Conceptual design

**PROPERTIES**
- Number of available properties
- Total monthly rent price
- Total surface m²

**FAVORITES**
- Total number of users
- Total number of properties

- year
- semester
- trimester
- month
- week
- numberOfRooms
- type

- table (y/n)
- bed (y/n)
- … (y/n)
- furniture
- university

- area
- region
- province
- city
- district

- priceRange
- surfaceRange

- year
- season
- numberOfRooms
- type

- table (y/n)
- bed (y/n)
- … (y/n)
- furniture
- university (y/n)
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