

# Hospital

## The Housekeeping Department

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# Project Report

The Housekeeping Department in a hospital plays a crucial role in maintaining a clean, safe, and hygienic environment, which is essential for patient care and recovery. This department is responsible for the thorough cleaning and disinfection of patient rooms, operating theaters, and common areas to prevent the spread of infections and ensure compliance with health and safety standards. The Housekeeping staff work supports the overall mission of the hospital by creating a pleasant and sanitary environment that promotes healing and well-being for patients, while also providing a safe workplace for healthcare professionals and visitors.

## **Entities managed by the Housekeeping Department include:**

- **Rooms:** This entity stores information about the different rooms in the hospital, including their type, occupancy status (occupied or vacant), and cleaning status (cleaned, in progress, or dirty).
- **Staff Member:** The staff member entity contains the housekeeping personnel's full name.
- **Cleaning Tasks:** This entity tracks the cleaning tasks assigned to staff members for specific rooms, indicating the task's status (e.g., pending, in progress, completed) to ensure timely and thorough cleaning.
- **Cleaning Supplies:** The cleaning supplies entity manages the inventory of cleaning materials, including their names, quantities available, and storage locations within the hospital.
- **Maintenance Requests:** This entity records maintenance requests submitted for rooms requiring repairs or attention, documenting the issue description and date reported for prompt resolution.
- **Inspection Logs:** Inspection logs capture information about room inspections conducted to assess cleanliness and compliance with hygiene standards, recording the inspection date and result (e.g., pass, fail) for quality assurance purposes.

3NF:

Room: RID -> Type, Occupancy Status, Cleaning Status.

Need for: SUID, TID, RID, SID -> Quantity.

Cleaning Supply: SUID -> Name, Total Quantity, Location.

Inspection Logs: LID -> Inspection Date, Inspection Result, RID.

Maintenance Request: MID, RID, SID -> Issue Description, Date Reported.

Cleaning Task: TID, RID, SID -> Status.

Staff Member: SID -> First Name, Last Name.

Staff Member Info: SID -> Phone Number.

CREATE TABLE Room

```
(  
  RID INT NOT NULL,  
  Type VARCHAR(30) NOT NULL,  
  Occupancy_Status VARCHAR(30) NOT NULL,  
  Cleaning_Status VARCHAR(30) NOT NULL,  
  PRIMARY KEY (RID)  
);
```

CREATE TABLE Staff\_Member

```
(  
  SID INT NOT NULL,  
  First_Name VARCHAR(30) NOT NULL,  
  Last_Name_ VARCHAR(30) NOT NULL,  
  PRIMARY KEY (SID)  
);
```

```
CREATE TABLE Cleaning_Supply
(
    SUID INT NOT NULL,
    Name VARCHAR(30) NOT NULL,
    Total_Quantity INT NOT NULL,
    Location VARCHAR(30) NOT NULL,
    PRIMARY KEY (SUID)
);
```

```
CREATE TABLE Cleaning_Task
(
    TID INT NOT NULL,
    Status VARCHAR(30) NOT NULL,
    RID INT NOT NULL,
    SID INT NOT NULL,
    PRIMARY KEY (TID, RID, SID),
    FOREIGN KEY (RID) REFERENCES Room(RID),
    FOREIGN KEY (SID) REFERENCES Staff_Member(SID)
);
```

```
CREATE TABLE Maintenance_Request
(
    MID INT NOT NULL,
    Issue_Description VARCHAR(30) NOT NULL,
    Date_Reported DATE NOT NULL,
    RID INT NOT NULL,
    SID INT NOT NULL,
    PRIMARY KEY (MID, RID, SID),
    FOREIGN KEY (RID) REFERENCES Room(RID),
    FOREIGN KEY (SID) REFERENCES Staff_Member(SID)
);
```

```
CREATE TABLE Inspection_Logs
(
    LID INT NOT NULL,
    Inspection_Date DATE NOT NULL,
    Inspection_Result VARCHAR(30) NOT NULL,
    RID INT NOT NULL,
    PRIMARY KEY (LID),
    FOREIGN KEY (RID) REFERENCES Room(RID)
);
```

```
CREATE TABLE Need_for
(
    SUID INT NOT NULL,
    Quantity INT NOT NULL,
    TID INT NOT NULL,
    RID INT NOT NULL,
    SID INT NOT NULL,
    PRIMARY KEY (SUID, TID, RID, SID),
    FOREIGN KEY (SUID) REFERENCES Cleaning_Supply(SUID),
    FOREIGN KEY (TID, RID, SID) REFERENCES Cleaning_Task(TID, RID, SID)
);
```

```
CREATE TABLE Staff_Member_Info
(
    SID INT NOT NULL,
    Phone_Number VARCHAR(30) NOT NULL,
    PRIMARY KEY (SID),
    FOREIGN KEY (SID) REFERENCES Staff_Member(SID)
);
```

## Desc instruction

SQL> desc Staff\_Member

Nom	NULL ?	Type
SID	NOT NULL	NUMBER(38)
FIRST_NAME	NOT NULL	VARCHAR2(30)
LAST_NAME_	NOT NULL	VARCHAR2(30)

SQL> desc Cleaning\_Task

Nom	NULL ?	Type
TID	NOT NULL	NUMBER(38)
STATUS	NOT NULL	VARCHAR2(30)
RID	NOT NULL	NUMBER(38)
SID	NOT NULL	NUMBER(38)

SQL> desc Maintenance\_request

Nom	NULL ?	Type
MID	NOT NULL	NUMBER(38)
ISSUE_DESCRIPTION	NOT NULL	VARCHAR2(30)
DATE_REPORTED	NOT NULL	DATE
RID	NOT NULL	NUMBER(38)
SID	NOT NULL	NUMBER(38)

SQL> desc ROOM

Nom	NULL ?	Type
RID	NOT NULL	NUMBER(38)
TYPE	NOT NULL	VARCHAR2(30)
OCCUPANCY_STATUS	NOT NULL	VARCHAR2(30)
CLEANING_STATUS	NOT NULL	VARCHAR2(30)

SQL> desc Inspection\_Logs

Nom	NULL ?	Type
LID	NOT NULL	NUMBER(38)
INSPECTION_DATE	NOT NULL	DATE
INSPECTION_RESULT	NOT NULL	VARCHAR2(30)
RID	NOT NULL	NUMBER(38)

SQL> desc need\_for

Nom	NULL ?	Type
SUID	NOT NULL	NUMBER(38)
QUANTITY	NOT NULL	NUMBER(38)
TID	NOT NULL	NUMBER(38)
RID	NOT NULL	NUMBER(38)
SID	NOT NULL	NUMBER(38)

SQL> desc Cleaning\_Supply

Nom	NULL ?	Type
SUID	NOT NULL	NUMBER(38)
NAME	NOT NULL	VARCHAR2(30)
TOTAL_QUANTITY	NOT NULL	NUMBER(38)
LOCATION	NOT NULL	VARCHAR2(30)

```
SQL> desc Staff_member_info
```

Nom	NULL ?	Type
SID	NOT NULL	NUMBER(38)
PHONE_NUMBER	NOT NULL	VARCHAR2(30)

## Data generator

<

Owner

Table

Number of records

>

SYSTEM

ROOM

390

...

Name	Type	Size	Data	Master
RID	NUMBER		Sequence(11, [1])	...
TYPE	VARCHAR2	30	List('Single', 'Double', 'Suite')	...
OCCUPANCY_STATUS	VARCHAR2	30	List('Occupied', 'Vacant')	...
CLEANING_STATUS	VARCHAR2	30	List('Clean', 'Dirty')	...
*				...

CLEANING\_TASK

<

Owner

Table

Number of records

>

SYSTEM

CLEANING\_TASK

10..20

...

Name	Type	Size	Data	Master
TID	NUMBER		Sequence(11, [1])	...
STATUS	VARCHAR2	30	List('Completed', 'Pending')	...
RID	NUMBER		Random(1, 400)	...
SID	NUMBER		Random(1, 400)	...
*				...

Ent...

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SEL

--

INS

TYPE

CLEANING\_SUPPLY

<

Owner

Table

Number of records

>

SYSTEM

CLEANING\_SUPPLY

390

...

Name	Type	Size	Data	Master
SUID	NUMBER		Sequence(11, [1])	...
NAME	VARCHAR2	30	List('Detergent', 'Bleach', 'Mop', 'Broom', 'Vacuum', 'Trash Bags', 'Glass Cleaner', 'Air Fresh')	...
TOTAL_QUANTITY	NUMBER		Random(10, 500)	...
LOCATION	VARCHAR2	30	List('Storage A', 'Storage B', 'Storage C')	...
*				...



STAFF\_MEMBER

< Owner

Table

Number of records

> SYSTEM

STAFF\_MEMBER

390

...

Name	Type	Size	Data	Master
✓ SID	NUMBER		Sequence(11, [1])	***
FIRST_NAME	VARCHAR2	30	FirstName	***
LAST_NAME_	VARCHAR2	30	LastName	***
*				***

## Python script

We created a CSV file with the following generated data for the staff\_member\_info table.  
Then, we imported it in PL/SQL.

```
import csv
import random

# Function to generate a random Israeli phone number
def generate_israeli_phone_number():
    return "972-5" + ''.join(random.choices("0123456789", k=8))

# Function to generate unique phone numbers
def generate_unique_phone_numbers(count):
    phone_numbers = set()
    while len(phone_numbers) < count:
        phone_number = generate_israeli_phone_number()
        phone_numbers.add(phone_number)
    return list(phone_numbers)

# Function to generate SIDs (assuming SIDs are unique and sequential for simplicity)
def generate_sids(count):
    return list(range(1, count + 1))

# Generate 400 unique phone numbers
phone_numbers = generate_unique_phone_numbers(400)

# Generate 400 SIDs
sids = generate_sids(400)

# Write the data to a CSV file
with open('staff_member_info.csv', mode='w', newline='') as file:
    writer = csv.writer(file)
    writer.writerow(["SID", "Phone Number"]) # Writing header
    for sid, phone_number in zip(sids, phone_numbers):
        writer.writerow([sid, phone_number])

print("CSV file 'staff_member_info.csv' created successfully.")
```

## Mockaroo

In Mockaroo, we generated the data as a CSV file and imported it in PL/SQL.

### Need\_For

SUID	Quantity	TID	RID	SID
34	3	311	282	298
273	12	291	173	202
289	15	165	294	175
25	12	370	14	298
9	3	305	29	324
72	1	219	84	35

```
[General]
ID=Import Definition
Version=1
Header=True
SkipEmptyLines=True
SingleLineRecord=True
QuoteChar="
CommentLine=
ImportLinesStart=1
ImportLinesEnd=-1
TableOwner=SYSTEM
OracleTable=NEED_FOR
InitializingScript=
FinalizingScript=
OverwriteDuplicates=True
CommitCount=100
Filter=
EmptyTable=False
TruncateTable=False
```

```
[ODBC]
DSN=
UserName=
Command=
Kind=0
```

```
[Fields]
Field=0
FieldStart=0
FieldStartValue=0
FieldEnd=2
```

FieldEndValue=,  
OracleSQL=  
OracleField=SUID  
OracleType=1  
ODBCField=  
ODBCFieldNo=0  
ODBCType=0  
ODBCCType=0  
ODBCLength=0  
OracleParamNo=0

Field=1  
FieldStart=0  
FieldStartValue=0  
FieldEnd=2  
FieldEndValue=,  
OracleSQL=  
OracleField=QUANTITY  
OracleType=1  
ODBCField=  
ODBCFieldNo=0  
ODBCType=0  
ODBCCType=0  
ODBCLength=0  
OracleParamNo=0

Field=2  
FieldStart=0  
FieldStartValue=0  
FieldEnd=2  
FieldEndValue=,  
OracleSQL=  
OracleField=TID  
OracleType=1  
ODBCField=  
ODBCFieldNo=0  
ODBCType=0  
ODBCCType=0  
ODBCLength=0  
OracleParamNo=0

Field=3  
FieldStart=0  
FieldStartValue=0  
FieldEnd=2  
FieldEndValue=,  
OracleSQL=  
OracleField=RID  
OracleType=1  
ODBCField=  
ODBCFieldNo=0  
ODBCType=0  
ODBCCType=0  
ODBCLength=0

OracleParamNo=0

Field=4  
FieldStart=0  
FieldStartValue=0  
FieldEnd=2  
FieldEndValue=,  
OracleSQL=  
OracleField=SID  
OracleType=1  
ODBCField=  
ODBCFieldNo=0  
ODBCType=0  
ODBCCType=0  
ODBCLength=0  
OracleParamNo=0

## Maintenance\_Request

MID	Issue_Description	Date_Reported	RID	SID
11	Leaking pipe	2023-09-08	70	35
12	Freezing refrigerator	2023-05-16	149	174
13	Flickering lights	2024-04-06	229	399
14	Dripping shower	2023-02-22	155	39
15	Broken door	2023-10-24	358	16
16	Water damage	2023-07-15	356	215
17	Soggy drywall	2023-05-08	88	52
18	Plumbing issue	2023-07-26	284	271
19	Cabinet door broken	2023-02-14	241	158

[General]  
ID=Import Definition  
Version=1  
Header=True  
SkipEmptyLines=True  
SingleLineRecord=True  
QuoteChar=""  
CommentLine=  
ImportLinesStart=1  
ImportLinesEnd=-1  
TableOwner=SYSTEM

```
OracleTable=MAINTENANCE_REQUEST
InitializingScript=
FinalizingScript=
OverwriteDuplicates=True
CommitCount=100
Filter=
EmptyTable=False
TruncateTable=False
```

```
[ODBC]
DSN=
UserName=
Command=
Kind=0
```

```
[Fields]
Field=0
FieldStart=0
FieldStartValue=0
FieldEnd=2
FieldEndValue=,
OracleSQL=
OracleField=MID
OracleType=1
ODBCField=
ODBCFieldNo=0
ODBCType=0
ODBCCType=0
ODBCLength=0
OracleParamNo=0
```

```
Field=1
FieldStart=0
FieldStartValue=0
FieldEnd=2
FieldEndValue=,
OracleSQL=
OracleField=ISSUE_DESCRIPTION
OracleType=0
ODBCField=
ODBCFieldNo=0
ODBCType=0
ODBCCType=0
ODBCLength=0
OracleParamNo=0
```

```
Field=2
FieldStart=0
FieldStartValue=0
FieldEnd=2
FieldEndValue=,
OracleSQL=to_date('#', 'YYYY-MM-DD')
OracleField=DATE_REPORTED
OracleType=2
```

ODBCField=  
ODBCFieldNo=0  
ODBCType=0  
ODBCCType=0  
ODBCLength=0  
OracleParamNo=0

Field=3  
FieldStart=0  
FieldStartValue=0  
FieldEnd=2  
FieldEndValue=,  
OracleSQL=  
OracleField=RID  
OracleType=1  
ODBCField=  
ODBCFieldNo=0  
ODBCType=0  
ODBCCType=0  
ODBCLength=0  
OracleParamNo=0

Field=4  
FieldStart=0  
FieldStartValue=0  
FieldEnd=2  
FieldEndValue=,  
OracleSQL=  
OracleField=SID  
OracleType=1  
ODBCField=  
ODBCFieldNo=0  
ODBCType=0  
ODBCCType=0  
ODBCLength=0  
OracleParamNo=0

## staff\_member\_info

SID	Phone Number
11	972-532458468
12	972-516926496
13	972-560437641
14	972-560143765
15	972-536673145
16	972-599342084
17	972-523256549
18	972-521919180

```
[General]
ID=Import Definition
Version=1
Header=True
SkipEmptyLines=True
SingleLineRecord=True
QuoteChar="
CommentLine=
ImportLinesStart=1
ImportLinesEnd=-1
TableOwner=SYSTEM
OracleTable=STAFF_MEMBER_INFO
InitializingScript=
FinalizingScript=
OverwriteDuplicates=True
CommitCount=100
Filter=
EmptyTable=False
TruncateTable=False
```

```
[ODBC]
DSN=
UserName=
Command=
Kind=0
```

```
[Fields]
Field=0
FieldStart=0
FieldStartValue=0
FieldEnd=2
```

FieldEndValue=,  
OracleSQL=  
OracleField=SID  
OracleType=1  
ODBCField=  
ODBCFieldNo=0  
ODBCType=0  
ODBCCType=0  
ODBCLength=0  
OracleParamNo=0

Field=1  
FieldStart=0  
FieldStartValue=0  
FieldEnd=2  
FieldEndValue=,  
OracleSQL=  
OracleField=PHONE\_NUMBER  
OracleType=0  
ODBCField=  
ODBCFieldNo=0  
ODBCType=0  
ODBCCType=0  
ODBCLength=0  
OracleParamNo=0

## Inspection\_Logs

LID	Inspection_Date	Inspection_Result	RID
11	2023-12-02	Fail	345
12	2023-05-13	Pass	358
13	2023-03-15	Fail	334
14	2024-03-22	Pass	315
15	2024-04-20	Pass	215
16	2023-11-16	Pass	241
17	2023-04-21	Pass	105
18	2024-04-10	Pass	66
19	2024-02-02	Pass	101

[General]  
ID=Import Definition  
Version=1  
Header=True



```
SkipEmptyLines=True
SingleLineRecord=True
QuoteChar="
CommentLine=
ImportLinesStart=1
ImportLinesEnd=-1
TableOwner=SYSTEM
OracleTable=INSPECTION_LOGS
InitializingScript=
FinalizingScript=
OverwriteDuplicates=True
CommitCount=100
Filter=
EmptyTable=False
TruncateTable=False
```

```
[ODBC]
DSN=
UserName=
Command=
Kind=0
```

```
[Fields]
Field=0
FieldStart=0
FieldStartValue=0
FieldEnd=2
FieldEndValue=,
OracleSQL=
OracleField=LID
OracleType=1
ODBCField=
ODBCFieldNo=0
ODBCType=0
ODBCCType=0
ODBCLength=0
OracleParamNo=0
```

```
Field=1
FieldStart=0
FieldStartValue=0
FieldEnd=2
FieldEndValue=,
OracleSQL=to_date('#', 'YYYY-MM-DD')
OracleField=INSPECTION_DATE
OracleType=2
ODBCField=
ODBCFieldNo=0
ODBCType=0
ODBCCType=0
ODBCLength=0
OracleParamNo=0
```

```
Field=2
```

FieldStart=0  
FieldStartValue=0  
FieldEnd=2  
FieldEndValue=,  
OracleSQL=  
OracleField=INSPECTION\_RESULT  
OracleType=0  
ODBCField=  
ODBCFieldNo=0  
ODBCType=0  
ODBCCType=0  
ODBCLength=0  
OracleParamNo=0

Field=3  
FieldStart=0  
FieldStartValue=0  
FieldEnd=2  
FieldEndValue=,  
OracleSQL=  
OracleField=RID  
OracleType=1  
ODBCField=  
ODBCFieldNo=0  
ODBCType=0  
ODBCCType=0  
ODBCLength=0  
OracleParamNo=0

Backup:

In *Export Tables*, we made the backup file:

ToolsConfigureViewHelpPlug-Ins

er  
utifier

Find Database Objects

Compile Invalid Objects

Export User Objects

Compare User Objects

DBMS Scheduler

Export Tables

Import Tables

Compare Table Data

Text Importer

ODBC Importer

Data Generator

Event Monitor

Sessions

Test Manager

Load Tester

CLEANING_SUPPLY	TABLE	5/24/2024 9:20:49 AM
CLEANING_TASK	TABLE	5/24/2024 9:20:49 AM
INSPECTION_LOGS	TABLE	5/24/2024 9:20:49 AM
MAINTENANCE_REQUEST	TABLE	5/24/2024 9:20:49 AM
NEED_FOR	TABLE	5/24/2024 9:20:49 AM
ROOM	TABLE	5/24/2024 9:20:49 AM
STAFF_MEMBER	TABLE	5/24/2024 9:20:49 AM
STAFF_MEMBER_INFO	TABLE	5/24/2024 9:20:49 AM

User <CURRENT USER>

Oracle ExportSQL InsertsPL/SQL Developer

☐ Drop tables

☒ Create tables

☐ Truncate tables

☒ Delete records

☒ Disable triggers

☒ Disable foreign key constraints

☒ Include storage

☒ Include privileges

Commit every 100 records (0 = never)

☐ Zip

Where clause

Output file C:\Users\Admin\Desktop\DB\backup\_24\_05\_2024.sql

Export

system@XE

-- Sele  
SELECT

-- Inse  
INSERT  
INSERT  
INSERT  
-- Sele  
SELECT

-- Sele  
-- Sele  
SELECT

-- Sele  
-- Inse  
INSERT  
INSERT  
INSERT  
-- Inse  
INSERT  
INSERT  
INSERT

Quantiti

RID INI

Phone\_1

## Reproduction:

We logged in to the user in sqlplus via the command line and ran the backup SQL file created earlier. We can see the result by trying the following instruction

Select \* from need\_for;

```
C:\Users\Admin>sqlplus c##jeremiet3/1234@XE

SQL*Plus: Release 21.0.0.0.0 - Production on Mar. Mai 28 18:36:13 2024
Version 21.3.0.0.0

Copyright (c) 1982, 2021, Oracle. All rights reserved.

Heure de la dernibre connexion rUussie : Mar. Mai 28 2024 18:35:11 +03:00

ConnectÚ Ó :
Oracle Database 21c Express Edition Release 21.0.0.0.0 - Production
Version 21.3.0.0.0

SQL> @C:\Users\Admin\Desktop\DB\Step1\backup_24_05_2024.sql

SQL> @C:\Users\Admin\Desktop\DB\Step1\backup_24_05_2024.s
SP2-0734: commande inconnue au dÚbut de "' prompt ..." -
Created by Admin on Friday, May 24, 2024
Creating CLEANING_SUPPLY...
Creating ROOM...
Creating STAFF_MEMBER...
Creating CLEANING_TASK...
Creating INSPECTION_LOGS...
Creating MAINTENANCE_REQUEST...
Creating NEED_FOR...
Creating STAFF_MEMBER_INFO...
Disabling triggers for CLEANING_SUPPLY...
Disabling triggers for ROOM...
Disabling triggers for STAFF_MEMBER...
```

```
SQL> select * from need_for;
```

SUID	QUANTITY	TID	RID	SID
1	10	1	1	1
2	5	2	2	2
3	3	3	3	3
4	2	4	4	4
5	1	5	5	5
6	20	6	6	6
7	4	7	7	7
8	6	8	8	8
9	7	9	9	9
10	2	10	10	10
34	3	11	250	159
SUID	QUANTITY	TID	RID	SID