Electricity

Bill Management System

BY:

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**Problem Statement:**

A electricity bill management system is a framework that allows the customers or users to pay their electricity bill through online payment method without any hassle. The system should be able to send alerts on due dates of payments, modify data of customers and update the bill amount.

**Introduction:**

The Electricity bill management system is a project that will help in the storage of details of user and admin electronically in a database system. This infrastructure will help the user and admin to easily keep track of the information. Sending out alerts to each pending payment is a hassle if done manually, the automation of this through this framework will reduce a lot of manual labour. Keeping electronic tabs will minimise errors to a large extent.

**Functionalities:**

An employee from the Electric Board will manually update the power used by a house. The user will be charged accordingly to the power consumed. Each user will be put into two different slabs, commercial and domestic respectively. The cost of each unit will depend on the slab. The user will pay a particular deposit amount for establishing the electricity connection for the first time. The user will be updated regularly on the payment date. The power connection will be removed if the user fails to meet few criteria.

**Revised Entity Relationship Diagram**

Diagram

Description automatically generated

**Normalization**

**Schema before normalisation:**

* Admin(admin\_id, username, admin\_name, st\_name, hno, ad\_phone number)
* Bill (bill\_no, cust\_id, priceperunit, unit, due\_date)
* Invoice (invoice\_id, admin\_id, cust\_id, unit, status)
* Announcement(st\_name,message,admin\_name,admin\_id)
* Reads(cust\_id,stname)
* User(username,cust\_id,H\_no,st\_name, phone-no,f\_name,L\_name,phoneno)
* Login(username, password, role, Date)
* Feedback (fb\_id , cust\_id, feedback , admin\_id)

**1 NF:**

* Each column of the schema contains only atomic values, there are no column which contain two or more values.
* Each column has stored only values of same data type.
* Each schema in the column can be uniquely identified as no two columns in the schema has the same name.
* Therefore, the schema are already in 1NF.

**2 NF:**

**Dependencies :**

* admin\_id -username, admin\_name, st\_name, hno, ad\_phone number
* bill\_no -invoice\_id, cust\_id, ppu\_id, unit, amount
* invoice\_id -admin\_id, cust\_id, unit, status
* st\_name -message, admin\_name, admin\_id
* cust\_id - username, H\_no, st\_name, phone-no, f\_name, L\_name, phoneno
* status -due\_date
* Username-password, role, dob
* fb\_id-cust\_id, feedback , admin\_id
* No partial dependency is found in the same table and each table has one primary key, hence the tables are already in 2NF.

**3 NF:**

* Bill table normalised to 3NF by creating a table 'Tariff'

1. Bill (bill\_no, invoice\_id, cust\_id, ppu\_id, unit, amount)
2. Tariff (ppu\_id, priceperunit, range)

* Announcement table normalised to 3NF by removing 'admin\_name' attribute due to its transitive dependency with 'admin\_id'

1. announcement(st\_name, message, admin\_id)

* User table normalised to 3NF by creating a table 'cust' to remove transitive dependency:

1. user(Username, f\_name, L\_name,city)
2. district(city, district)
3. cust(cust-id, H\_no,st\_name, phoneno, username)

* Feedback table normalised by creating a table 'Adminfeed' to remove transitive dependency of 'admin\_id')

1. feedback (fb\_id, cust\_id, feedback)
2. adminfeed (admin\_id, fb\_id)

      All other tables are in 3NF as they do not have any transitive dependency.

**BCNF**:

* In the 3NF relation it can be seen that no non-prime attribute derives a prime attribute and only the super key determines the relation of all other attributes. So we can conclude that they are in BCNF.

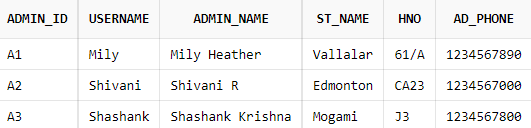
**Schema after Normalization:**

* Admin(admin\_id,username, admin\_name, st\_name, hno, ad\_phone number)
* Invoice (invoice\_id, admin\_id, cust\_id, unit, status)
* Bill (bill\_no, invoice\_id, cust\_id, ppu\_id, unit, amount)
* Tariff (ppu\_id, priceperunit, range)
* User(Username, f\_name, L\_name, city)
* district(city, district)
* cust(cust-id, H\_no,st\_name, phoneno, username)
* announcement(st\_name, message, admin\_id)
* Reads(cust\_id,stname)
* Login(username, password, role, Date)
* feedback (fb\_id, cust\_id, feedback)
* adminfeed (admin\_id, fb\_id)

**Creation of Tables and Insertion of Values**

**Admin:**

* create table admin (admin\_id varchar2(5), username varchar2(20),    admin\_name varchar(20), st\_name varchar(100),    hno varchar2(5),  ad\_phone number(20),  constraint aid\_pk primary key (admin\_id));
* insert into admin values ('A1','Mily','Mily Heather','Vallalar','61/A','1234567890');
* insert into admin values ('A2','Shivani','Shivani R','Edmonton','CA23','1234567000');
* insert into admin values ('A3','Shashank','Shashank Krishna','Mogami','J3','1234567800');



**Bill:**

* create table bill(    bill\_no number(10),  invoice\_id number(10),  cust\_id varchar2(5),   ppu\_id varchar2(5),   unit number(10),  amount number(15,2),  constraint bno\_pk primary key (bill\_no));
* insert into bill values ('1','1','C1','P2','450','337.50');
* insert into bill values ('2','2','C1','P3','1231','1846.50');
* insert into bill values ('3','3','C1','P1','600','300.00');
* insert into bill values ('4','4','C2','P1','512','256.00');
* insert into bill values ('5','5','C3','P1','780','390.00');
* insert into bill values ('6','6','C4','P1','749','374.50');
* insert into bill values ('7','7','C5','P3','4000','6000.00');
* insert into bill values ('8','8','C1','P4','5600','12320.00');
* alter table bill add constraint iidb\_fk foreign key (invoice\_id) references invoice (invoice\_id);
* alter table bill add constraint cidb\_fk foreign key (cust\_id) references users (cust\_id);
* alter table bill add constraint pidb\_fk foreign key (ppu\_id) references tariff (ppu\_id);

Table

Description automatically generated

**Invoice:**

* create table invoice (  invoice\_id number(10),   admin\_id varchar(5),  cust\_id varchar2(5),  unit number(7),   status varchar(20),  constraint in\_pk primary key (invoice\_id));
* insert into invoice values ('1','A1','C1','450','Paid');
* insert into invoice values ('2','A2','C1','1231','Paid');
* insert into invoice values ('3','A3','C1','600','Not Paid');
* insert into invoice values ('4','A2','C2','512','Not Paid');
* insert into invoice values ('5','A2','C3','780','Paid');
* insert into invoice values ('6','A3','C4','749','Not Paid');
* insert into invoice values ('7','A1','C5','4000','Paid');
* insert into invoice values ('8','A1','C1','5600','Paid');
* alter table invoice add constraint adidi\_fk foreign key (admin\_id) references admin (admin\_id);
* alter table invoice add constraint cuidi\_fk foreign key (cust\_id) references users (cust\_id);

A picture containing table

Description automatically generated

**Tariff:**

* create table tariff(ppu\_id varchar2(5),   priceperunit number(5,5),  range varchar2(200),   constraint pid\_pk primary key (ppu\_id));
* insert into tariff values ('P1',0.5,'UNITS<500');
* insert into tariff values ('P2',0.75,'UNITS>=500 AND UNITS<1000');
* insert into tariff values ('P3',1.5,'UNITS>=1000 AND UNITS<5000');
* insert into tariff values ('P4',2.2,'UNITS>=5000');

A picture containing table

Description automatically generated

**User:**

* create table user(username varchar(20) primary key,f\_name varchar(10),L\_name varchar(10),city varchar(10));
* insert into user values ('Jessica1','Jessica','Martin','chennai');
* insert into user values ('Danilol','Dani','Navi','coimbature');
* insert into user values ('Alex\_tug','Alex','HK','ramanathapuram');
* insert into user values ('HrithikHRX','Hrithik','Roshan','thanjavur');
* insert into user values ('Remo\_Remo','Remoni','Motwani','chennai');

Table

Description automatically generated

**Cust:**

* create table cust(  cust\_id int primary key,   H\_no varchar(5),   st\_name varchar(10),phone\_no varchar(11), username varchar(20));
* insert into cust values ('C1','23I','EL Plazzo','9876543210','Jessica1');
* insert into cust values ('C2','4US','Lol\_st','9876543200','Danilol');
* insert into cust values ('C3','45EU','Eunumera\_st','9876543000','Alex\_tug');
* insert into cust values ('C4','444I','remura\_st','9876540000','HrithikHRX');
* insert into cust values ('C5','22US','Othello','987650000','Remo\_Remo');

Table

Description automatically generated

District:

* create table district( city varchar(20) primary key, district varchar(20));
* insert into district values ('chennai','tamilnadu');
* insert into district values ('coimbature','tamilnadu');
* insert into district values ('ramanathapuram','tamilnadu');
* insert into district values ('thanjavur','tamilnadu');
* insert into district values ('chennai','tamilnadu');

Table

Description automatically generated

**Announcement:**

* create table announcement ( st\_name varchar(20),message varchar(50),admin\_id varchar(5));
* insert into announcement values ('EL Plazzo','supply cut on (9am-5pm)22-12-2021','A1');
* insert into announcement values ('Lol\_st','supply cut on (2pm-3pm)09-08-2021','A2');
* insert into announcement values ('Eunumera\_st','supply cut on (1am-6am)05-05-2021','A3');
* insert into announcement values ('remura\_st','supply cut on (5pm-10pm)06-06-2021','A1');
* insert into announcement values ('Othello','supply cut on (10am-5pm)07-07-2021','A2');
* insert into announcement values ('Vallalar','none','A2');
* insert into announcement values ('Edmonton','supply cut on (10am-5pm)07-07-2021','A1');
* insert into announcement values ('Mogami','supply cut on (10am-5pm)07-07-2021','A3');

Table

Description automatically generated

Login:

* create table login( username varchar2(50), password varchar2(25) NOT NULL,role varchar(10),dob Date,constraint uname\_pk primary key (username));
* insert into login values ('Mily','Mily1234','admin','02-jul-1981');
* insert into login values ('Jessica1','Jessica@0','user','23-apr-1950');
* insert into login values ('Danilol','Dani-elc','user','13-jan-1956');
* insert into login values ('Shivani','s12vani','admin','14-aug-1960');
* insert into login values ('Alex\_tug','aaa1999','user','23-feb-1999');
* insert into login values ('HrithikHRX','Hrx@24','user','02-sep-1997');
* insert into login values ('Remo\_Remo','Remo007','user','10-mar-1988');
* insert into login values ('Shashank','shasha2020','admin','01-jan-1999');

Table

Description automatically generated

**Feedback:**

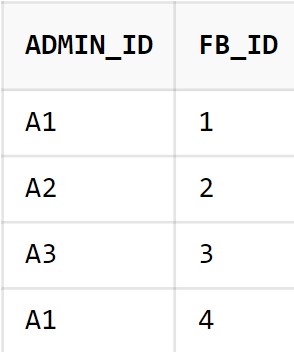
* create table feedback(fb\_id number(5), cust\_id varchar2(5),feedback varchar2(500),constraint fidf\_pk primary key (fb\_id));
* insert into feedback values ('1','C1','i get low voltage supply in my area.pls look.')
* insert into feedback values ('3','C1','pls supply us third phase in which we will apply for extra')
* insert into feedback values ('4','C4','how much for supplying current from our solar energy')
* insert into feedback values ('2','C2','nice work out there')
* alter table feedback add constraint sidf\_fk foreign key (cust\_id) references users (cust\_id);

Table

Description automatically generated

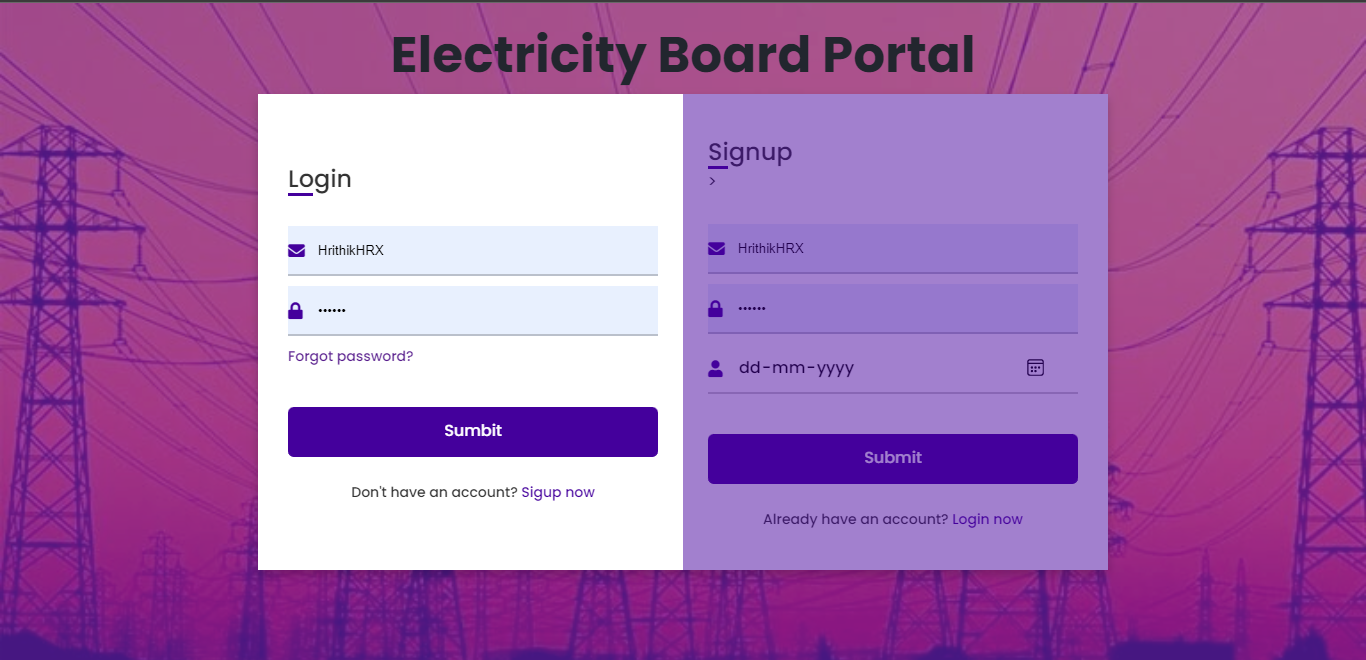
**Adminfeed:**

* create table Adminfeed(admin\_id varchar2(5),fb\_id number(5));
* insert into Adminfeed values ('A1','1');
* insert into Adminfeed values ('A2','2');
* insert into Adminfeed values ('A3','3');
* insert into Adminfeed values ('A1','4');

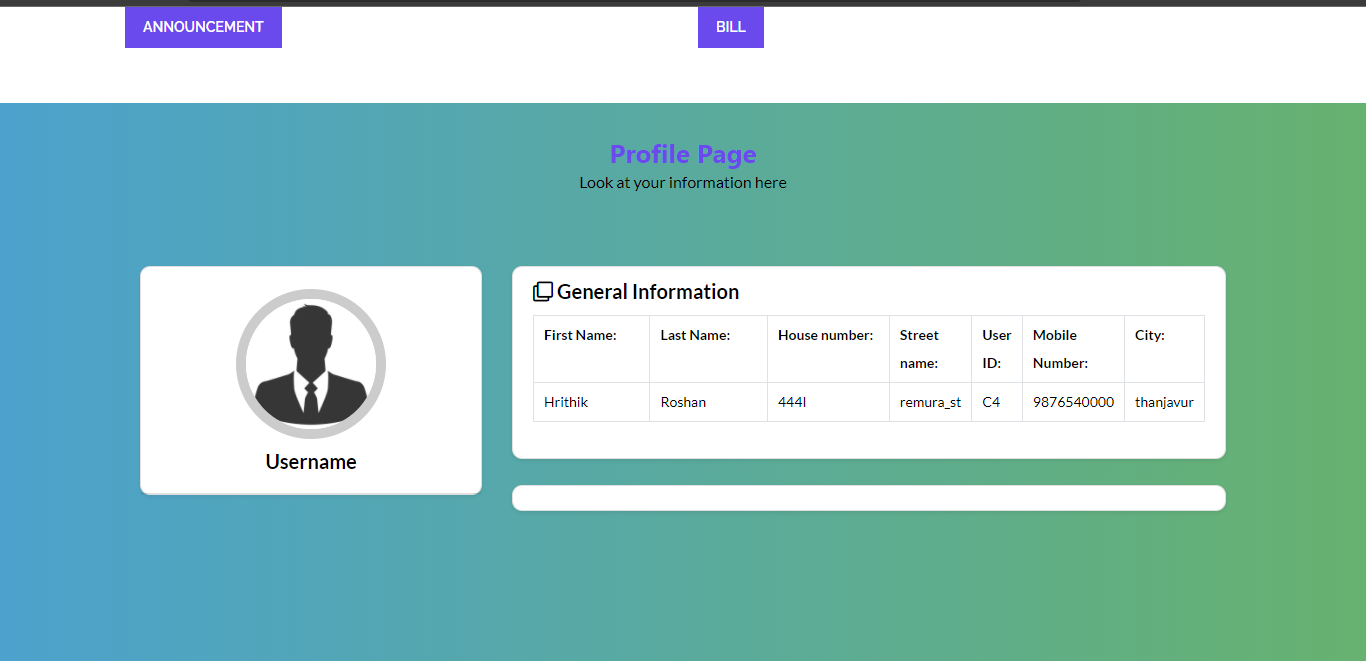


**User-Interface Design:**

**Login and Signup Page:**



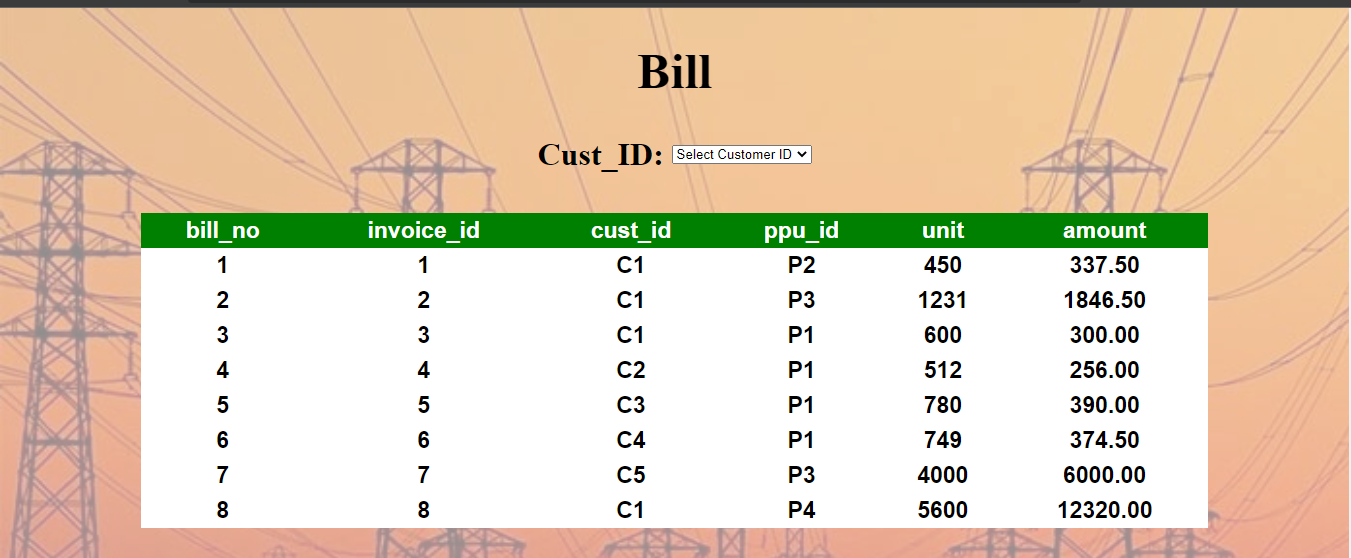
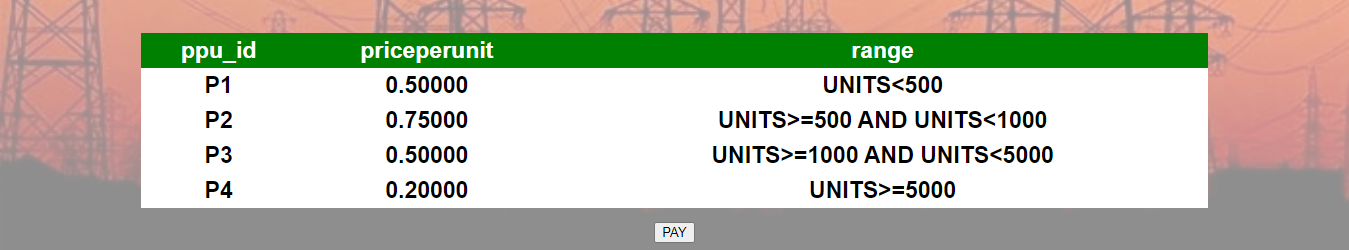
**Profile Page – User and Admin:**



**Announcement Page:**



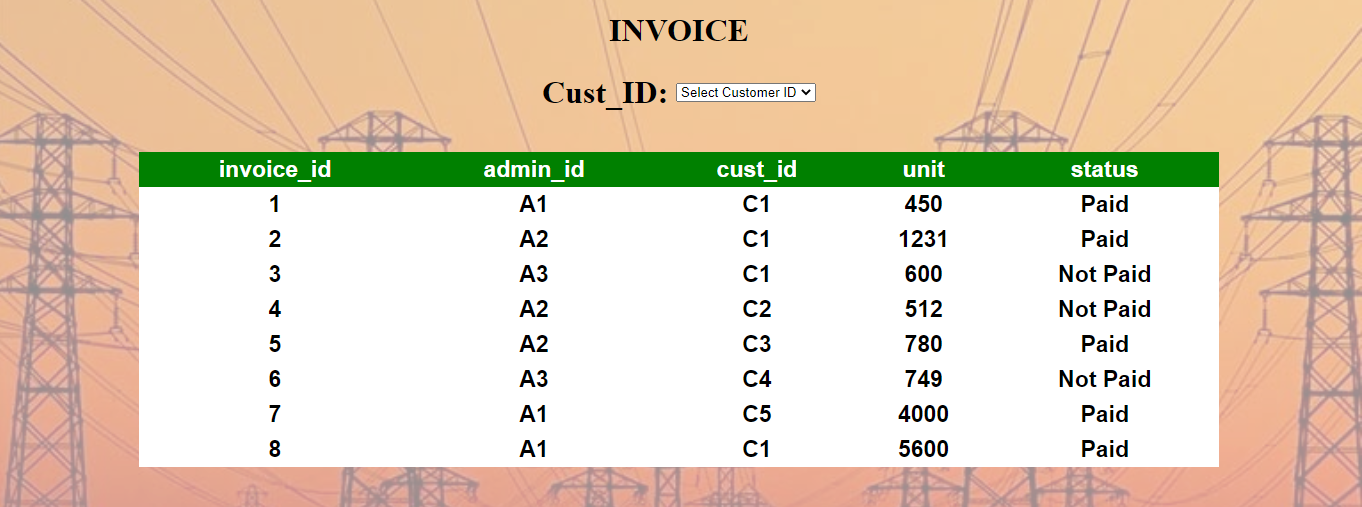
**Bill Page:**

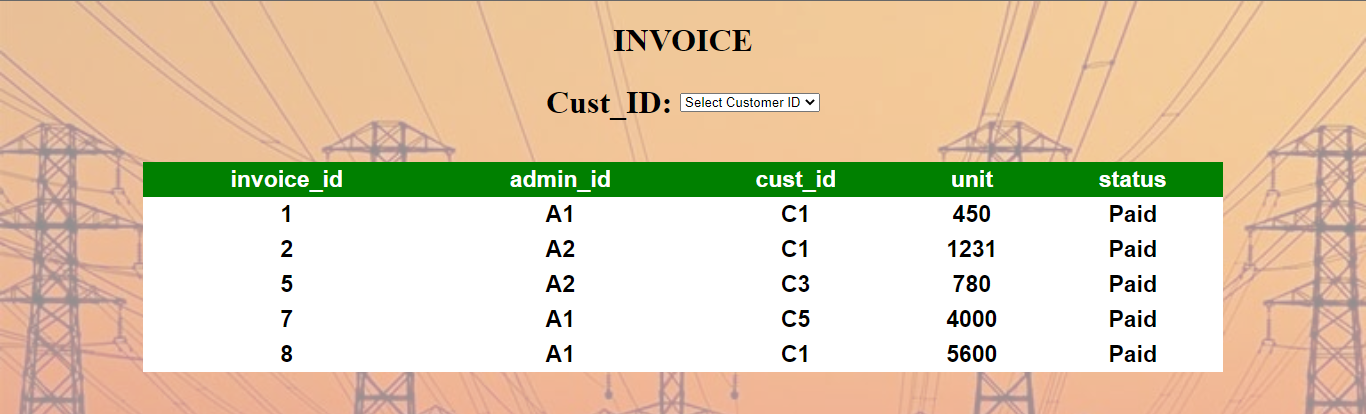


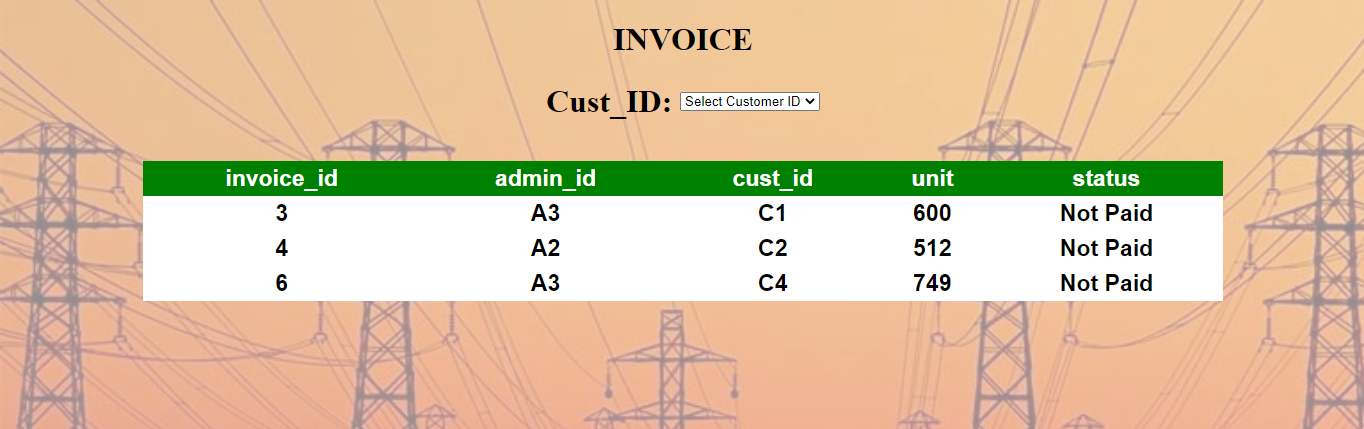
**Getting Announcement Page:**



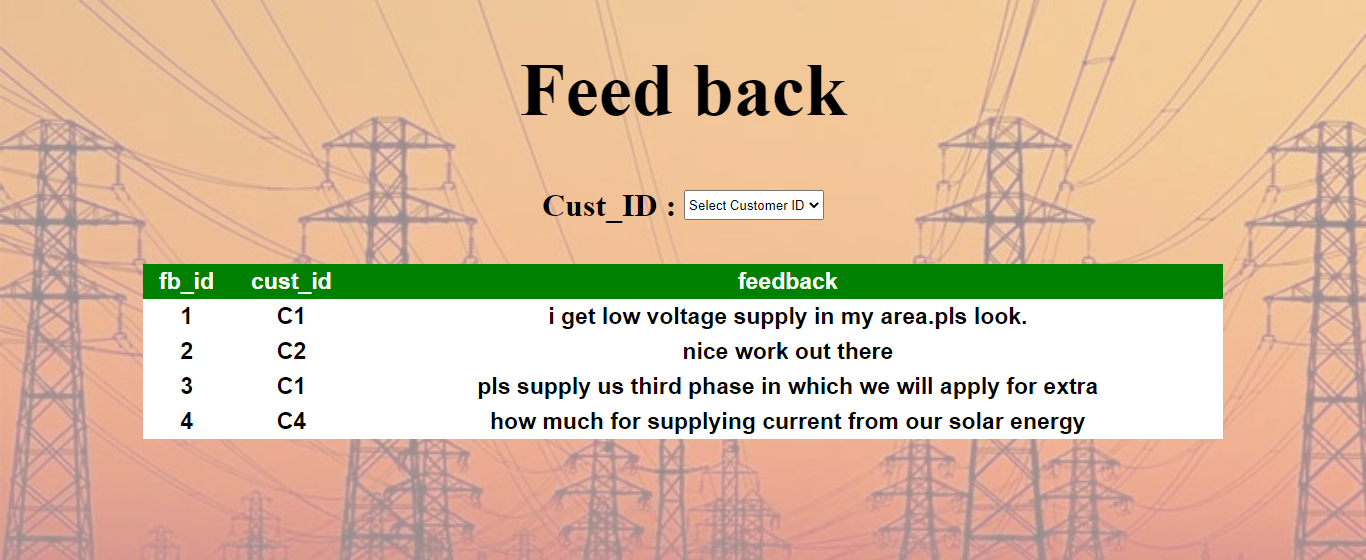
**Invoice:**



**Paid bill:**

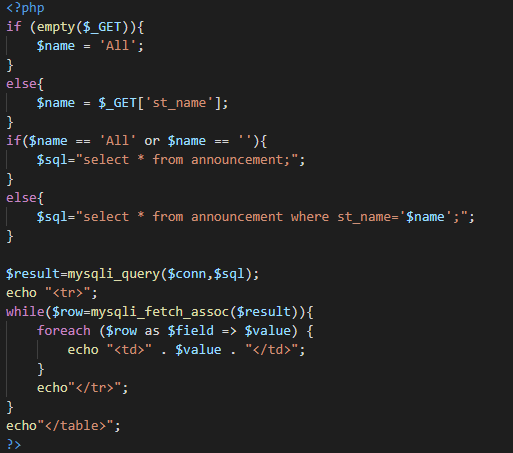
**Not-Paid bill:**

**Feed Back Page:**

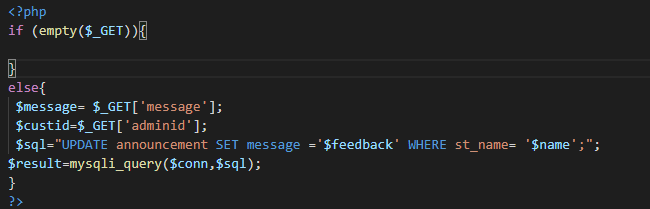


**CODE:**

**For filter the data and displaying them(** **All the values are get from the form and used in the php by GET method.)**



**For updating the data to the table(** **All the values are get from the form and used in the php by GET method.)**

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**For sending the data from one php page to other**

(**Inside the login *php*)**

**(inside the user page)**

