

VIETNAM NATIONAL UNIVERSITY, HO CHI MINH CITY
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FACULTY OF COMPUTER SCIENCE AND ENGINEERING



DATABASE SYSTEMS LAB (CO3001)

Assignment

RESORT MANAGEMENT

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1 Create Table:

1.1 Create Database and Schema

Firstly, we have to create database named "postgres".//

```
1 CREATE DATABASE postgres
2 WITH
3 OWNER = postgres
4 ENCODING = 'UTF8',
5 LC_COLLATE = 'Vietnamese_Vietnam.1258'
6 LC_CTYPE = 'Vietnamese_Vietnam.1258'
7 TABLESPACE = pg_default
8 CONNECTION LIMIT = -1
9 IS_TEMPLATE = False;
10
11 COMMENT ON DATABASE postgres
12 IS 'default administrative connection database';
13
14 GRANT TEMPORARY, CONNECT ON DATABASE postgres TO PUBLIC;
15
16 GRANT ALL ON DATABASE postgres TO postgres;
17
18 GRANT ALL ON DATABASE postgres TO smanager;
```

Then in "postgres", we create schema named "public".//

```
1 CREATE SCHEMA IF NOT EXISTS public
2 AUTHORIZATION postgres;
```

1.2 Chi Nhanh

```
1     create table if not exists public.chi_nhanh
2 (
3     ma_chi_nhanh text not null unique,
4     tinh character varying(40) collate pg_catalog."default",
5     dia_chi character varying(40) collate pg_catalog."default",
6     dien_thoai text,
7     email character varying(40) collate pg_catalog."default",
8     constraint chi_nhanh_pkey primary key (ma_chi_nhanh)
9 );
```

1.3 Hinh Anh Chi Nhanh

```
1     create table ha_chi_nhanh (
2     ma_chi_nhanh text not null ,
3     hinh_anh text ,
4     primary key(ma_chi_nhanh , hinh_anh),
5     unique(ma_chi_nhanh , hinh_anh),
6     foreign key (ma_chi_nhanh) references chi_nhanh(ma_chi_nhanh)
7     on delete cascade
8     on update cascade
9 );
```

1.4 Khu

```
1     create table khu (
2     ma_chi_nhanh text not null ,
3     ten_khu text not null ,
4     primary key(ma_chi_nhanh , ten_khu),
5
6     foreign key (ma_chi_nhanh) references chi_nhanh (ma_chi_nhanh)
7     on update cascade
```

```

8     on delete cascade ,
9     unique(ma_chi_nhanh ,ten_khu)
10 );

```

1.5 Loai Phong

```

1 create table loai_phong (
2     ma_loai_phong bigserial not null primary key ,
3     ten_loai_phong text not null ,
4     dien_tich int ,
5     so_khach int check(so_khach >= 1 and so_khach <= 10) ,
6     mo_ta_khac text
7 );

```

1.6 Thong Tin Giuong

```

1 create table thong_tin_giuong (
2     ma_loai_phong bigint not null ,
3     kich_thuoc NUMERIC(10,1) not null ,
4     so_luong int default 1 check(so_luong >= 1 and so_luong <= 10) ,
5     primary key (ma_loai_phong ,kich_thuoc) ,
6     foreign key (ma_loai_phong) references loai_phong(ma_loai_phong)
7 );

```

1.7 Chi Nhanh Co Loai Phong

```

1     create table chi_nhanh_co_loai_phong (
2         ma_loai_phong bigint not null ,
3         ma_chi_nhanh text not null ,
4         gia_thue int not null ,
5         primary key (ma_loai_phong ,ma_chi_nhanh) ,
6         foreign key (ma_loai_phong) references loai_phong(ma_loai_phong) ,
7         foreign key (ma_chi_nhanh) references chi_nhanh(ma_chi_nhanh)
8 );

```

1.8 Phong

```

1 create table phong (
2     ma_loai_phong bigint not null ,
3     ma_chi_nhanh text not null ,
4     so_phong varchar(3) not null ,
5     ten_khu text not null ,
6     primary key (so_phong ,ma_chi_nhanh) ,
7     foreign key (ma_loai_phong) references loai_phong(ma_loai_phong) ,
8     foreign key (ma_chi_nhanh) references chi_nhanh(ma_chi_nhanh) ,
9     foreign key (ma_chi_nhanh ,ten_khu) references khu(ma_chi_nhanh ,ten_khu)
10 );

```

1.9 Loai Vat Tu

```

1 create table loai_vat_tu
2 (
3     ma_loai_vat_tu varchar(6) not null primary key ,
4     ten_loai_vat_tu text not null
5 );

```

1.10 Loai Vat Tu Trong Phong

```
1 create table public.loai_vat_tu_trong_phong
2 (
3     ma_loai_vat_tu varchar(6) not null ,
4     ma_loai_phong bigint not null ,
5     so_luong int not null default 1 check(so_luong  >= 1 and so_luong  <= 20),
6     primary key (ma_loai_vat_tu , ma_loai_phong),
7     foreign key (ma_loai_vat_tu)
8         references public.loai_vat_tu (ma_loai_vat_tu) match simple
9         on update cascade
10        on delete cascade
11        not valid ,
12     foreign key (ma_loai_phong)
13         references public.loai_phong (ma_loai_phong) match simple
14         on update cascade
15         on delete cascade
16         not valid
17 );
```

1.11 Vat Tu

```
1 create table public."vat_tu"
2 (
3     "ma_chi_nhanh" text ,
4     "ma_loai_vat_tu" varchar(6) ,
5     "stt_vat_tu" integer check (stt_vat_tu >=1) ,
6     tinh_trang character varying(255) ,
7     so_phong varchar(3) ,
8     primary key ("ma_chi_nhanh", "ma_loai_vat_tu", "stt_vat_tu"),
9     foreign key ("ma_chi_nhanh")
10        references public.chi_nhanh (ma_chi_nhanh) match simple
11        on update cascade
12        on delete cascade
13        not valid ,
14     foreign key ("ma_loai_vat_tu")
15        references public.loai_vat_tu (ma_loai_vat_tu) match simple
16        on update cascade
17        on delete cascade
18        not valid ,
19     foreign key ("ma_chi_nhanh", so_phong)
20        references public.phong (ma_chi_nhanh , so_phong) match simple
21        on update cascade
22        on delete cascade
23        not valid
24 );
```

1.12 Nha Cung Cap

```
1 create table public."nha_cung_cap"
2 (
3     "ma_nha_cung_cap" varchar(7) ,
4     "ten_nha_cung_cap" text ,
5     email text ,
6     "dia_chi" text ,
7     primary key ("ma_nha_cung_cap")
8 );
```

1.13 Cung Cap Vat Tu

```
1 create table public."cung_cap_vat_tu"
2 (
3     "ma_nha_cung_cap" varchar(7) ,
```

```

4   "ma_loai_vat_tu" varchar(6) ,
5   "ma_chi_nhanh" text ,
6   primary key ("ma_loai_vat_tu", "ma_chi_nhanh"),
7   foreign key ("ma_nha_cung_cap")
8     references public."nha_cung_cap" ("ma_nha_cung_cap") match simple
9     on update cascade
10    on delete cascade
11    not valid,
12   foreign key ("ma_loai_vat_tu")
13     references public.loai_vat_tu (ma_loai_vat_tu) match simple
14     on update cascade
15     on delete cascade
16     not valid,
17   foreign key ("ma_chi_nhanh")
18     references public.chi_nhanh (ma_chi_nhanh) match simple
19     on update cascade
20     on delete cascade
21     not valid
22 );

```

1.14 Khach Hang

```

1 create table public."khach_hang"
2 (
3   "ma_khach_hang" varchar(8),
4   "cccd/cmnd" character varying(12) not null Unique ,
5   "dien_thoai" text not null Unique ,
6   "email" text Unique ,
7   "username" text Unique ,
8   "password" text Unique ,
9   "diem" integer not null default 0 check (diem >= 0),
10  "loai" integer not null default 1 check (loai >= 1),
11  primary key ("ma_khach_hang")
12 );

```

1.15 Goi Dich Vu:

```

1 create table public."goi_dich_vu"
2 (
3   "so_ngay" integer not null check (so_ngay >= 1 and so_ngay <=100) ,
4   "so_khach" integer not null check (so_khach >= 1 and so_khach <=10),
5   "gia" integer not null ,
6   "ten_goi" text ,
7   primary key ("ten_goi")
8 );
9
10 alter table if exists public."goi_dich_vu"
11   owner to postgres;

```

1.16 Hoa Don Goi Dich Vu:

```

1 create table public."hoa_don_goi_dich_vu"
2 (
3   "ma_khach_hang" varchar(8),
4   "ten_goi" text ,
5   "ngay gio_mua" timestamp ,
6   "ngay_bat_dau" date check ( ngay_bat_dau > ngay_gio_mua ) ,
7   "tong_tien" real not null ,
8   ngay_con_lai integer DEFAULT 0,
9   primary key ("ma_khach_hang", "ten_goi", "ngay_gio_mua"),
10  foreign key ("ma_khach_hang")
11    references public."khach_hang" ("ma_khach_hang") match simple
12    on update cascade

```

```

13     on delete cascade
14     not valid ,
15   foreign key ("ten_goi")
16     references public."goi_dich_vu" ("ten_goi") match simple
17     on update cascade
18     on delete cascade
19     not valid
20 );
21
22 alter table if exists public."hoa_don_goi_dich_vu"
23   owner to postgres;

```

1.17 Don Dat Phong:

```

1 create table public."don_dat_phong"
2 (
3     "ma_dat_phong" character varying(16) ,
4     "ngay_gio_dat" timestamp without time zone ,
5     "so_khach" integer ,
6     "ngay_nhan_phong" date check ( ngay_nhan_phong > ngay_gio_dat ) ,
7     "ngay_tra_phong" date check( ngay_tra_phong > ngay_nhan_phong ) ,
8     "tinh_trang" smallint ,
9     "tong_tien" real not null default 0 ,
10    "ma_khach_hang" varchar(8) ,
11    "ten_goi_dich_vu" text default null ,
12    primary key ("ma_dat_phong"),
13    foreign key ("ma_khach_hang")
14      references public."khach_hang" ("ma_khach_hang") match simple
15      on update cascade
16      on delete cascade
17      not valid ,
18    foreign key ("ten_goi_dich_vu")
19      references public."goi_dich_vu" ("ten_goi") match simple
20      on update cascade
21      on delete cascade
22      not valid
23 );
24
25 alter table if exists public."don_dat_phong"
26   owner to postgres;

```

1.18 Phong Thue:

```

1 create table public."phong_thue"
2 (
3     "ma_dat_phong" character varying(16) ,
4     "ma_chi_nhanh" text ,
5     "so_phong" varchar(3) ,
6     primary key ("ma_dat_phong", "ma_chi_nhanh", "so_phong") ,
7     foreign key ("ma_dat_phong")
8       references public."don_dat_phong" ("ma_dat_phong") match simple
9       on update cascade
10      on delete cascade
11      not valid ,
12     foreign key ("ma_chi_nhanh", "so_phong")
13       references public.phong (ma_chi_nhanh, so_phong) match simple
14       on update cascade
15       on delete cascade
16       not valid
17 );
18
19 alter table if exists public."phong_thue"
20   owner to postgres;

```

1.19 Hoa Don:

```
1 create table public."hoa_don"
2 (
3     "ma_hoa_don" character varying(16),
4     "thoi_gian_nhan_phong" time without time zone,
5     "thoi_gian_tra_phong" time without time zone,
6     "ma_dat_phong" character varying(16),
7     primary key ("ma_hoa_don"),
8     foreign key ("ma_dat_phong")
9         references public."don_dat_phong" ("ma_dat_phong") match simple
10        on update cascade
11        on delete cascade
12        not valid
13 );
14
15 alter table if exists public."hoa_don"
16     owner to postgres;
```

1.20 Doanh Nghiep:

```
1 create table public."doanh_nghiep"
2 (
3     "ma_doanh_nghiep" character varying(6),
4     "ten_doanh_nghiep" text,
5     primary key ("ma_doanh_nghiep")
6 );
7
8 alter table if exists public."doanh_nghiep"
9     owner to postgres;
```

1.21 Dich Vu:

```
1 create table public."dich_vu"
2 (
3     "ma_dich_vu" character varying(6),
4     "loai_dich_vu" text,
5     "so_khach" integer,
6     "phong_cach" text,
7     "ma_doanh_nghiep" text,
8     primary key ("ma_dich_vu"),
9     foreign key ("ma_doanh_nghiep")
10        references public."doanh_nghiep" ("ma_doanh_nghiep") match simple
11        on update cascade
12        on delete cascade
13        not valid
14 );
15
16 alter table if exists public."dich_vu"
17     owner to postgres;
```

1.22 Dich Vu Spa:

```
1 create table public."dich_vu_spa"
2 (
3     "ma_dich_vu" character varying(6),
4     "dich_vu_spa" text,
5     primary key ("ma_dich_vu", "dich_vu_spa"),
6     foreign key ("ma_dich_vu")
7         references public."dich_vu" ("ma_dich_vu") match simple
8         on update cascade
9         on delete cascade
10        not valid
```

```

11 );
12
13 alter table if exists public."dich_vu_spa"
14   owner to postgres;

```

1.23 Loai Hang Do Luu Niem:

```

1 create table public."loai_hang_do_luu_niem"
2 (
3   "ma_dich_vu" character varying(6),
4   "loai_hang" text,
5   primary key ("ma_dich_vu", "loai_hang"),
6   foreign key ("ma_dich_vu")
7     references public."dich_vu" ("ma_dich_vu") match simple
8     on update cascade
9     on delete cascade
10    not valid
11 );
12
13 alter table if exists public."loai_hang_do_luu_niem"
14   owner to postgres;

```

1.24 Thuong Hieu Do Luu Niem:

```

1 create table public."thuong_hieu_do_luu_niem"
2 (
3   "ma_dich_vu" character varying(6),
4   "thuong_hieu" text,
5   primary key ("ma_dich_vu", "thuong_hieu"),
6   foreign key ("ma_dich_vu")
7     references public."dich_vu" ("ma_dich_vu") match simple
8     on update cascade
9     on delete cascade
10    not valid
11 );
12
13 alter table if exists public."thuong_hieu_do_luu_niem"
14   owner to postgres;

```

1.25 Mat Bang:

```

1 create table public."mat_bang"
2 (
3   "ma_chi_nhanh" text,
4   "stt_mat_bang" integer not null default 1 check (stt_mat_bang >=1 and stt_mat_bang <= 50),
5   "chieu_dai" integer,
6   "chieu_rong" integer,
7   "gia_thue" integer not null,
8   "mo_ta" text,
9   "ma_dich_vu" text,
10  "ten_cua_hang" text,
11  "logo" text,
12  primary key ("ma_chi_nhanh", "stt_mat_bang"),
13  foreign key ("ma_chi_nhanh")
14    references public.chi_nhanh (ma_chi_nhanh) match simple
15    on update cascade
16    on delete cascade
17    not valid,
18  foreign key ("ma_dich_vu")
19    references public."dich_vu" ("ma_dich_vu") match simple
20    on update cascade
21    on delete cascade
22    not valid
23 );

```

1.26 Hinh Anh Cuu Hang:

```
1 create table public."hinh_anh_cua_hang"
2 (
3     "ma_chi_nhanh" text ,
4     "stt_mat_bang" integer ,
5     "hinh_anh" text ,
6     primary key ("ma_chi_nhanh", "stt_mat_bang") ,
7     foreign key ("ma_chi_nhanh", "stt_mat_bang")
8         references public."mat_bang" ("ma_chi_nhanh", "stt_mat_bang") match simple
9         on update cascade
10        on delete cascade
11        not valid
12 );
```

1.27 Khung Gio Hoat Dong cua Cua Hang:

```
1 create table public."khung_gio_hoat_dong_cua_hang"
2 (
3     "ma_chi_nhanh" text ,
4     "stt_mat_bang" integer ,
5     "gio_bat_dau" time without time zone ,
6     "gio_ket_thuc" time without time zone ,
7     primary key ("ma_chi_nhanh", "stt_mat_bang", "gio_bat_dau") ,
8     foreign key ("ma_chi_nhanh", "stt_mat_bang")
9         references public."mat_bang" ("ma_chi_nhanh", "stt_mat_bang") match simple
10        on update cascade
11        on delete cascade
12        not valid
13 );
```

2 Insert:

2.1 Chi Nhanh:

```
1 INSERT INTO chi_nhanh
2 VALUES ( 'CN' , 'Lam Dong' , '280 Hung Vuong, thanh pho Da Lat' , '0912547874' , 'dalat@gmail.com' );
3 INSERT INTO chi_nhanh
4 VALUES ( 'CN' , 'tp Ho Chi Minh' , '130 Ly Chinh Thang, quan 3' , '0912547458' , 'hcm_quan3@gmail.com' );
5 INSERT INTO chi_nhanh
6 VALUES ( 'CN' , 'tp Ho Chi Minh' , '330 To Hien Thanh, quan 10' , '0912541258' , 'hcm_quan10@gmail.com' );
7 INSERT INTO chi_nhanh
8 VALUES ( 'CN' , 'tp Ho Chi Minh' , '689 Ha Ton Quyen, quan 5' , '0912547458' , 'hcm_quan5@gmail.com' );
9 INSERT INTO chi_nhanh
10 VALUES ( 'CN' , 'tp Ho Chi Minh' , '353 Binh Quoi, quan Binh Thanh' , '0912547458' , 'hcm_quanbt@gmail.com' );
```

2.2 Hinh Anh Chi Nhanh:

```
1 INSERT INTO ha_chi_nhanh
2 VALUES ( 'CN1' , 'https://t-cf.bstatic.com/xdata/images/hotel/max1024x768/22931657.jpg?k=a915121c8908a2c158024b43e9abbd5c5efb01cda36846d0f6eac28a8672878&o=&hp=1' ) ;
3 INSERT INTO ha_chi_nhanh
4 VALUES ( 'CN2' , 'https://t-cf.bstatic.com/xdata/images/hotel/max1024x768/25111742.jpg?k=01238aca193d8a3647f91937380e6347028258cbc3c6fdbd616ed319de7fcd4b&o=&hp=1' ) ;
5 INSERT INTO ha_chi_nhanh
6 VALUES ( 'CN3' , 'https://t-cf.bstatic.com/xdata/images/hotel/max1024x768/247301698.jpg?k=aea33dff016e9517c2b30a14bf43e05317e88c18a96808d3d059e24bc26f172&o=&hp=1' ) ;
7 INSERT INTO ha_chi_nhanh
8 VALUES ( 'CN4' , 'https://t-cf.bstatic.com/xdata/images/hotel/max1024x768/226433013.jpg?k=12325ced07a983778ad96a3f4baa5464d7d329b1d283d93eed720d403ce73af0&o=&hp=1' ) ;
9 INSERT INTO ha_chi_nhanh
10 VALUES ( 'CN5' , 'https://t-cf.bstatic.com/xdata/images/hotel/max1024x768/226433029.jpg?k=491a5f417372a232947eb1c59301cd8e8c47e5f1a854cde1160adb87e9d415f1&o=&hp=1' ) ;
```

2.3 Khu

```
1 INSERT INTO khu
2 VALUES ( 'CN1' , 'Khu 1' ) ;
3 INSERT INTO khu
4 VALUES ( 'CN2' , 'Khu 1' ) ;
5 INSERT INTO khu
6 VALUES ( 'CN3' , 'Khu 1' ) ;
7 INSERT INTO khu
8 VALUES ( 'CN4' , 'Khu 1' ) ;
9 INSERT INTO khu
10 VALUES ( 'CN5' , 'Khu 1' ) ;
11
12 INSERT INTO khu
13 VALUES ( 'CN1' , 'Khu 2' ) ;
14 INSERT INTO khu
15 VALUES ( 'CN2' , 'Khu 2' ) ;
16 INSERT INTO khu
17 VALUES ( 'CN3' , 'Khu 2' ) ;
18 INSERT INTO khu
19 VALUES ( 'CN4' , 'Khu 2' ) ;
20 INSERT INTO khu
21 VALUES ( 'CN5' , 'Khu 2' ) ;
22
23 INSERT INTO khu
24 VALUES ( 'CN1' , 'Khu 3' ) ;
25 INSERT INTO khu
```

```

26 VALUES ('CN2', 'Khu 3') ;
27 INSERT INTO khu
28 VALUES ('CN3', 'Khu 3') ;
29 INSERT INTO khu
30 VALUES ('CN4', 'Khu 3') ;
31 INSERT INTO khu
32 VALUES ('CN5', 'Khu 3') ;

```

2.4 Loai Phong

```

1 INSERT INTO loai_phong
2 VALUES (DEFAULT, 'nho', 30, 2);
3 INSERT INTO loai_phong
4 VALUES (DEFAULT, 'vua', 50, 2);
5 INSERT INTO loai_phong
6 VALUES (DEFAULT, 'lon', 80, 4);
7 INSERT INTO loai_phong
8 VALUES (DEFAULT, 'cuc lon', 120, 6);
9 INSERT INTO loai_phong
10 VALUES (DEFAULT, 'tong thong', 200, 10);

```

2.5 Thong Tin Giuong

```

1 INSERT INTO thong_tin_giuong
2 VALUES (1, 1.8, 1);
3 INSERT INTO thong_tin_giuong
4 VALUES (2, 1.8, 2);
5 INSERT INTO thong_tin_giuong
6 VALUES (3, 1.8, 2);
7 INSERT INTO thong_tin_giuong
8 VALUES (4, 1.8, 2);
9 INSERT INTO thong_tin_giuong
10 VALUES (5, 3, 2);

```

2.6 Chi Nhanh Co Loai Phong:

```

1 INSERT INTO chi_nhanh_co_loai_phong
2 VALUES (1, 'CN2', 1000);
3 INSERT INTO chi_nhanh_co_loai_phong
4 VALUES (2, 'CN2', 2000);
5 INSERT INTO chi_nhanh_co_loai_phong
6 VALUES (3, 'CN2', 3000);
7 INSERT INTO chi_nhanh_co_loai_phong
8 VALUES (4, 'CN2', 4000);
9 INSERT INTO chi_nhanh_co_loai_phong
10 VALUES (5, 'CN2', 9000);
11
12 INSERT INTO chi_nhanh_co_loai_phong
13 VALUES (1, 'CN3', 1500);
14 INSERT INTO chi_nhanh_co_loai_phong
15 VALUES (2, 'CN3', 2500);
16 INSERT INTO chi_nhanh_co_loai_phong
17 VALUES (3, 'CN3', 3500);
18 INSERT INTO chi_nhanh_co_loai_phong
19 VALUES (4, 'CN3', 4500);
20 INSERT INTO chi_nhanh_co_loai_phong
21 VALUES (5, 'CN3', 9500);
22
23 INSERT INTO chi_nhanh_co_loai_phong
24 VALUES (1, 'CN1', 500);
25 INSERT INTO chi_nhanh_co_loai_phong
26 VALUES (2, 'CN1', 1500);
27 INSERT INTO chi_nhanh_co_loai_phong

```

```

28 VALUES (3, 'CN1', 2500);
29 INSERT INTO chi_nhanh_co_loai_phong
30 VALUES (4, 'CN1', 3500);
31 INSERT INTO chi_nhanh_co_loai_phong
32 VALUES (5, 'CN1', 6500);

```

2.7 Phong:

```

1 INSERT INTO phong
2 VALUES (2, 'CN2', 101, 'Khu 1');
3 INSERT INTO phong
4 VALUES (2, 'CN2', 102, 'Khu 1');
5 INSERT INTO phong
6 VALUES (2, 'CN2', 103, 'Khu 1');
7 INSERT INTO phong
8 VALUES (2, 'CN2', 104, 'Khu 1');
9 INSERT INTO phong
10 VALUES (2, 'CN2', 105, 'Khu 1');
11
12 INSERT INTO phong
13 VALUES (3, 'CN2', 201, 'Khu 1');
14 INSERT INTO phong
15 VALUES (3, 'CN2', 202, 'Khu 1');
16 INSERT INTO phong
17 VALUES (3, 'CN2', 203, 'Khu 1');
18 INSERT INTO phong
19 VALUES (3, 'CN2', 204, 'Khu 1');
20 INSERT INTO phong
21 VALUES (3, 'CN2', 205, 'Khu 1');
22
23
24 INSERT INTO phong
25 VALUES (1, 'CN1', 101, 'Khu 1');
26 INSERT INTO phong
27 VALUES (1, 'CN1', 102, 'Khu 1');
28 INSERT INTO phong
29 VALUES (1, 'CN1', 103, 'Khu 1');
30 INSERT INTO phong
31 VALUES (1, 'CN1', 104, 'Khu 1');
32 INSERT INTO phong
33 VALUES (1, 'CN1', 105, 'Khu 1');
34
35 INSERT INTO phong
36 VALUES (2, 'CN1', 201, 'Khu 1');
37 INSERT INTO phong
38 VALUES (2, 'CN1', 202, 'Khu 1');
39 INSERT INTO phong
40 VALUES (2, 'CN1', 203, 'Khu 1');
41 INSERT INTO phong
42 VALUES (2, 'CN1', 204, 'Khu 1');
43 INSERT INTO phong
44 VALUES (2, 'CN1', 205, 'Khu 1');

```

2.8 Loai Vat Tu:

```

1 INSERT INTO loai_vat_tu
2 VALUES ('VT', 'ghe');
3
4 INSERT INTO loai_vat_tu
5 VALUES ('VT', 'ban');
6
7 INSERT INTO loai_vat_tu
8 VALUES ('VT', 'tu_lanh');
9
10 INSERT INTO loai_vat_tu

```

```

11 VALUES ('VT', 'ti vi');
12
13 INSERT INTO loai_vat_tu
14 VALUES ('VT', 'dieu hoa');

```

2.9 Loai Vat Tu Trong Loai Phong:

```

1 INSERT INTO loai_vat_tu_trong_phong
2 VALUES ('VT0001', 1, 2);
3 INSERT INTO loai_vat_tu_trong_phong
4 VALUES ('VT0002', 1, 1);
5 INSERT INTO loai_vat_tu_trong_phong
6 VALUES ('VT0003', 1, 1);
7 INSERT INTO loai_vat_tu_trong_phong
8 VALUES ('VT0004', 1, 1);
9 INSERT INTO loai_vat_tu_trong_phong
10 VALUES ('VT0005', 1, 1);
11
12
13
14 INSERT INTO loai_vat_tu_trong_phong
15 VALUES ('VT0001', 2, 4);
16 INSERT INTO loai_vat_tu_trong_phong
17 VALUES ('VT0002', 2, 2);
18 INSERT INTO loai_vat_tu_trong_phong
19 VALUES ('VT0003', 2, 1);
20 INSERT INTO loai_vat_tu_trong_phong
21 VALUES ('VT0004', 2, 1);
22 INSERT INTO loai_vat_tu_trong_phong
23 VALUES ('VT0005', 2, 1);
24
25
26 INSERT INTO loai_vat_tu_trong_phong
27 VALUES ('VT0001', 3, 5);
28 INSERT INTO loai_vat_tu_trong_phong
29 VALUES ('VT0002', 3, 2);
30 INSERT INTO loai_vat_tu_trong_phong
31 VALUES ('VT0003', 3, 1);
32 INSERT INTO loai_vat_tu_trong_phong
33 VALUES ('VT0004', 3, 1);
34 INSERT INTO loai_vat_tu_trong_phong
35 VALUES ('VT0005', 3, 1);

```

2.10 Vat Tu:

```

1 INSERT INTO vat_tu
2 VALUES ('CN1', 'VT0001', 1, 'good', '101');
3 INSERT INTO vat_tu
4 VALUES ('CN1', 'VT0002', 2, 'good', '101');
5 INSERT INTO vat_tu
6 VALUES ('CN1', 'VT0003', 3, 'good', '101');
7 INSERT INTO vat_tu
8 VALUES ('CN1', 'VT0004', 4, 'good', '101');
9 INSERT INTO vat_tu
10 VALUES ('CN1', 'VT0005', 5, 'good', '101');
11 INSERT INTO vat_tu
12 VALUES ('CN1', 'VT0002', 7, 'good', '102');
13 INSERT INTO vat_tu
14 VALUES ('CN1', 'VT0003', 8, 'good', '102');
15 INSERT INTO vat_tu
16 VALUES ('CN1', 'VT0004', 9, 'good', '102');
17 INSERT INTO vat_tu
18 VALUES ('CN1', 'VT0005', 10, 'good', '102');

```

2.11 Nha Cung Cap:

```
1 INSERT INTO nha_cung_cap
2 VALUES ( 'NCC' , 'Bao Hung' , 'baohung@gmail.com' , 'Ho Chi Minh' );
3 INSERT INTO nha_cung_cap
4 VALUES ( 'NCC' , 'Chau Hung' , 'chauhung@gmail.com' , 'Ho Chi Minh' );
5 INSERT INTO nha_cung_cap
6 VALUES ( 'NCC' , 'Ikea' , 'ikea@gmail.com' , 'Ho Chi Minh' );
7 INSERT INTO nha_cung_cap
8 VALUES ( 'NCC' , 'Channel' , 'channel@gmail.com' , 'Ho Chi Minh' );
9 INSERT INTO nha_cung_cap
10 VALUES ( 'NCC' , 'Gutri' , 'gutri@gmail.com' , 'Ho Chi Minh' );
```

2.12 Cung Cap Vat Tu:

```
1 INSERT INTO cung_cap_vat_tu
2 VALUES ( 'NCC0001' , 'VT0001' , 'CN2' );
3 INSERT INTO cung_cap_vat_tu
4 VALUES ( 'NCC0001' , 'VT0002' , 'CN2' );
5 INSERT INTO cung_cap_vat_tu
6 VALUES ( 'NCC0001' , 'VT0003' , 'CN2' );
7 INSERT INTO cung_cap_vat_tu
8 VALUES ( 'NCC0001' , 'VT0004' , 'CN2' );
9 INSERT INTO cung_cap_vat_tu
10 VALUES ( 'NCC0001' , 'VT0005' , 'CN2' );
11
12
13 INSERT INTO cung_cap_vat_tu
14 VALUES ( 'NCC0002' , 'VT0001' , 'CN1' );
15 INSERT INTO cung_cap_vat_tu
16 VALUES ( 'NCC0002' , 'VT0002' , 'CN1' );
17 INSERT INTO cung_cap_vat_tu
18 VALUES ( 'NCC0002' , 'VT0003' , 'CN1' );
19 INSERT INTO cung_cap_vat_tu
20 VALUES ( 'NCC0002' , 'VT0004' , 'CN1' );
21 INSERT INTO cung_cap_vat_tu
22 VALUES ( 'NCC0002' , 'VT0005' , 'CN1' );
23
24
25
26
27 INSERT INTO cung_cap_vat_tu
28 VALUES ( 'NCC0003' , 'VT0001' , 'CN3' );
29 INSERT INTO cung_cap_vat_tu
30 VALUES ( 'NCC0003' , 'VT0002' , 'CN3' );
31 INSERT INTO cung_cap_vat_tu
32 VALUES ( 'NCC0003' , 'VT0003' , 'CN3' );
33 INSERT INTO cung_cap_vat_tu
34 VALUES ( 'NCC0003' , 'VT0004' , 'CN3' );
35 INSERT INTO cung_cap_vat_tu
36 VALUES ( 'NCC0003' , 'VT0005' , 'CN3' );
```

2.13 Khach Hang:

```
1 INSERT INTO khach_hang
2 VALUES ( 'KH' , '251287478' , '0918874569' , 'kh1@gmai.com' , 'kh1_2022' , '987654321' , default ,
3 default );
4 INSERT INTO khach_hang
5 VALUES ( 'KH' , '251288478' , '0918874570' , 'kh2@gmai.com' , 'kh2_2022' , '987654322' , default ,
6 default );
7 INSERT INTO khach_hang
8 VALUES ( 'KH' , '251777478' , '0918874571' , 'kh3@gmai.com' , 'kh3_2022' , '987654323' , default ,
9 default );
10 INSERT INTO khach_hang
```

```

8 VALUES ('KH','259787478','0918874572','kh4@gmai.com','kh4_2022','987654324', default,
9 default);
10 INSERT INTO khach_hang
10 VALUES ('KH','251212378','0918874573','kh5@gmai.com','kh5_2022','987654325', default,
11 default);
11 INSERT INTO khach_hang
11 VALUES ('KH','251789678','0918874574','kh6@gmai.com','kh6_2022','987654326', default,
12 default);
12 INSERT INTO khach_hang
12 VALUES ('KH','251214878','0918874575','kh7@gmai.com','kh7_2022','987654327', 15, default);
13 INSERT INTO khach_hang
13 VALUES ('KH','251288479','0918874576','kh8@gmai.com','kh8_2022','987654328', 20, default);
14 INSERT INTO khach_hang
14 VALUES ('KH','251777498','0918874577','kh9@gmai.com','kh9_2022','987654329', 57, default);
15 INSERT INTO khach_hang
15 VALUES ('KH','259787491','0918874578','kh10@gmai.com','kh10_2022','987654330', 89, default
16 );
16 INSERT INTO khach_hang
17 VALUES ('KH','251212392','0918874579','kh11@gmai.com','kh11_2022','987654331', 110,
18 default);
19 INSERT INTO khach_hang
20 VALUES ('KH','251789693','0918874580','kh12@gmai.com','kh12_2022','987654332', 160,
21 default);

```

2.14 Goi Dich Vu:

```

1 INSERT INTO goi_dich_vu
2 VALUES (10,3,3000, 'Goi 1');
3 INSERT INTO goi_dich_vu
4 VALUES (15,3,4000, 'Goi 2');
5 INSERT INTO goi_dich_vu
6 VALUES (20,5,6000, 'Goi 3');
7 INSERT INTO goi_dich_vu
8 VALUES (30,5,7000, 'Goi 4');
9 INSERT INTO goi_dich_vu
10 VALUES (40,8,15000, 'Goi 5');
11 INSERT INTO goi_dich_vu
12 VALUES (50,10,20000, 'Goi 6');

```

2.15 Hoa Don Goi Dich Vu:

```

1 INSERT INTO hoa_don_goi_dich_vu
2 VALUES ('KH000001','Goi 1','02-09-2022 15:04:05','02-10-2022',,0);
3 INSERT INTO hoa_don_goi_dich_vu
4 VALUES ('KH000002','Goi 2','15-09-2022 08:12:19','28-09-2022',,0);
5 INSERT INTO hoa_don_goi_dich_vu
6 VALUES ('KH000003','Goi 3','23-09-2022 04:55:34','01-10-2022',,0);
7 INSERT INTO hoa_don_goi_dich_vu
8 VALUES ('KH000004','Goi 4','01-10-2022 20:41:07','15-10-2022',,0);
9 INSERT INTO hoa_don_goi_dich_vu
10 VALUES ('KH000005','Goi 5','25-10-2022 17:02:47','30-10-2022',,0);
11 INSERT INTO hoa_don_goi_dich_vu
12 VALUES ('KH000001','Goi 3','16-10-2022 18:02:45','20-10-2022',,0);

```

2.16 Don Dat Phong:

```

1 INSERT INTO don_dat_phong
2 VALUES ('DP','15-09-2022 08:12:19', 3,'25-09-2022','28-09-2022',,0,,0,'KH000001', 'Goi 1');
3 INSERT INTO don_dat_phong
4 VALUES ('DP','19-09-2022 10:12:19', 3,'24-09-2022','28-09-2022',,0,,0,'KH000002', 'Goi 2');
5 INSERT INTO don_dat_phong
6 VALUES ('DP','15-08-2022 08:12:19', 10,'25-09-2022','28-09-2022',,1,,0,'KH000003', 'Goi 3');
7 INSERT INTO don_dat_phong

```

```

8 VALUES ( 'DP' , '19-08-2022 10:12:19' , 7 , '24-09-2022' , '28-09-2022' , 1,0 , 'KH000004' , 'Goi 4');
9 INSERT INTO don_dat_phong
10 VALUES ( 'DP' , '15-07-2022 08:12:19' , 5 , '25-08-2022' , '28-08-2022' , 1,0 , 'KH000005' , 'Goi 5');
11 INSERT INTO don_dat_phong
12 VALUES ( 'DP' , '19-06-2022 10:12:19' , 25 , '24-07-2022' , '28-07-2022' , 1,0 , 'KH000006' , 'Goi 4');

```

2.17 Phong Thue:

```

1 INSERT INTO phong_thue
2 VALUES ( 'DP15092022000001' , 'CN2' , '101' );
3 INSERT INTO phong_thue
4 VALUES ( 'DP19092022000002' , 'CN2' , '102' );
5 INSERT INTO phong_thue
6 VALUES ( 'DP19092022000002' , 'CN2' , '201' );
7 INSERT INTO phong_thue
8 VALUES ( 'DP15092022000001' , 'CN2' , '103' );
9 INSERT INTO phong_thue
10 VALUES ( 'DP15092022000001' , 'CN2' , '104' );
11 INSERT INTO phong_thue
12 VALUES ( 'DP15092022000001' , 'CN2' , '105' );
13 INSERT INTO phong_thue
14 VALUES ( 'DP15082022000003' , 'CN1' , '201' );
15 INSERT INTO phong_thue
16 VALUES ( 'DP15082022000003' , 'CN1' , '101' );
17 INSERT INTO phong_thue
18 VALUES ( 'DP15082022000003' , 'CN1' , '102' );
19 INSERT INTO phong_thue
20 VALUES ( 'DP19082022000004' , 'CN2' , '203' );

```

2.18 Hoa Don:

```

1 INSERT INTO hoa_don
2 VALUES ( 'HD' , '08:00' , '13:00' , 'DP19092022000002' );
3 INSERT INTO hoa_don
4 VALUES ( 'HD' , '19:00' , '15:00' , 'DP15082022000003' );
5 INSERT INTO hoa_don
6 VALUES ( 'HD' , '04:00' , '12:00' , 'DP19082022000004' );
7 INSERT INTO hoa_don
8 VALUES ( 'HD' , '05:00' , '22:00' , 'DP15072022000005' );
9 INSERT INTO hoa_don
10 VALUES ( 'HD' , '06:00' , '18:00' , 'DP19062022000006' );

```

2.19 Doanh Nghiep:

```

1 INSERT INTO doanh_nghiep
2 VALUES ( 'DN' , 'VinAI' );
3 INSERT INTO doanh_nghiep
4 VALUES ( 'DN' , 'FPT' );
5 INSERT INTO doanh_nghiep
6 VALUES ( 'DN' , 'Trusting_social' );
7 INSERT INTO doanh_nghiep
8 VALUES ( 'DN' , 'KMC' );
9 INSERT INTO doanh_nghiep
10 VALUES ( 'DN' , 'Viettel' );

```

2.20 Dich Vu:

```

1 INSERT INTO dich_vu
2 VALUES ( 'DVR' , 'nha hang' , 100 , 'chau a' , 'DN0001' );
3 INSERT INTO dich_vu
4 VALUES ( 'DVS' , 'spa' , 20 , 'chau a' , 'DN0002' );

```

```

5 INSERT INTO dich_vu
6 VALUES ( 'DVC' , 'cua hang tien loi' , 30 , 'chau a' , 'DN0003' );
7 INSERT INTO dich_vu
8 VALUES ( 'DVM' , 'do luu niem' , 40 , 'chau a' , 'DN0004' );
9 INSERT INTO dich_vu
10 VALUES ( 'DVB' , 'bar' , 300 , 'chau a' , 'DN0005' );

```

2.21 Dich Vu Spa:

```

1 INSERT INTO dich_vu_spa
2 VALUES ( 'DVS002' , 'nan mun' );
3 INSERT INTO dich_vu_spa
4 VALUES ( 'DVS002' , 'lan kim' );
5 INSERT INTO dich_vu_spa
6 VALUES ( 'DVS002' , 'mat xa' );
7 INSERT INTO dich_vu_spa
8 VALUES ( 'DVS002' , 'xong hoi' );
9 INSERT INTO dich_vu_spa
10 VALUES ( 'DVS002' , 'ban laze' );

```

2.22 Loai Hang Do Luu Niem:

```

1 INSERT INTO loai_hang_do_luu_niem
2 VALUES ( 'DVM004' , 'tuong' );
3 INSERT INTO loai_hang_do_luu_niem
4 VALUES ( 'DVM004' , 'non la' );
5 INSERT INTO loai_hang_do_luu_niem
6 VALUES ( 'DVM004' , 'khan ran' );
7 INSERT INTO loai_hang_do_luu_niem
8 VALUES ( 'DVM004' , 'ao dai' );
9 INSERT INTO loai_hang_do_luu_niem
10 VALUES ( 'DVM004' , 'mo hinh' );

```

2.23 Thuong Hieu Do Luu Niem:

```

1 INSERT INTO thuong_hieu_do_luu_niem
2 VALUES ( 'DVM004' , 'Kinh Do' );
3 INSERT INTO thuong_hieu_do_luu_niem
4 VALUES ( 'DVM004' , 'Ai Phuong' );
5 INSERT INTO thuong_hieu_do_luu_niem
6 VALUES ( 'DVM004' , 'Mai Linh' );
7 INSERT INTO thuong_hieu_do_luu_niem
8 VALUES ( 'DVM004' , 'Thanh Buoi' );
9 INSERT INTO thuong_hieu_do_luu_niem
10 VALUES ( 'DVM004' , 'Song Xanh' );

```

2.24 Mat Bang:

```

1 INSERT INTO mat_bang (ma_chi_nhanh , stt_mat_bang , chieu_dai , chieu_rong , gia_thue , ma_dich_vu)
2 VALUES ( 'CN2' , 1 , 50 , 30 , 10000 , 'DVM004' );
3 INSERT INTO mat_bang (ma_chi_nhanh , stt_mat_bang , chieu_dai , chieu_rong , gia_thue , ma_dich_vu)
4 VALUES ( 'CN2' , 2 , 450 , 50 , 40000 , 'DVC003' );
5 INSERT INTO mat_bang (ma_chi_nhanh , stt_mat_bang , chieu_dai , chieu_rong , gia_thue , ma_dich_vu)
6 VALUES ( 'CN2' , 3 , 300 , 150 , 30000 , 'DVB005' );
7 INSERT INTO mat_bang (ma_chi_nhanh , stt_mat_bang , chieu_dai , chieu_rong , gia_thue , ma_dich_vu)
8 VALUES ( 'CN2' , 4 , 600 , 100 , 70000 , 'DVS002' );
9 INSERT INTO mat_bang (ma_chi_nhanh , stt_mat_bang , chieu_dai , chieu_rong , gia_thue , ma_dich_vu)
10 VALUES ( 'CN2' , 5 , 1000 , 300 , 100000 , 'DVR001' );

```

2.25 Hinh Anh Cuu Hang:

```
1 INSERT INTO hinh_anh_cua_hang
2 VALUES ( 'CN2' , 1, 'https://imgur.com/gallery/SP6MWqB' );
3 INSERT INTO hinh_anh_cua_hang
4 VALUES ( 'CN2' , 2, 'https://imgur.com/gallery/SP6MWtB' );
5 INSERT INTO hinh_anh_cua_hang
6 VALUES ( 'CN2' , 3, 'https://imgur.com/gallery/SP6NWqB' );
7 INSERT INTO hinh_anh_cua_hang
8 VALUES ( 'CN2' , 4, 'https://imgur.com/gallery/SP7MWqB' );
9 INSERT INTO hinh_anh_cua_hang
10 VALUES ( 'CN2' , 5, 'https://imgur.com/gallery/SP6MWqA' );
```

2.26 Khung Gio Hoat Dong Cua Hang:

```
1 INSERT INTO khung_gio_hoat_dong_cua_hang
2 VALUES ( 'CN2' , 1, '08:00' , '12:00' );
3 INSERT INTO khung_gio_hoat_dong_cua_hang
4 VALUES ( 'CN2' , 1, '14:00' , '18:00' );
5 INSERT INTO khung_gio_hoat_dong_cua_hang
6 VALUES ( 'CN2' , 2, '08:00' , '11:00' );
7 INSERT INTO khung_gio_hoat_dong_cua_hang
8 VALUES ( 'CN2' , 2, '13:00' , '17:00' );
9 INSERT INTO khung_gio_hoat_dong_cua_hang
10 VALUES ( 'CN2' , 3, '07:00' , '12:00' );
11 INSERT INTO khung_gio_hoat_dong_cua_hang
12 VALUES ( 'CN2' , 4, '08:00' , '12:00' );
13 INSERT INTO khung_gio_hoat_dong_cua_hang
14 VALUES ( 'CN2' , 4, '15:00' , '20:00' );
15 INSERT INTO khung_gio_hoat_dong_cua_hang
16 VALUES ( 'CN2' , 5, '08:00' , '17:00' );
```

3 Store Procedure, Functions, Triggers

3.1 Function:

3.1.1 GoiDichVu function:

```
1 create or replace function public.GoiDichVu(
2     ma character)
3     returns table ( ten_goi text ,
4                     so_khach integer ,
5                     ngay_bat_dau date ,
6                     ngay_het_han date ,
7                     so_ngay_con_lai double precision
8                 )
9     language 'plpgsql'
10    cost 100
11    volatile parallel unsafe
12    rows 1000
13 as $body$
14 declare
15     ngay_het_han date ;
16     con_lai date;
17 begin
18     return query
19     select
20         h.ten_goi ,
21         g.so_khach ,
22         h.ngay_bat_dau ,
23         (h.ngay_bat_dau + interval '1 year') :: date ,
24         date_part('day', h.ngay_bat_dau + interval '1 year' - current_date)
25     from
26         hoa_don_goi_dich_vu h ,
27         goi_dich_vu g
28     where
29         ma = h.ma_khach_hang and
30         h.ten_goi = g.ten_goi ;
31 end;
32 $body$;
```

3.1.2 ThongKeLuotKhach function:

```
1 CREATE OR REPLACE FUNCTION public.ThongKeLuotKhach(
2     ma_cn text ,
3     nam integer)
4     RETURNS TABLE(thang integer , tong_so_khach bigint)
5     LANGUAGE 'plpgsql'
6     COST 100
7     VOLATILE PARALLEL UNSAFE
8     ROWS 1000
9
10 AS $BODY$
11 begin
12     return query
13     select
14         extract (month FROM d.ngay_nhan_phong)::int as Thang ,
15         sum(d.so_khach) as So_khach
16     FROM don_dat_phong d
17
18
19     where EXTRACT(YEAR FROM d.ngay_gio_dat)::int = nam
20     and d.tinh_trang = 1
21     --and d.ma_dat_phong = (select ma_dat_phong from phong_thue ph where ma_cn = ph.
22     --                         ma_chi_nhanh)
23     and true = exists (SELECT 1 FROM phong_thue p WHERE p.ma_dat_phong =d.ma_dat_phong and
24                         p.ma_chi_nhanh = ma_cn LIMIT 1)
25     --and p.ma_chi_nhanh = ma_cn
26     --and p.ma_dat_phong =d.ma_dat_phong
```

```

25 GROUP BY extract (month FROM d.ngay_nhan_phong)
26 ;
27
28 end;
29 $BODY$;
```

3.2 Trigger:

3.2.1 Trigger 1a: Tong Tien Goi Dich Vu

```

1 CREATE OR REPLACE FUNCTION public.tong_tien_goi_dich_vu()
2   RETURNS trigger
3   LANGUAGE 'plpgsql'
4   COST 100
5   VOLATILE NOT LEAKPROOF
6 AS $BODY$
7 declare
8   giam_gia int;
9   tien_goi int;
10  loai_khach int;
11 BEGIN
12   select k.loai into loai_khach from khach_hang k where NEW.ma_khach_hang = k.ma_khach_hang
13   ;
14   if (loai_khach =3) then
15     giam_gia = 85 ;
16     update hoa_don_goi_dich_vu h set ngay_con_lai = ngay_con_lai +1;
17   elseif (loai_khach =4) then
18     giam_gia = 80;
19     update hoa_don_goi_dich_vu h set ngay_con_lai = ngay_con_lai +2;
20   else
21     giam_gia = 100;
22   end if;
23
24   select gia into tien_goi from goi_dich_vu g
25   where NEW.ten_goi = g.ten_goi ;
26
27   new.tong_tien = tien_goi * giam_gia /100 ;
28   -- end if;
29   RETURN NEW;
30 END;
31 $BODY$;
32
33
34 CREATE TRIGGER trigg_tong_tien_goi_dich_vu
35   BEFORE INSERT on hoa_don_goi_dich_vu
36   FOR EACH ROW
37
38   EXECUTE FUNCTION public.tong_tien_goi_dich_vu();
```

3.2.2 Trigger 1b: Tong Tien Don Dat Phong

```

1 CREATE OR REPLACE FUNCTION public.tong_tien_don_dat_phong()
2   RETURNS trigger
3   LANGUAGE 'plpgsql'
4   COST 100
5   VOLATILE NOT LEAKPROOF
6 AS $BODY$
7 declare
8   giam_gia int;
9   tien_phong int;
10  loai_khach int;
11  ngay_thue int;
12  goi_dv text;
13 BEGIN
```

```

14 select k.loai into loai_khach from khach_hang k , don_dat_phong d where NEW.ma_dat_phong =
15   d.ma_dat_phong
16   AND d.ma_khach_hang = k.ma_khach_hang ;
17 if (loai_khach =2) then
18   giam_gia := 90;
19 elseif (loai_khach =3) then
20   giam_gia := 85 ;
21 elseif (loai_khach =4) then
22   giam_gia := 80;
23 else giam_gia := 100;
24 end if ;
25
26 select abs(extract('day' from d.ngay_tra_phong :: timestamp - d.ngay_nhan_phong :: timestamp))
27   into ngay_thue from don_dat_phong d where new.ma_dat_phong = d.ma_dat_phong;
28 select gia_thue into tien_phong from chi_nhanh_co_loai_phong cn
29   where NEW.ma_chi_nhanh = cn.ma_chi_nhanh and
30         cn.ma_loai_phong = (SELECT ma_loai_phong from phong p
31         where p.so_phong = NEW.so_phong AND
32               p.ma_chi_nhanh = NEW.ma_chi_nhanh);
33 select d.ten_goi_dich_vu into goi_dv from don_dat_phong d where new.ma_dat_phong = d.
34   ma_dat_phong ;
35 if (goi_dv <> null) then
36   UPDATE don_dat_phong d SET tong_tien = tong_tien where d.ma_dat_phong = new.ma_dat_phong
37   ;
38 else
39   UPDATE don_dat_phong d SET tong_tien = tong_tien + tien_phong* ngay_thue * giam_gia
40   /100 where d.ma_dat_phong = new.ma_dat_phong;
41 end if ;
42 RETURN NEW;
43
44 $BODY$;
45
46 ALTER FUNCTION public.tong_tien_don_dat_phong()
47 OWNER TO postgres;
48
49 CREATE TRIGGER trigg_tong_tien_don_dat_phong
50 BEFORE INSERT on phong_thue
51 FOR EACH ROW
52
53 EXECUTE FUNCTION public.tong_tien_don_dat_phong();

```

3.2.3 Trigger 1c: Diem Cua Khach Hang

We used 2 trigger

```

1 CREATE OR REPLACE FUNCTION public.diem_khach_hang_goi_dich_vu()
2   RETURNS trigger
3   LANGUAGE 'plpgsql'
4   COST 100
5   VOLATILE NOT LEAKPROOF
6 AS $BODY$
7 declare
8
9   tien_tra_goi_dich_vu int;
10
11 BEGIN
12   select new.tong_tien into tien_tra_goi_dich_vu
13     from hoa_don_goi_dich_vu h, khach_hang k
14    where k.ma_khach_hang = h.ma_khach_hang
15    and new.ten_goi = h.ten_goi
16    and new.ngay gio_mua = h.ngay gio_mua
17    and new.ma_khach_hang = h.ma_khach_hang;
18
19
20   update khach_hang k set diem = diem + tien_tra_goi_dich_vu / 1000
21
22   where new.ma_khach_hang = k.ma_khach_hang;
23

```

```

24 RETURN new;
25 END;
26 $BODY$;
27
28 ALTER FUNCTION public.diem_khach_hang_goi_dich_vu()
29 OWNER TO postgres;
30
31
32
33 CREATE TRIGGER trigg_diem_khach_hang_goi_dich_vu
34 AFTER INSERT on hoa_don_goi_dich_vu
35 FOR EACH ROW
36 EXECUTE FUNCTION public.diem_khach_hang_goi_dich_vu();

```

```

1 CREATE OR REPLACE FUNCTION public.diem_khach_hang_don_dat_phong()
2 RETURNS trigger
3 LANGUAGE 'plpgsql'
4 COST 100
5 VOLATILE NOT LEAKPROOF
6 AS $BODY$
7 declare
8     giam_gia int;
9     tien_phong int;
10    loai_khach int;
11    goi_dv text;
12    tien_tra_don_dat_phong int;
13    ngay_thue int;
14    BEGIN
15        select k.loai into loai_khach from khach_hang k , don_dat_phong d where NEW.ma_dat_phong =
16            d.ma_dat_phong
17                                AND d.ma_khach_hang = k.ma_khach_hang ;
18
19        if (loai_khach =2) then
20            giam_gia := 0.9;
21        elseif (loai_khach =3) then
22            giam_gia := 0.85 ;
23        elseif (loai_khach =4) then
24            giam_gia := 0.80;
25        else giam_gia := 1;
26        end if;
27
28        select gia_thue into tien_phong from chi_nhanh_co_loai_phong cn
29            where NEW.ma_chi_nhanh = cn.ma_chi_nhanh and
30                cn.ma_loai_phong = (SELECT ma_loai_phong from phong p
31                    where p.so_phong = NEW.so_phong AND
32                        p.ma_chi_nhanh = NEW.ma_chi_nhanh);
33
34        select abs(extract('day' from d.ngay_tra_phong::timestamp - d.ngay_nhan_phong::timestamp))
35            into ngay_thue from don_dat_phong d where new.ma_dat_phong = d.ma_dat_phong;
36        update khach_hang k set diem = diem + tien_phong * giam_gia * ngay_thue / 1000
37            from don_dat_phong d
38            where d.tinh_trang = 1
39                and k.ma_khach_hang = (select d.ma_khach_hang from don_dat_phong d where new.
40                    ma_dat_phong = d.ma_dat_phong) ;
41        return new;
42    END;
43 $BODY$;
44
45
46
47 CREATE TRIGGER trigg_diem_khach_hang_don_dat_phong
48 BEFORE INSERT on phong_thue
49 FOR EACH ROW
50 EXECUTE FUNCTION public.diem_khach_hang_don_dat_phong();

```

3.2.4 Trigger 1d: Loai Khach Hang

```

1 CREATE OR REPLACE FUNCTION public.loai_khach_hang()
2   RETURNS trigger
3   LANGUAGE 'plpgsql'
4   COST 100
5   VOLATILE NOT LEAKPROOF
6 AS $BODY$
7 declare
8
9   diem_khach int;
10  loai_khach int;
11
12 BEGIN
13
14  NEW.loai := CASE WHEN NEW.diem < 50 THEN 1
15    WHEN NEW.diem BETWEEN 50 AND 100 THEN 2
16    WHEN NEW.diem BETWEEN 100 AND 1000 THEN 3
17    ELSE 4 END;
18
19
20 RETURN NEW;
21
22 END;
23 $BODY$;
24
25 ALTER FUNCTION public.loai_khach_hang()
26   OWNER TO postgres;
27
28
29 CREATE TRIGGER trigg_cap_nhat_loai_khach_hang
30   before INSERT or UPDATE on khach_hang
31   FOR EACH ROW
32     EXECUTE FUNCTION public.loai_khach_hang();

```

3.2.5 Trigger 2: Kiem tra Goi Dich Vu trung

When clients buy the same package but the older one is still not expired, this trigger will inform the customer that they should change 'Thoi gian bat dau' cua 'Goi Dich Vu'

```

1 CREATE OR REPLACE FUNCTION public.kiem_tra_goi_dich_vu()
2   RETURNS trigger
3   LANGUAGE 'plpgsql'
4   COST 100
5   VOLATILE NOT LEAKPROOF
6 AS $BODY$
7 declare
8   han_goi_cu date;
9   BEGIN
10
11  select (h.ngay_bat_dau + interval '1 year')::date into han_goi_cu from hoa_don_goi_dich_vu
12    h
13      where new.ma_khach_hang = h.ma_khach_hang
14        and new.ten_goi = h.ten_goi;
15
16  if (new.ngay_bat_dau < han_goi_cu) then
17    raise EXCEPTION 'Goi dich vu con thoi gian hieu luc, khong the mua goi moi. Quy khach hay
18      thay doi Ngay bat dau cua Goi dich vu moi';
19  end if;
20
21
22  RETURN NEW;
23 END;
24 $BODY$;
25
26 ALTER FUNCTION public.kiem_tra_goi_dich_vu()

```

```
27 OWNER TO postgres;
28
29 CREATE TRIGGER trigg_kiem_tra_goi_dich_vu
30   before INSERT on hoa_don_goi_dich_vu
31 FOR EACH ROW
32   EXECUTE FUNCTION public.kiem_tra_goi_dich_vu();
```

4 Build application

- Programming environment: Web application
- Programming language: Python, Flask, HTML

4.1 Instruction to run our website on your local

Link github to our code: https://github.com/Karej/Database_assignment.git

You should download Zip file and then extract it in your folder. Remember to create virtual environment and activate your folder. Link for instruction: <https://youtu.be/QjtW-wnXlUY>

After following the video, you should know how to run our web application to test on your own local.

4.2 Create User

Requiremet: Đăng nhập vào CSDL bằng user có quyền DBA, tạo user có tên là sManager và gán tất cả quyền truy xuất vào CSDL cho user này.

```
postgres=# GRANT postgres TO smanager;
NOTICE:  role "smanager" is already a member of role "postgres"
GRANT ROLE
postgres=# GRANT SELECT, INSERT, UPDATE, DELETE ON ALL TABLES IN SCHEMA public TO smanager;
GRANT
postgres=#
```

Figure 1

Initially, We already have an admin user 'postgres', which has all role to access and query database 'postgres' - our database for this assignment. So in order to create a new admin user that has access to this database, we grant Role of 'postgres' admin to 'sManager' by this command: "GRANT postgres to smanager". Next, we also need to grant all the type of access to 'sManager' such as SELECT, INSERT, ALTER,... to user smanager

4.3 Functional reality

4.3.1 Log-in, Log-out

```
#app.route('/data/')
def data():
    conn = psycopg2.connect("postgresql://smanager:phucbao12340@localhost:5432/postgres")
    return conn
You, last week • Add ...
```

Figure 2:

Then in python app.py. We import the psycopg2 library. Then you open a connection to the 'postgres' database using the psycopg2.connect() function. The command "postgresql://smanager:phucbao12340@localhost:5432/postgres" is used to connect to database system. "smanager:phucbao12340" is the user name and password. "localhost:5432/postgres" is the host and port of postgres database

4.3.2 Log-in sManager and do:

A. View information of customers (except password)

```

@app.route('/khach_hang/')
def Kh():
    conn = data()
    cur = conn.cursor()
    cur.execute('SELECT * FROM khach_hang;')
    khach_hang = cur.fetchall()
    cur.close()
    conn.close()
    return render_template('khach_hang.html', khach_hang=khach_hang)

```

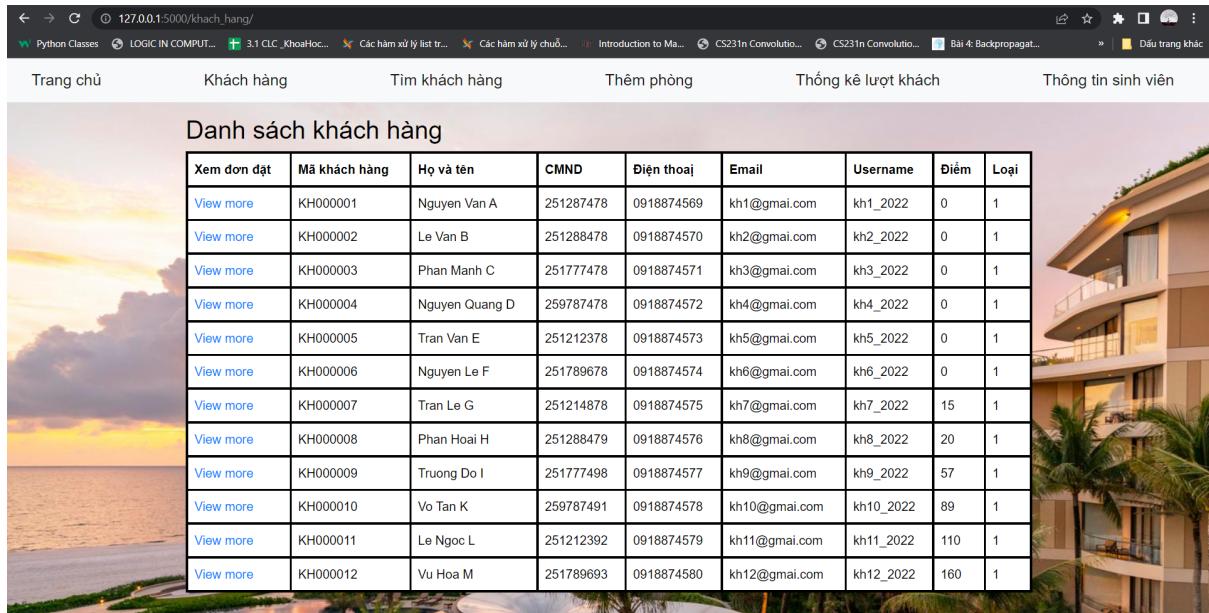
Figure 3:

You create a cursor called **cur** using the **connection.cursor()** method, which allows Python code to execute PostgreSQL commands in a database session by **cur.execute()**.

Then in **cur.execute()**, we pass "SELECT * FROM khach_hang;" - this is the SELECT command in Postgres, to query all the information of table khach_hang, this return a str object in python, We save it in khach_hang

Finally, we render the information in 'khach_hang.html'.

The result on our website:



Xem đơn đặt	Mã khách hàng	Họ và tên	CMND	Điện thoại	Email	Username	Điểm	Loại
View more	KH000001	Nguyen Van A	251287478	0918874569	kh1@gmai.com	kh1_2022	0	1
View more	KH000002	Le Van B	251288478	0918874570	kh2@gmai.com	kh2_2022	0	1
View more	KH000003	Phan Manh C	251777478	0918874571	kh3@gmai.com	kh3_2022	0	1
View more	KH000004	Nguyen Quang D	259787478	0918874572	kh4@gmai.com	kh4_2022	0	1
View more	KH000005	Tran Van E	251212378	0918874573	kh5@gmai.com	kh5_2022	0	1
View more	KH000006	Nguyen Le F	251789678	0918874574	kh6@gmai.com	kh6_2022	0	1
View more	KH000007	Tran Le G	251214878	0918874575	kh7@gmai.com	kh7_2022	15	1
View more	KH000008	Phan Hoai H	251288479	0918874576	kh8@gmai.com	kh8_2022	20	1
View more	KH000009	Truong Do I	251777498	0918874577	kh9@gmai.com	kh9_2022	57	1
View more	KH000010	Vo Tan K	259787491	0918874578	kh10@gmai.com	kh10_2022	89	1
View more	KH000011	Le Ngoc L	251212392	0918874579	kh11@gmai.com	kh11_2022	110	1
View more	KH000012	Vu Hoa M	251789693	0918874580	kh12@gmai.com	kh12_2022	160	1

Figure 4:

As you can see, we display all the information of all customers, we also have addition column "Xem đơn đặt", you can click on the link "View more" to view "Đơn đặt phòng" of that customer.

B. TÌM KIẾM THÔNG TIN KHÁCH HÀNG

In this route, we pass the tuple ('GET', 'POST') to the methods parameter to allow both GET and POST requests. GET requests are used to retrieve data from the server. POST requests are used to post data to a specific

route.

```
@app.route('/tim_khach_hang/', methods=['GET', 'POST'])
def Kh_find():
    #input a username, find and display the user's information
    if request.method == 'POST':
        username = request.form['username']
        khach_hang = Kh_1(username)
        #dd(khach_hang[0][0])
        return render_template('khach_hang.html', khach_hang=khach_hang)
    return render_template('tim_khach_hang.html')
```

Figure 5:

The function Kh_1() is called to execute query: " SELECT * FROM khach_hang WHERE khach_hang.ho_ten = username;

```
def Kh_1(username):
    conn = data()
    cur = conn.cursor()
    cur.execute('SELECT * FROM khach_hang WHERE khach_hang.ho_ten = %s;',(username,))
    khach_hang = cur.fetchall()
    cur.close()
    conn.close()
    return khach_hang
```

Figure 6:

Result on website:

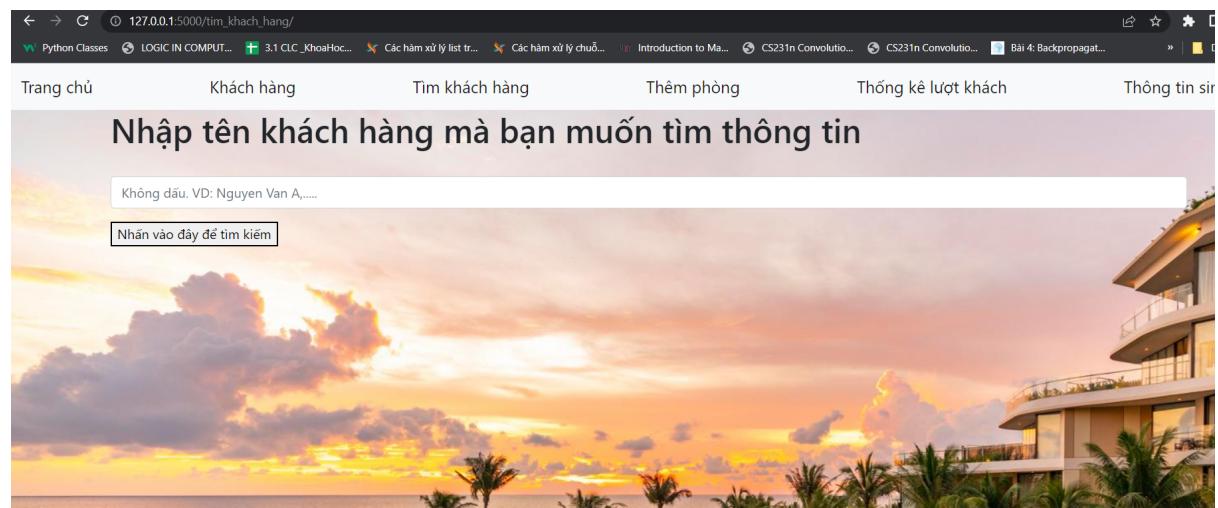


Figure 7:

Type customer's name that you want to search in the white box then click the button below.

For example, I search " Nguyen Van A ", then the result:

Xem đơn đặt	Mã khách hàng	Họ và tên	CMND	Điện thoại	Email	Username	Điểm	Loại
View more	KH000001	Nguyen Van A	251287478	0918874569	kh1@mai.com	kh1_2022	0	1

Figure 8:

C. Create new room type

We basically use create_phong() function as below to request information from smanager and then query to database using "INSERT INTO loai_phong"

```
@app.route('/them_phong/', methods=['GET', 'POST'])
def create_phong():
    if request.method == 'POST':
        ma_loai_phong = int(request.form['id'])
        ten_loai_phong = request.form['ten']
        dien_tich = float(request.form['dien_tich'])
        so_khach = int(request.form['so'])
        kt_giuong = request.form['kt_giuong']
        sl_giuong = int(request.form['sl_giuong'])
        mo_ta_khac = request.form['mo_ta']
        id_vat_tu = request.form['id_vat_tu']
        #id_phong = int(request.form['ma_phong'])
        sl_yattu = int(request.form['sl_yattu'])

        conn = data()
        cur = conn.cursor()
        cur.execute('SELECT MAX(ma_loai_phong) FROM loai_phong;')
        max_ma = cur.fetchall()
        ma_max = int(max_ma[0][0]) + 1
        cur.execute('INSERT INTO loai_phong (ma_loai_phong,ten_loai_phong, dien_tich, so_khach, mo_ta_khac)'
                   'VALUES ( %s ,%s, %s, %s, %s);',
                   ( ma_max,ten_loai_phong, dien_tich, so_khach, mo_ta_khac))
        cur.execute('SELECT MAX(ma_loai_phong) FROM loai_phong;')
        max_ma = cur.fetchall()
        cur.execute('INSERT INTO thong_tin_giuong(ma_loai_phong, kich_thuoc, so_luong)'
                   'VALUES ( %s, %s, %s);',
                   (ma_max, kt_giuong, sl_giuong))
        cur.execute(' INSERT INTO loai_vat_tu_trong_phong(ma_loai_vat_tu, ma_loai_phong, so_luong)'
                   'VALUES ( %s, %s, %s);',
                   ( id_vat_tu,ma_max, sl_yattu))
        conn.commit()
        cur.close()
        conn.close()
        #return redirect(url_for('index'))
    return render_template('create_phong.html')
```

Figure 9:

Result on our website:

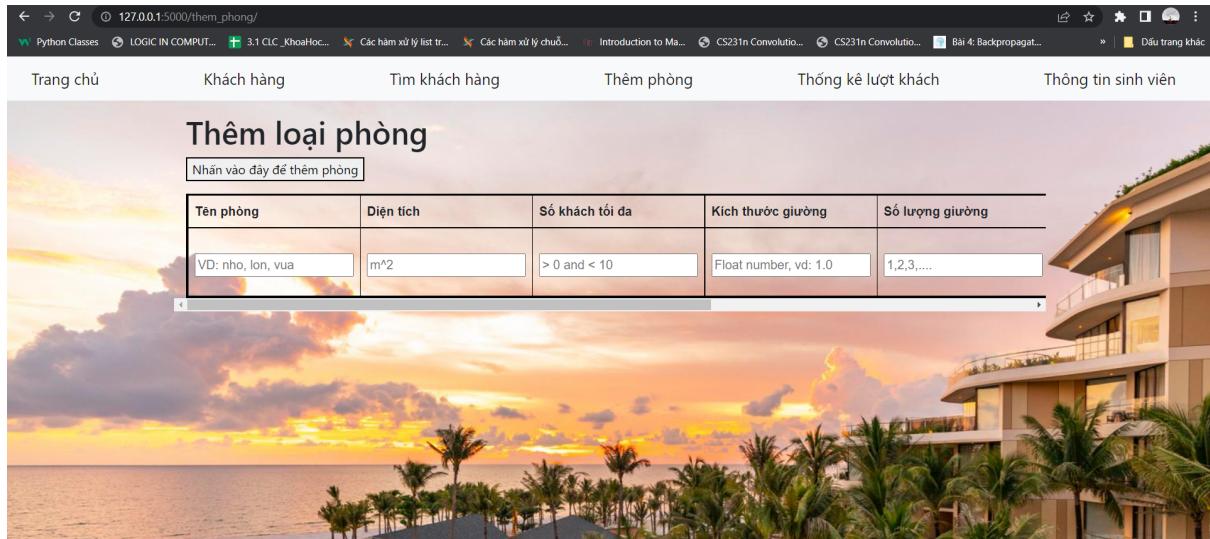


Figure 10:

Now you can type the information of new room type that you want to create, then click on "Nhấn vào đây để thêm phòng" button. Remember to follow the instruction at each insert box.

After create successfully, we will have new column in loai_phong table.

D. Count the number of customer at a branch / year

At part 2, we've already created a function **thongkeluotkhach()** that help us count the number of customer at a branch / year. So now, we use **thong_ke()** to do call that function.

```
def thong_ke():
    if request.method == 'POST':
        chi_nhanh = request.form['chi_nhanh']
        year = int(request.form['year'])
        #username = request.form['username']
        #khach_hang = Kh_1(username)
        conn = data()
        cur = conn.cursor()
        #ma = dd
        cur.execute('SELECT thongkeluotkhach(%s,%s);',(chi_nhanh,year,))
        thong_ke = cur.fetchall()
        cur.close()
        conn.close()

        #dd(khach_hang[0][0])
        return render_template('hien_thi_thong_ke.html', thong_ke=thong_ke, chi_nhanh=chi_nhanh, year=year)
    return render_template('thong_ke.html')
```

Figure 11:

This is the result on our website:

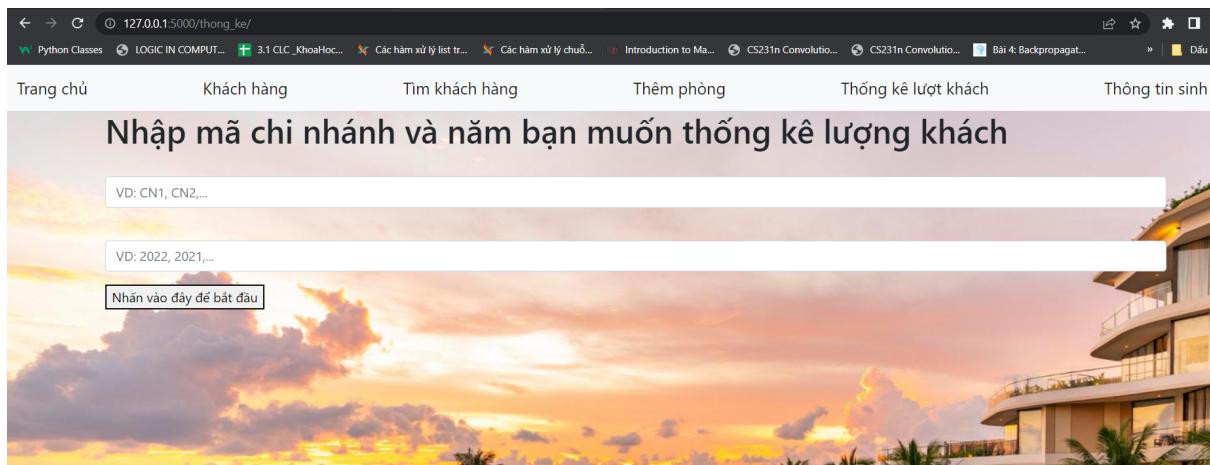


Figure 12:

Suppose we want to count from CN1 in 2022, we type in the white box exactly what we want than click the button.

We have a statistical table, first column represents month in that year, second one represents the number of customers.

The screenshot shows a web browser window with the URL 127.0.0.1:5000/thong_ke/. The page has a header with navigation links: Trang chủ, Khách hàng, Tim khách hàng, Thêm phòng, Thống kê lượt khách, and Thông tin sinh viên. Below the header is a title: Kết quả thống kê lượng khách tại một chi nhánh trong một năm. It displays the branch code: Mã chi nhánh: CN1 and the year: Năm: 2022. Below this is a table showing customer counts by month:

Tháng	Số lượt khách trong tháng đó
11	44
12	33

Figure 13: