



AN EFFECTIVE APPROACH FOR GRAM PANCHAYAT THROUGH IMPLEMENTATION OF CONVENTIONAL DATABASE

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Abstract: *Transaction and its processing is most critical in almost all ventures. Government is also suffering of the problem of production of huge amount of data and its reference when ever requires. Here in the paper we have address very similar situation of Gram Panchayat and we have tried to address this problem through implementation of the conventional database system. Here we have stored different categories of data into separate tables and all tables are controlled through a central table called homefamily_detail. Once the data is stored through this electronic media, it becomes much efficient and effective as retrieval and searching of complex and multi referenced records becomes easy. We have collected data from UttarSanda Gram Panchayat, Dist: Kheda, State: Gujarat for the implementation of these model. Data are collected, analyzed and then we have proposed this model.*

Keywords: *E Gram Panchayat, Data Processing, Databases*

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1. INTRODUCTION

“Gram Panchayat” is the most important part of villages because it the service provider hub within the center. They are providing services like Birth Registration, Death Registration, Property Assessment, Tax Collection, Account, Health Care and Issuance of various certificates. We have observed that issuing documents is very time consuming process and maintaining records is also too complicated.

The entire process is modularized in terms of wards. Each ward has been assigned one person as an in-charge of it. He/She is supposed to look after the development and trouble shooting of the concern problem within the ward.

Main Objective behind converting “Gram Panchayat” to “E- Gram Panchayat” is to maintain the records in proper form so that all these tedious tasks became simpler and fast in terms of response time.

As sticking with our prime objective, we will explain each process of Gram Panchayat thoroughly.

For Example, in Birth Registration process, basic information of new born baby is recorded like name, birth time, birth date, birth place etc. So in future if it required than it will be available. As the process is manual one, the information retrieval becomes almost impossible or likely to be very difficult. These are the primary out come of transformation of “Gram Panchayat” to “E – Gram Panchayat”.

Similarly, the same process is repeated in case of death registration with slight variation. As far as death registration is concern, they are keeping records like name, death date etc. and all his/her belongings. Here, not only record keeping is important but the person who is passed away, his/her belongings are supposed to be transferred under the next head suggested by the family member of the person. This transformation is very tedious and complex too as many belongings are required different sort of process to transform under different head.

In Property Assessment, record of property owner is maintained. Each transaction of that property is required to be updated in the record of Gram Panchayat. If the seller/buyer failed to update that record then subsequent transaction may not be possible of such property. So it is one of the biggest challenge for the Gram Panchayat to monitory such



transactions and compel the property owner to synchronize with the records upon each transaction of their property.

In Tax Collections, they are collecting different types of taxes based on the services they are providing such as they are providing drinking water facility so they are liable to collect water tax. Based on the valuation of your property they are collecting Home Tax. Other services such as Street Light, Cleanliness and Drainage system, they are collecting fix amount of tax for all such services.

As a residents of village if you want any proof or any type of certificates you can get from “Gram Panchayat”. Suppose you want education loan from a bank and for that you want caste certificate than it will be issued from “Gram Panchayat”.

If you are farmer and get avail with the benefits offer by the government, then you will required “Farmer Certificate” which is been also issued by Gram Panchayat.

To maintain health care of the society, they are also providing Health care facility. There is free vaccination facility for pregnant women, children. Some medicines are also available at cheap rate. To keep record they are using manual system but it is hard and complex too to find detail vaccination record of one particular child.

2. DATA COLLECTION AND MAPPING

As “Gram Panchayat” is providing different types of facilities and also keeping the records of that but all the process is manually so it is very time consuming and hectic process. To maintain records they are using different manual book for each services. They are providing services listed below:

- 1) Birth/Death Certificate
- 2) Marriage Certificate
- 3) Tax Collections
- 4) Other Certificates
- 5) Property Assessment
- 6) Health Care

We had covered some of the services:

1) BIRTH/DEATH CERTIFICATE

In Birth/Death Certificate they are keeping records up to 10 years. A Person who are born in Village Hospital or else at home than only they register and issue birth certificate. For



Registration they need written application which contains name and birth date of child and registration charge. As they are maintaining record manually it is hard to keep mapping of record so to solve this problem we can store the data in below format.

Field Name	Type	Constraint	Remarks
RegistrationId	Number(4)	Primary Key	Unique number of application
Name	Text(20)		Name of the Person
DOR	Date/Time		Birth/Death Date of Person
Time	Date/Time		Birth/Death Time of Person
MotherName	Text (20)		Mother name of Person
FatherName	Text (20)		Father name of Person
Add_Place	Memo (2000)		Address of Birth/Death Place
Place	Text (20)		Place of Birth/Death
Sex	Text (1)		Gender of Person
District	Text (15)		District name
Taluka	Text (15)		Taluka Name
State	Text (15)		State Name
City	Text (15)		City Name
Perma_Add	Memo(2000)		Permanent Address of Person
Reg_Date	Date/Time		Registration Date for Birth/Death Certificate
Issue_Date	Date/Time		Date on which Certificate Issued
Remarks	Memo(1000)		Remarks if any
RegistrationFee	Number(6,2)		Charge of Certificate
CertificateId	Number	Foreign Key	Reference Certificate Detail Table

Table-1 Registration Detail

Here Registration No is unique so based on Registration No we can get record of particular person and based on CertificateId we can identify which type of registration is Birth/Death.

2) TAX COLLECTIONS

In Tax Collections all the taxes are on yearly basis and based on the services they are providing but some time it is possible that they are forgetting to generate the bill and all the remaining bills will come together. As they are writing the bill manually so it is time consuming process. The last payment information is also maintained in the manual book so it is hard to find the record of individual, so to solve this problem we can store the data in below format. As taxes are collected home wise it is important to get the updated name of home owner.



Field Name	Type	Constraint	Remarks
TaxId	Number(3)	Primary Key	Unique No of Tax Type
TaxType	Text(15)		Types of Taxes
TaxAmount	Number(6,2)		Charges of Taxes

Table-2 Tax Charges

Field Name	Type	Constraint	Remarks
BillId	Number(6)	Primary Key	Unique Id of Bill
BillDate	DateTime		Date on which bill generated
TotalBillAmount	Number(6,2)		Total Bill Amount
HomeNo	Number(6)	Foreign Key	Home No of Owner

Table-3 Tax Bill

Field Name	Type	Constraint	Remarks
TranBillId	Number(6)	Primary Key	Unique Id of Bill Detail
BillId	Number(6)	Foreign Key	Reference Tax Bill Table
TaxId	Number(6)	Foreign Key	Reference Tax Bill Table
TaxRate	Number(8,2)		Contains Rate Charge of Tax

Table-4 Bill Detail

So using the specified system employee doesn't need to write bill manually and all the Tax Rates will club in one bill so it save time and paper.

3) OTHER CERTIFICATES

Other certificates such as caste certificate, farmer certificate, income certificate and resident certificate are also provided by them. Process is same for issuing those certificates. They need written application which includes name, photograph, registration charge and type of certificate. So to get information of no. of certificates issues per year is hard because it is manually. To solve this problem we can store data in below format



Field Name	Type	Constraint	Remarks
CertificateId	Number(3)	Primary Key	Unique Certificate Id
CertificateType	Text(25)		Types of Certificates
TaxCertificateCharge	Number(6,2)		Charges to Issue Certificates

Table-5 Certificate Charges

Field Name	Type	Constraint	Remarks
IssueCerId	Number(3)	Primary Key	Unique Issued Id No
CertificateId	Number(3)	Foreign Key	Type of Certificate(Reference from Certificate Charge Table)
IssueDate	Date/Time		Date on which Certificate Issue
Content	Memo(1000)		Detail description of Certificate
PersonRegId	Number(6)	Foreign Key	Unique Record (Reference from Home Family Detail Table)

Table-6 Certificate Issue Detail

So using the above system at the end of the year or month we can get total no. of certificates are issue and no. of certificates issue by type.

4) HEALTH CARE

To Keep Villager healthy they are giving health care facility. In village 40% villagers are poor and they can't afford costly medicine and vaccination. There is free vaccination facility for pregnant women, children.

To maintain the record they are using manual book which contains information such as vaccination date, type of vaccination, next vaccination date, name, age, weight and so on. For personal record they are giving "Mamta Card" which contains all the information from pregnancy to the current vaccination status of child. Vaccination data is most important so in case if in future any one needed it is hard to find the detailed record. So to solve this problem we can store data in below format.

Field Name	Type	Constraint	Remarks
MamtaCardId	Number(6)	Primary Key	Unique Mamta Card Id
IssueDate	Date/Time		Date on which Card Issued
PersonRegId	Number(6)	Foreign Key	Unique Record (Reference from Home Family Detail Table)

Table-7 Mamta Card Issue Detail



Field Name	Type	Constraint	Remarks
VisitedId	Number(6)	Primary Key	Unique Visited Id
VisitedDate	Date/Time		Date on which mother visited
VaccinationType	Text(25)		Name of vaccination
Medicine	Memo (500)		Medicine if any she had taken
MamtaCardId	Number(6)	Foreign Key	Mamta Card Id (References from Mamta Card Issue Detail)

Table-8 Mother Visit Detail

Field Name	Type	Constraint	Remarks
VaccinationId	Number(6)	Primary Key	Unique Vaccination Id
VaccinationDate	Date/Time		Date on which vaccination given
Vaccination Type	Text (25)		Vaccination name
Medicine	Memo(500)		Medicine if any taken
Next_Vacc_Date	Date/Time		Date on which next vaccination have to given
MamtaCardId	Number(6)	Foreign Key	Mamta Card Id (Reference from Mamta Card Issue Detail)
PersonRegId	Number(6)	Foreign Key	Reference From Family Person Detail (Person Id of Child is stored)

Table-9 Child Vaccination Detail

As described above, the Gram Panchayat is maintaining these much complex information without any electronic or efficient approach/media. The current process is completely manual and records are maintained on a register. In this regard, the analysis, report generation, searching, updating or deletion becomes very difficult or a big source of anomalies. It is not monitoring the duplications and inconsistencies also. So, our idea is to cutover the entire system on a computer system with some necessary modifications for the improvements. In order to achieve this enhanced system, we need to add one master table to make slave all the current tables of different categories.

Field Name	Type	Constraint	Remarks
HomeNo	Number(6)	Primary Key	Unique Home No in Village
Address	Memo(2000)		Home Address
VillageName	Text(20)		Name of Village
PropertyVal	Number(18,2)		Valuation of Property according to Gantri
NoOfFamily	Number(3)		No of Families in Home

Table-10 Home Detail



Field Name	Type	Constraint	Remarks
PersonRegId	Number(6)	Primary Key	Unique Person Id
HomeNo	Number(6)	Primary Key/Foreign Key	Reference Home Detail Table
FamilyId	Number(6)	Primary Key/Foreign Key	Reference Home Family Detail Table
PersonName	Text(20)		Name of Familiy Member
DOB	Date/Time		Birth Date of Person
Gender	Text(1)		Gender of Person
Occupation	Text(20)		Occupation of Person

Table-11 Home Family Detail

3. RESEARCH METHODOLOGY

We used Microsoft Access 2007 Analysis Service to build Data Warehouse for E-Gram Panchayat System. The process of extracting data from Gram Panchayat and loading into Data Warehouse is commonly known as ETL, which stands for extraction, transformation, and loading. To implement ETL process Microsoft Access 2007 was used and Data Warehouse was established using Microsoft Analysis Services.

4. DESIGN OF PROPOSED MODEL

Once data is organized in the well suited table of each category, we can process the data in more proper and effective way. As we have implemented 11 different tables and maintain dependency between them to avoid duplications and anomalies of database. The data is arranged within the database as shown in the following diagram.



Relationships for GramPanchayat
Monday, March 25, 2013

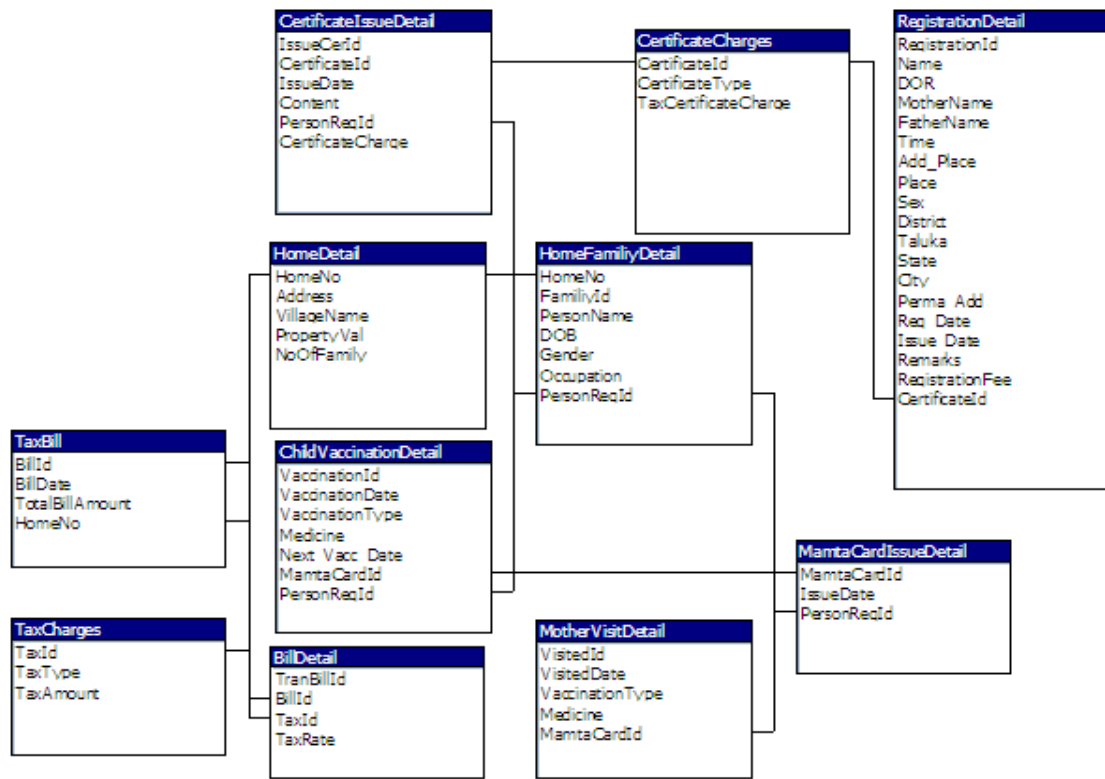


Figure – 1 Relationship Diagram

As shown in figure, the HomeOwner table maintains unique home detail. The HomeFamily detail maintains the details of family for that particular home. CertificateCharges table maintains the charges to be claimed upon request of particular type of certificate. CertificateIssueDetails maintains the record of certificate which are issued upon request of end user. The RegistrationDetail table maintains the record of birth and death. TaxCharge table maintains charges of different categories of taxes. It is linked up with BillDetail table to pass the updated tax value for tax calculations. TaxBill table maintains all the bill records for the tax payments. MamtaCardDetail table MotherVisitDetail and ChildVaccinationDetail table to maintain mother's visit details and the record of child vaccination.

5. CONCLUSION

Implementation of this model will drastically change the level of efficiency by the Gram Panchayat. Information will become secure and flexible for the purpose of reporting, data generation upon user requests, verification, updating of information etc. The model is very easy to implement and maintain.



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