CENSUS DATABASE

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About Census:

A **census** is the procedure of systematically acquiring and recording information about the members of a given population. It is a regularly occurring and official count of a particular population. The term is used mostly in connection with national population and housing censuses. Considering scenario of huge population India, there are people with different religion, speaking different languages, with different income levels, The Indian Census is the most credible source of information on Demography (Population characteristics), Economic Activity, Literacy and Education, Housing & Household Amenities, Urbanization, Fertility and Mortality, Scheduled Castes and Scheduled Tribes, Language, Religion, Migration, Disability and many other socio-cultural and demographic data. For such a large data there is always a need of a good database.

Scope of Census database:

It involves keeping records of all the details of people living in India. For eg. Full Name, sex, marital status occupation, family details, residential address, date of birth, placed of birth, educational qualifications, religion, caste, types of facilities people have in their home. It also covers types of energy source, light source, fuel source, electronic equipment and vehicle people use. It also keeps track of usage of all houses.

Using this database we can have following useful information,

- All families which are below poverty line
- Average salary of person state, city, district or taluk.
- Literacy rate in any state, city, district or taluk.
- Population of any state, city, district or taluk.
- Gender ratio of India or of any particular region.
- Average Family size.
- How many citizens are graduated in India?
- Total population of India
- Population density
- Sex ratio
- Child sex ratio

And many more……

Database Schema:

Terms Used
home_id , : unique home id
pid : unique person id
tno: unique taluk no

Home
(home_id , ownership_status(Owned ,Rented ,Other), no_of_dwelling_rooms, no_of_married_couples, drinking_water_within_premices (Y or N), **water_source_typeno**, **light_source_typeno**, latrine_within_premises (Y or N or null), **fuel_typeno,** bathing_facility, availability_of_kitchen(Y or N), **use_of_house_typeno**, **material_no,head_pid**)
Foreign Keys:-
water_source_typeno references to water_source,
light_source_typeno references to light_source,
use_of_house_typeno references to use_of_house,
material_no references to material
head_pid references to pid of person.

light_source
(light_source_typeno, light_source_type**)**

Fuel
(fuel_typeno, fuel_type)

w**ater_source**
(water_source_type_no , water_source_type)

use_of_house
(use_of_house_typeno, use_of_house_type)

taluk
(tno, tname, dname, **sname**)
Foreign Keys:-
sname references to state_code in state_codes ,

address
(**home_id** , home_no, name_of_society , ward_no, town_or_village_name**, tno**)
Foreign Keys:-
home_id references to home,
tno references to taluk

el_items_type
(item_type_no**,** item_name)

electronic_items_of_house
(**home_id ,Item_type_no**);
Foreign Keys:-
home_id references to home,
item_type_no references to electronic_items_of_house,

vehicle_name
(vehicle_typeno,vehicle_type**)**

vehicle
(**home_id**, **vehicle_typeno)**
Foreign Keys:-
home_id references to home,
vehicle_typeno references to vehicle_name.

material
(material_no, **roof_no**, **wall_no**, **floor_no**)
Foreign Keys:-
roof_no references to roof_material,
wall_no references to wall_material
floor_no references to floor_material

roof_material (roof_no,roof_type)

wall_material (wall_no,wall_type)

floor_material (floor_no,floor_type)

KnownLanguages
(**pid** , language_name)
Foreign Keys:-
pid references to person,

person
(pid, **home_id**, fname, lname, occupation, **non_economic_activity_no**, mode_of_travel_to_work, **attendance_no**, DOB, edu_level, **marital_status_no**, caste (sc ,st ,obc, other), religion, **disability_no**, mother_tongue, literacy_status(literate Illiterate), sex(Male Female Other), no_of_children (0,1,2 etc.))
Foreign Keys:-
home_id references to home,
non_economic_activity_no references to non_economic_activity
marital_status_no references to marital_status
disability_no references to disability

non_ecomonic_activity
(non_economic_activityno, non_economic_activity_type)

marital_status
(marital_status_no,marital_status_type)

Disability
(disability_no,disability_type)
State_Of_Attendance
(attencance_no,attendance_type**)**

Relation with Head
(**pid**, relationship)
Foregn Keys:-
pid references to person.
State_codes
(state_code,state_name,area**);**

FDs
home_id → ownership_status, no_of_dwelling_rooms, no_of_married_couples, drinking_water_within_premices, water_source_typeno, light_source_typeno, latrine_within_premises , fuel_typeno, bathing_facility, availability_of_kitchen, use_of_house_typeno, material_no,head_pid

light_source_typeno → light_source_type
fuel_typeno→fuel_type
water_source_type_no → water_source_type
use_of_house_typeno→use_of_house_type
tno→tname, dname, sname
home_id→home_no, name_of_society , ward_no, town_or_village_name, tno
item_type_no→item_name
home_id→Item_type_no
vehicle_typeno→vehicle_type
home_id→vehicle_typeno
material_no→roof_no, wall_no, floor_no)
roof_no→roof_type
floor_no→floor_type
pid →language_name

Here in all relations only PK determines all other attributes. So, Closure of PK in every relation contains all attributes of that relation. So, all relations are in BCNF.

Queries:

/*1. Retrieve all homes which are below poverty line */

```
SET SEARCH_PATH TO census;

select (person.fname) as Head_fname ,(person.lname) as
Head_fname,t1.home_id,t1.total_income

from

     (SELECT home.home_id,home.head_pid , (sum(salary)) AS
total_income

     FROM  person NATURAL JOIN home

     GROUP BY home.home_id

     HAVING sum(salary)<=100000) as t1 join person
on(t1.head_pid=person.pid)
```

/*2.Retrieve average salary of person in Gujarat */

```
SET SEARCH_PATH TO census;

SELECT (avg(salary))As avg_salary_per_person_of_Gujarat

FROM address NATURAL JOIN taluk NATURAL JOIN person

WHERE taluk.sname='GJ';
```

/*3. • Retrieve literacy rate in say rajkot gujarat */

```
SET SEARCH_PATH TO census;

SELECT ((e1.literate_of_rajkot1::decimal(5,2)) /(e2.total_of_rajkot ::
decimal(5,2))*100)::decimal(5,2) AS "Literacy rate of Rajkot"

FROM(SELECT (count(person.pid))As literate_of_rajkot1

FROM address NATURAL JOIN taluk NATURAL JOIN person

WHERE taluk.dname='Rajkot' and taluk.sname='GJ'

and person.edu_level is NOT NULL)As e1,

(SELECT (count(person.pid))As total_of_rajkot

FROM address NATURAL JOIN taluk NATURAL JOIN person

WHERE taluk.dname='Rajkot' and taluk.sname='GJ' )As e2;
```

/*4. • Find population of Vododara */

```
SET SEARCH_PATH TO census;
SELECT (count(person.pid))As "Population of Vadodara"
FROM address NATURAL JOIN taluk NATURAL JOIN person
WHERE taluk.dname='Vadodara';
```

/*5. • What is gender ratio in India state wise */

```
SET SEARCH_PATH TO census;
select
r1.sname,(((fno::decimal(5,2)/tno::decimal(5,2))::decimal(5,2)*1000)::
decimal(5,0)) as "Sex Ratio"
from (select count(person.pid) as fno,taluk.sname
from person natural join address natural join taluk
where person.sex ='F'
group by taluk.sname) as r1 natural join
(select count(person.pid) as tno,taluk.sname
from person natural join address natural join taluk
where person.sex ='M'
group by taluk.sname) as r2;
```

/*6. • List down all citizens who are Hindu and had salary more than 1 lakhs. */

```
SET SEARCH_PATH TO census;
select *
from person
where religion='Hindu' and salary>=100000;
```

/*7.• Average no of persons living in a home DONE BY STORED PROCEDURE*/

```
select find_ratio() AS "person per Home";
```

/*8. • Retrieve all senior citizen of vadodara city */

```
SET SEARCH_PATH TO census;

select person.*

from person natural join address natural join taluk

where (current_date-person.dob)::integer /365 > 60 and
taluk.tname='Vadodara'
```

/*9. • Retrieve all citizen who are student */

```
SET SEARCH_PATH TO census;

select *

from person

where person.occupation = 'student';
```

/*10. • • Find Total population of India */

```
SET SEARCH_PATH TO census;

select count(pid)

from person
```

/*11. •• Density of population per sq. km */

```
SET SEARCH_PATH TO census;

select sname, count(pid)as population, area ,(count(pid)/area)as
"Populaton Density"

from person natural join address natural join taluk natural join
state_codes

group by sname ,area
```

/*12. • • • Child sex ratio of india*/

```
SET SEARCH_PATH TO census;

select((fno::decimal(5,2)/tno::decimal(5,2))::decimal(5,2)*1000)::deci
mal(5,0) as child_sex_ratio

from (select count(person.pid) as fno from person where person.sex
='F' and (current_date-person.dob)::integer /365 < 12) as r1,

(select count(person.pid) as tno from person where person.sex ='M' and
(current_date-person.dob)::integer /365 < 12) as r2;
```

Trigger's description:

1. Update_material_trigger1
   Whenever there comes a new entry in Roof table, it updates material table making new combinations of different materials.
2. Update_material_trigger2
   Whenever there comes a new entry in Wall table, it updates material table making new combinations of different materials.
3. Update_material_trigger3
   Whenever there comes a new entry in Floor table, it updates material table making new combinations of different materials.
4. Update_stat
   Updates statistics relation whenever update is made in person.

Stored Procedures' Description:

1. Find_info
   Using this stored procedure, we can get specific info of specific state like, population, area, literacy rate, sex ratio.

   Ex.
   ```
   select find_info('RJ','population');
   select find_info('GJ','area');
   select find_info('GJ','literacy_rate');
   select find_info('GJ','sex_ratio');
   ```

2. Find_ratio
   this function is to find average no of person living in a home.