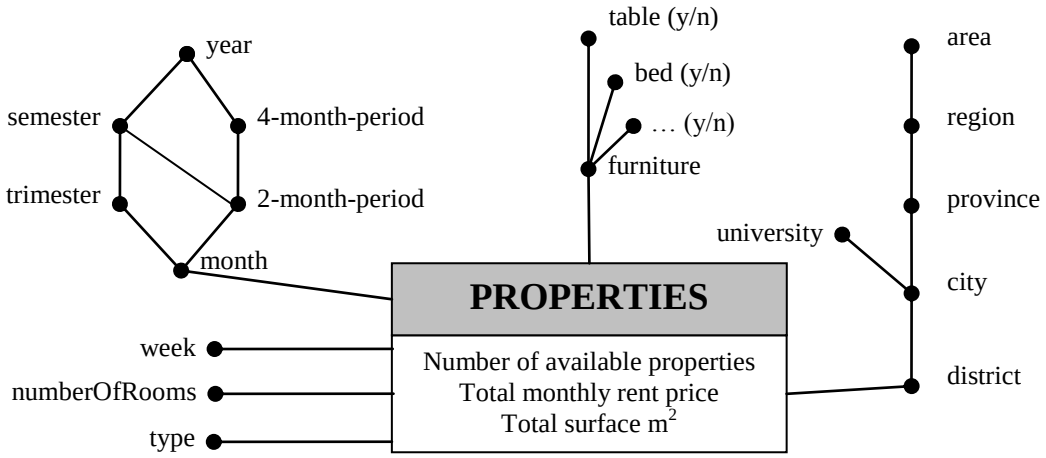
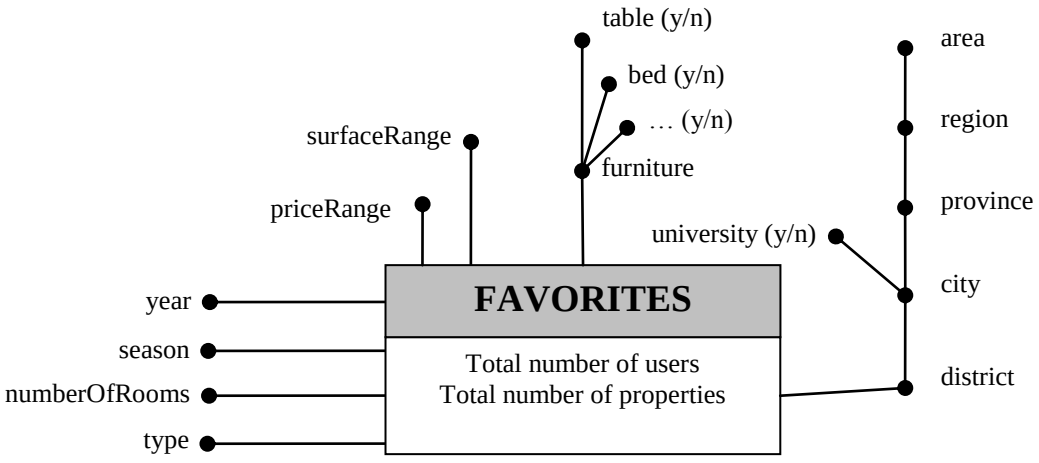
Data Base and Data Mining Group of Politecnico di Torino

Database Management Systems

Politecnico di Torino - School of Information Engineering
Master of Science in Computer Engineering

Conceptual design





Logical design

Primary keys are underlined.

Facts

PROPERTIES (monthID, weekID, typeID, roomsID, furnitureID, locationID, numProperties, totPrice, totSurface)
FAVORITES (yearID, seasonID, typeID, roomsID, furnitureID, locationID, surfaceRangeID, priceRangeID, numUsers, numProperties)

Dimensions

WEEK (weekID, week)	→ only for Properties fact
MONTH (monthID, month, 2m-period, trimester, 4m-period, semester, year)	→ only for Properties fact
TYPE (typeID, type)	→ shared both facts
ROOMS (roomsID, numberOfRooms)	→ shared both facts
FURNITURE (furnitureID, table, bed, …)	→ shared both facts
LOCATION (locationID, district, city, university, province, region, area)	→ shared both facts
SEASON (seasonID, season)	→ only for Favorites fact
YEAR (yearID, year)	→ only for Favorites fact
PRICE_RANGE (priceID, priceMin, priceMax)	→ only for Favorites fact
SURFACE_RANGE (surfaceID, surfaceMin, surfaceMax)	→ only for Favorites fact

Some dimensions could have been directly stored into the fact table, such as the Room dimension.

Since this is a draft, some tables and columns have the same names, but keep in mind that this is discouraged to avoid confusions.

Query A

```
select
    city, month, sum(totPrice)/sum(numProperties),
    ( sum(sum(totPrice)) / sum(sum(numProperties)) ) over (partition by city order by month rows unbounded preceding)
from
    properties p, location l, month m
where
    p.locationID=l. locationID and p.monthID=m.monthID and
    year=2004 and university='y'
group by
    city, month;
```

Query B

```
select
    city, week, sum(numProperties),
    sum(numProperties) / ( sum(sum(numProperties)) over (partition by week) ),
    rank() over (order by sum(numProperties) desc) as position
from
    properties p, location l, month m, week w
where
    p.locationID=l. locationID and p.monthID=m.monthID and p.weekID=w.weekID
    and month='September/2004' and province='Turin'
group by
    city, week
order by
    position;
```

Query C

```
select
    district, surfaceMin, surfaceMax, sum(numUsers) / sum(numProperties) as avgInterestedUsers,
    ( sum(sum(numUsers)) / sum(sum(numProperties)) ) over (partition by district)
from
    favorites f, location l, season s, year y, furniture fu, type t, price_range pr
where
    f.locationID=l.locationID and f.seasonID=s.seasonID and f.furnitureID=fu.furnitureID
    and f.typeID=t.typeID and f.priceID=pr.priceID  and
    season='summer' and year=2005 and type='attic' and city='Rome' and bed='y' and fridge='y' and table='y'
group by
    district, surfaceMin, surfaceMax
```

```
order by
    district, avgInterestedUsers;
```

Query D

```
select
    city, month, year,
    sum(totPrice) / sum(numProperties),
    sum(totPrice) / sum(totSurface),
    ( sum(sum(totPrice)) / sum(sum(numProperties)) ) over (partition by city, year order by month rows unbounded preceding)
from
    properties p, location l, month m, furniture f
where
    p.locationID=l.locationID and p.monthID=m.monthID and p.furnitureID=f.furnitureID and
    bed='y' and table='y' and university='y'
group by
    city, month, year
```

Query E

```
select
    city, sum(totPrice) / sum(numProperties),
    ( sum(sum(totPrice)) / sum(sum(numProperties)) ) over (partition by province)
from
    properties p, location l, month m
where
    p.locationID=l.locationID and p.monthID=m.monthID
    and  month>=9/2004 and month<=11/2004 and region='Piedmont'
group by
    city
```

Query F

```
select
    city, month,
    sum(totPrice) / sum(numProperties),
    sum(totPrice) / sum(totSurface),
from
    properties p, location l, month m, furniture f
where
    p.locationID=l.locationID and p.monthID=m.monthID and p.furnitureID=f.furnitureID
     and year=2004 and university='y' and bed='y' and table='y'
group by
    city, month
```