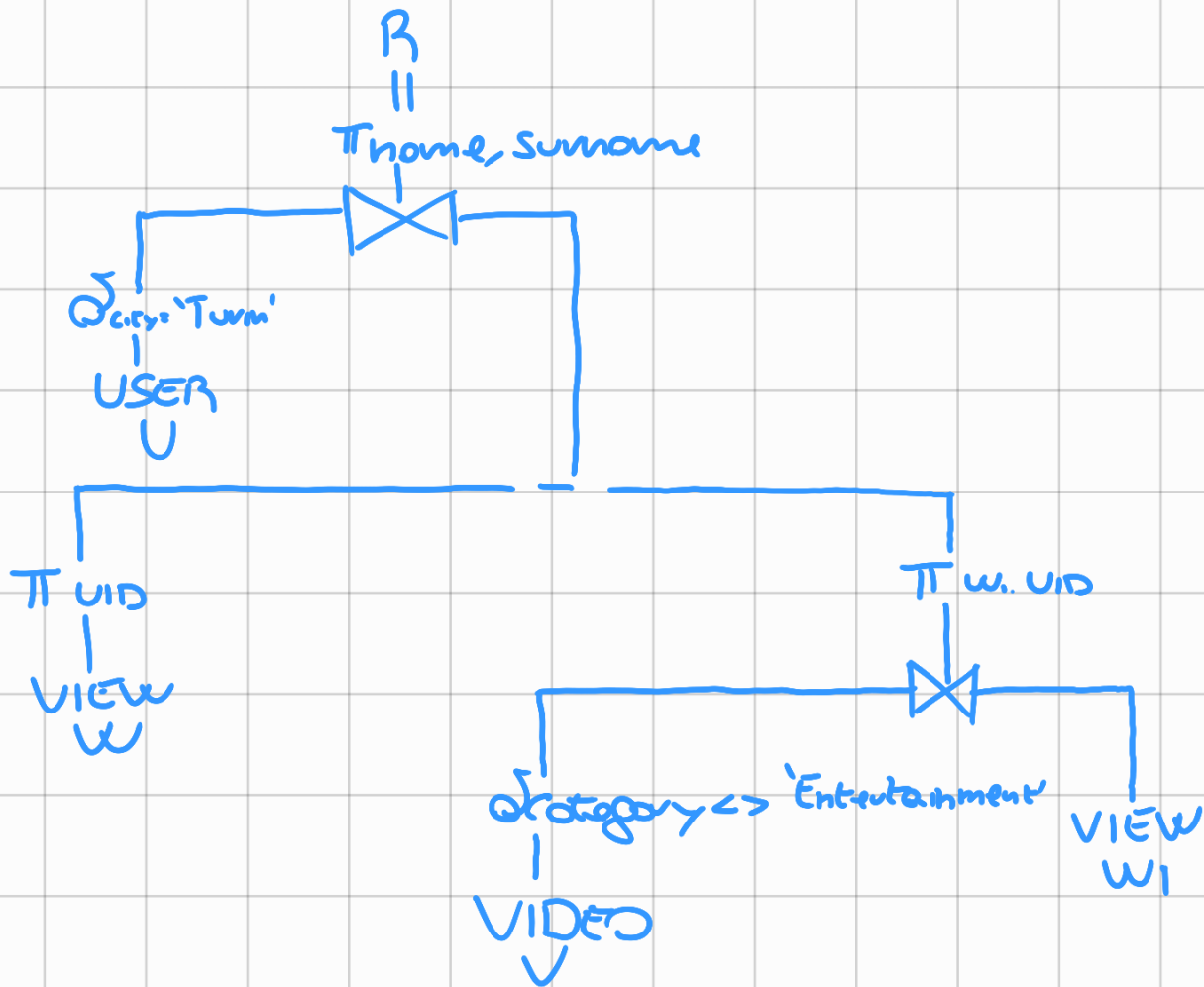## Relational Algebra

USER(<u>UID</u>, Name, Surname, DateOfBirth, City)
VIDEO(<u>VID</u>, Title, Category)
VIEW(<u>UID</u>, <u>VID</u>, # Views)

① Show name and surname of users liveing in Turin who have viewed only videos in the category Entertainment.

R
$\parallel$
$\pi_{name,\ surname}$

$\bowtie$

$\sigma_{city = 'Turin'}$
USER
U

π_{UID}
VIEW
W

$\pi_{W.\ UID}$

$\bowtie$

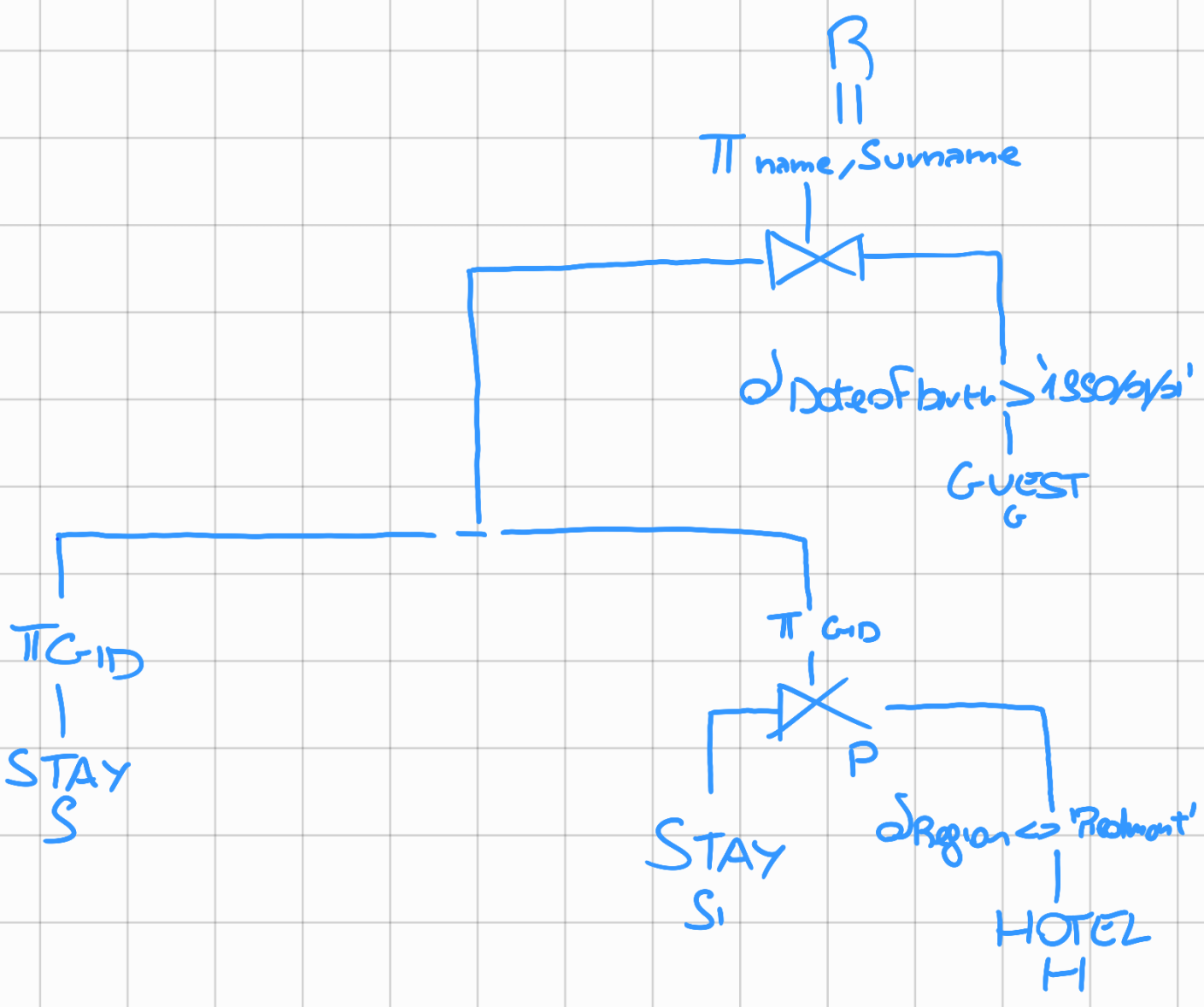$\sigma_{category <> 'Entertainment'}$
VIDEO
V

VIEW
$W1$

②

GUEST (GID, Name, SUrname, DateOfBirth)
HOTEL (HID, Name, CIty, Region, # Stars)
STAY (GID, HID, StartDate, EndDate)

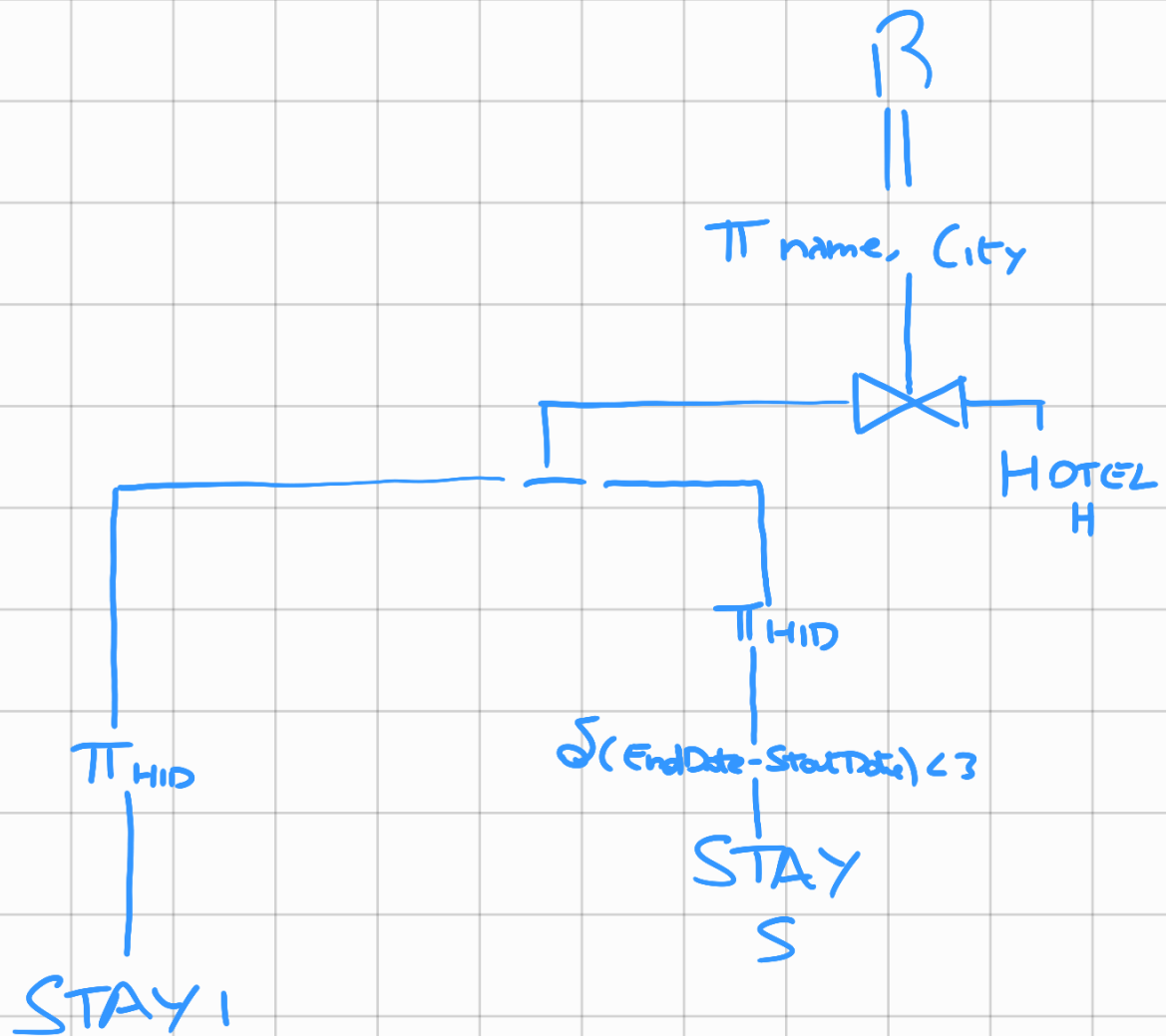**ⓠ** Show name, surname of guests born after 1990/01/01 who have stayed only in hotels located in Piedmont

$$\pi_{name, Surname}$$

$$\bowtie$$

$$\sigma_{DateOfBirth > '1990/6/6'}$$

GUEST
G

$$\pi_{GID}$$

STAY
S

$$\pi_{GID}$$

$$\bowtie_P$$

STAY
S₁

$$\sigma_{Region <> 'Piedmont'}$$

HOTEL
H

P: S₁.HID = H.HID

Show name and city of hotels that have never hosted clients for stays shorter than 3 days

$$\pi_{name,\ City}$$

$$\bowtie \quad HOTEL\ H$$

$$\pi_{HID} \qquad\qquad \pi_{HID}$$

$$\sigma_{(EndDate-StartDate)<3}$$

$$STAY\ S$$

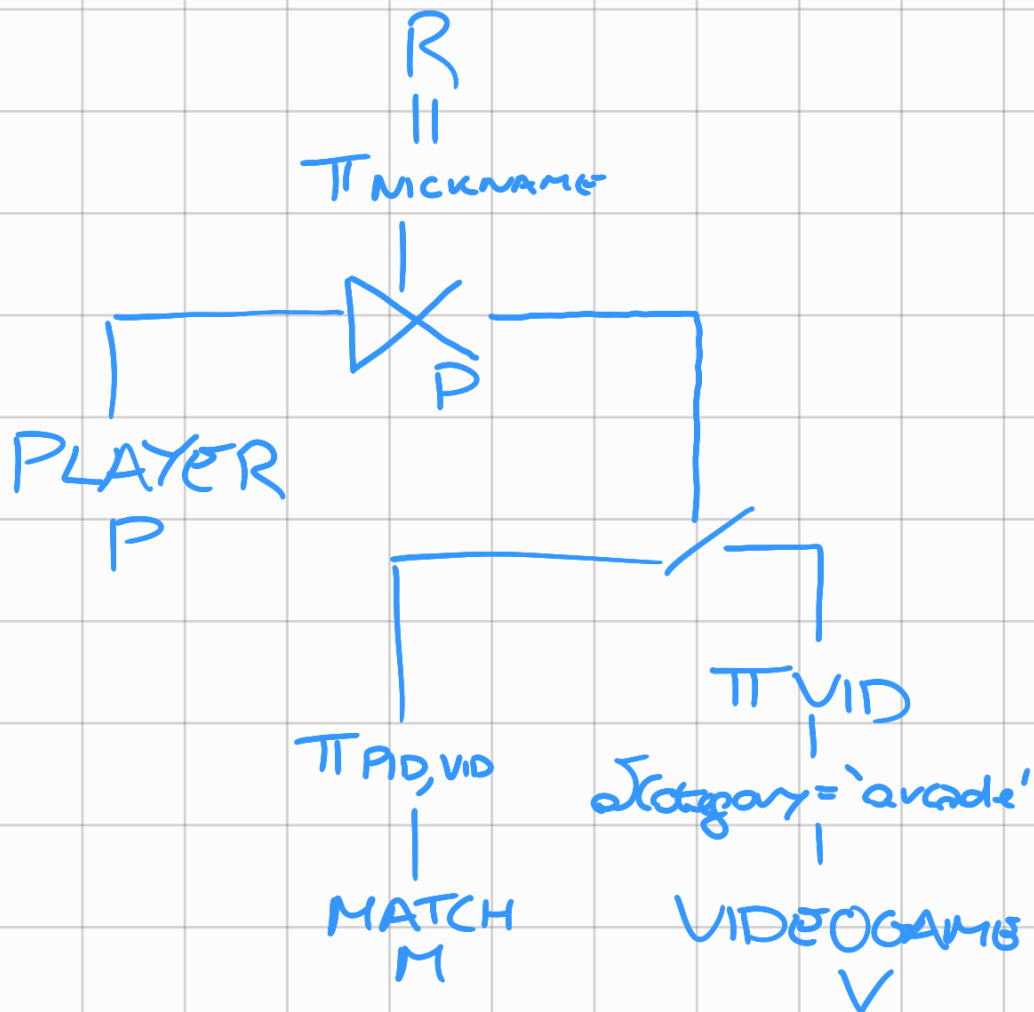$$STAY\ 1$$

3

PLAYER (<u>PID</u>, Nickname, DateOfBirth, Country)
VIDEOGAMES (<u>VID</u>, Name, Category)
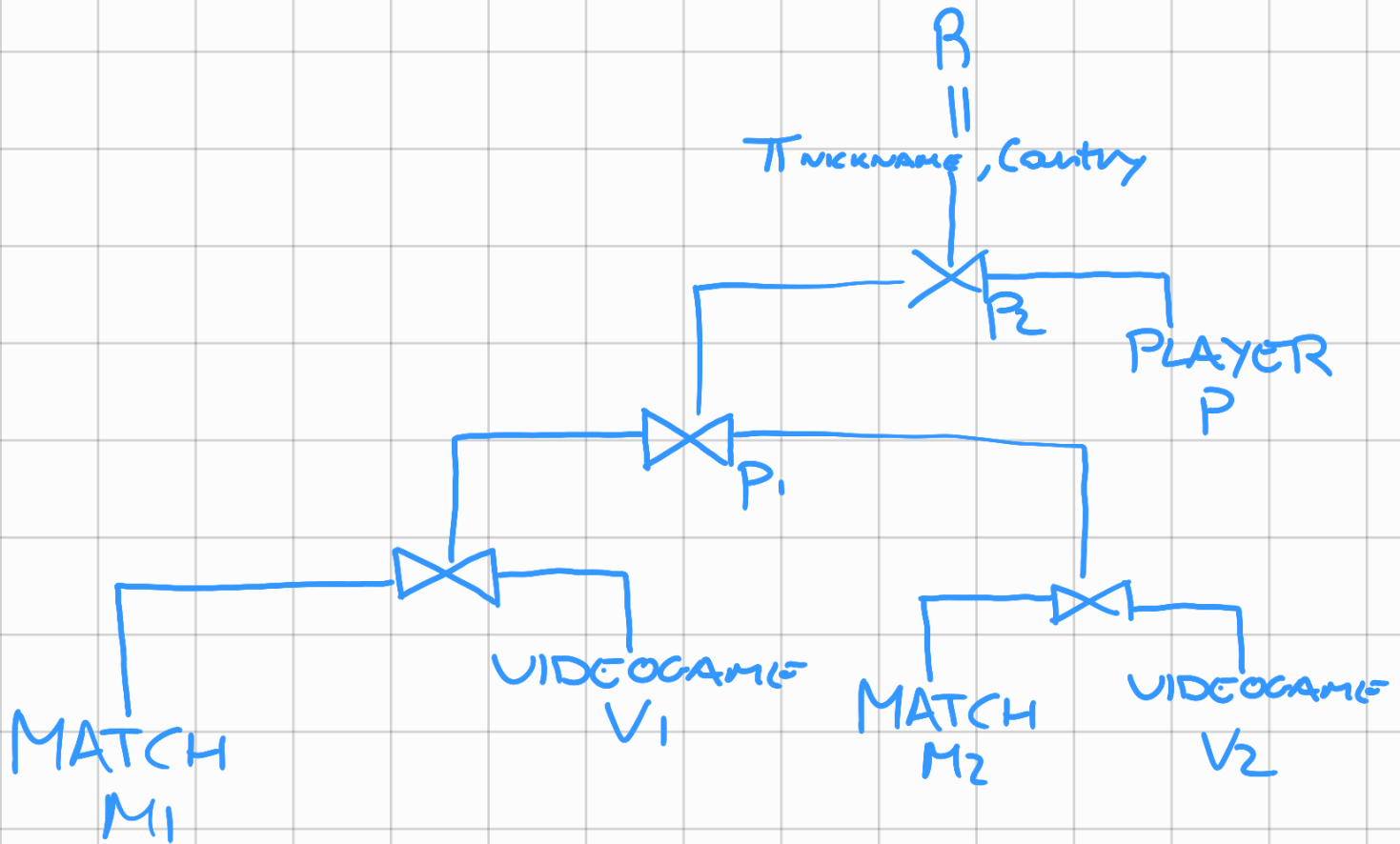MATCH (<u>PID</u>, <u>VID</u>, <u>Date</u>, # Hours)

Q. Show nicknames of players who have played all videogames belonging to category arcade

$$R$$
$$\parallel$$
$$\pi_{NICKNAME}$$
$$\bowtie P$$

PLAYER
P

$$\pi_{PID, VID}$$

MATCH
M

$$\pi_{VID}$$

$$\sigma_{Category = \text{`arcade'}}$$

VIDEOGAME
V

$$P: P.PID = M.PID$$

Show nickname and country of players who played, on the same date, two different videogames belonging to same category.

$$\beta$$
$$\|$$
$$\pi_{\text{NICKNAME, Country}}$$
$$\bowtie \; P_2 \quad \text{PLAYER } P$$

$$\bowtie \; P_1$$

$$\bowtie$$

MATCH M1   VIDEOGAME V1   MATCH M2   VIDEOGAME V2

$P_1:$ $M_1.PID = M_2.PID$ AND $M_1.Date = M_2.Date$
AND $V_1.Category = V_2.Category$ AND
$V_1.VID <> V_2.VID$

$P_2:$ $P.PID = M_1.PID$