

# Postgres 2

# Implement Library Database

## Add space\_available function

```
create or replace function space_available(lib integer)
```

```
returns integer AS $$
```

```
Declare
```

```
    cap integer;
```

```
    used integer;
```

```
    avail integer;
```

```
Begin
```

```
    select L.capacity into cap
```

```
    from library L
```

```
    where L.libnum = lib;
```

```
    select count(copynum) into used
```

```
    from copy C
```

```
    where C.libnum = lib;
```

```
    avail := cap - used;
```

```
    return avail;
```

```
End;
```

```
$$ Language plpgsql;
```

# Add Procedure to the Database

```
cs464=# \cd /Users/gendreau/classes/spring21/cs464/SQLReview
```

```
cs464=# \! pwd
```

```
/Users/gendreau/classes/spring21/cs464/SQLReview
```

```
cs464=# \i avail.sql
```

```
CREATE FUNCTION
```

```
cs464=# \df
```

```
                List of functions
 Schema |      Name      | Result data type | Argument data types | Type
-----+-----+-----+-----+-----
 public | space_available | integer          | lib integer          | func
(1 row)
```

# Use Space Available Function

```
cs464lib=# select space_available(libnum) from library;  
space_available
```

```
-----
```

```
21
```

```
42
```

```
12
```

```
88
```

```
131
```

```
28
```

```
13
```

```
25
```

```
0
```

```
(9 rows)
```

# Implement Library Database

## Add check\_full trigger

```
create or replace function check_full() returns trigger AS $$
```

```
Declare
```

```
    avail integer;
```

```
Begin
```

```
    avail = space_available(NEW.libnum);
```

```
    if avail = 0 then
```

```
        raise exception '% is full', NEW.libnum;
```

```
        return null;
```

```
    end if;
```

```
    return NEW;
```

```
End;
```

```
$$ Language plpgsql;
```

```
create trigger check_full before insert on copy
```

```
    for each row execute procedure check_full();
```

# Implement Library Database check\_full prevents a copy being added to a full library

```
cs464lib=# insert into copy (copynum, booknum, price, libnum) values (477,  
16, 30.00, 9);  
ERROR: 9 is full
```