```sql
--Create database company & its objects
----------------------------------------
use master;
go

--drop hr instance level login

if exists (
    select name
    from master.sys.server_principals
    where name = 'hr')
begin
    drop login hr;
end
go


--Create instance level login hr
if not exists (
    select name
    from master.sys.server_principals
    where name = 'hr')
begin
    create login hr
        with password = 'dbsys2018';
end
go

--verify that the hr user has been created
select *
    from master.sys.server_principals
    where name = 'hr';
go

--drop database if already exists
drop database if exists company;
go

--for earlier versions of SQL Server
/*
if DB_ID('COMPANY') is not null
    drop database company;
*/

--create the database
create database company;
go
/*

alter database company
    set read_only;
go

--the folowing statements will cause error
use company;
go

create table test(id int primary key,
    name varchar(30));
go

--set the database option back to read_write
use master;
go

alter database company
set read_write;
go
*/
```

```sql
70
71
72    --creating database user mapped to login
73    use company;
74    go
75
76    if USER_ID('hr') is null
77        begin
78            CREATE USER hr FOR LOGIN hr;
79            alter role [db_owner] add member [hr];
80        end
81    go
82
83    --drop hr schema if already exists
84    drop schema if exists hr;
85    go
86    --for earlier versions
87    /*
88    if schema_ID('hr') is not null
89        drop schema hr;
90    go
91    */
92
93    --create hr schema with hr user as owner
94    create schema hr authorization hr;
95    go
96
97    --verify that hr shema created
98    select * from sys.schemas
99    where name = 'hr';
100   go
101
102   --assign hr as default schema for user hr
103   alter user hr
104       with default_schema = hr;
105   go
106
107   select name, default_schema_name
108   from sys.database_principals
109   where name = 'hr';
110   go
111
112   --creating tables
113   create table department (
114     dname varchar(20) not null,
115     dnumber int not null,
116     mgrssn char(9) not null,
117     mgrstartdate date not null,
118     constraint pk_department primary key (dnumber),
119     constraint ck_department unique (dname)
120   );
121
122   --verify that department table created in the default schema dbo
123   select s.name, t.name
124   from sys.tables t join sys.schemas s
125       on t.schema_id = s.schema_id
126   order by s.name, t.name;
127
128   --switch to hr user's security context
129   execute as user = 'hr';
130
131   --creating employee table in the default dbo schema
132   create table employee (
133     fname varchar(15) not null,
134     lname varchar(20) not null,
135     ssn char(9) not null,
136     bdate date not null,
137     address varchar(30) not null,
138     sex char(1) not null,
```

```sql
139        salary decimal(10,2) not null,
140        superssn char(9),
141        dno int  not null,
142        constraint pk_employee primary key (ssn)
143    );
144
145    --verify that employee table created in hr schema, which is the default schema for hr
       user
146    select s.name, t.name
147    from sys.tables t join sys.schemas s
148        on t.schema_id = s.schema_id
149    order by s.name, t.name;
150
151    --go back to previous security context
152    revert;
153    go
154
155    --move employee table from dbo schema to hr schema
156    alter schema dbo transfer hr.employee;
157    go
158
159    --verify
160    select s.name, t.name
161    from sys.tables t join sys.schemas s
162        on t.schema_id = s.schema_id
163    order by s.name, t.name;
164
165    --creating other tables in the default dbo schema
166
167    create table project (
168      pname varchar(20) not null,
169      pnumber int not null,
170      plocation varchar(20) not null,
171      dnum int not null,
172      constraint pk_project primary key (pnumber),
173      constraint ck_project unique (pname)
174    );
175
176    create table works_on (
177      essn char(9) not null,
178      pno int not null,
179      hours decimal(5,1),
180      constraint pk_works_on primary key (essn, pno)
181      );
182
183    create table dependent (
184      essn char(9) not null,
185      dependent_name varchar(10) not null,
186      sex char(1) not null,
187      bdate date not null,
188      relationship varchar(30) not null,
189      constraint pk_dependent primary key (essn, dependent_name)
190      );
191
192    create table dept_locations (
193      dnumber int not null,
194      dlocation varchar (15) not null,
195      constraint pk_dept_locations primary key (dnumber, dlocation)
196     );
197
198    --insert data into tables
199
200    insert into department values
201     ('Research',5,'333445555','1988-05-22'),
202     ('Administration',4,'987654321','1995-01-01'),
203     ('Headquarters',1,'888665555','1981-06-19');
204
205    insert into employee values
206     ('John','Smith','123456789','1965-01-09','731 Fondren, Houston
```

```sql
         TX','M',30000,'333445555',5),
207      ('Franklin','Wong','333445555','1965-12-08','638 Voss, Houston
         TX','M',40000,'888665555',5),
208      ('Alicia','Zelaya','999887777','1968-01-19','3321 Castle, Spring
         TX','F',25000,'987654321',4),
209      ('Jennifer','Wallace','987654321','1941-06-20','291 Berry, Bellaire
         TX','F',43000,'888665555',4),
210      ('Ramesh','Narayan','666884444','1962-09-15','975 Fire Oak, Humble
         TX','M',38000,'333445555',5),
211      ('Joyce','English','453453453','1972-07-31','5631 Rice, Houston
         TX','F',25000,'333445555',5),
212      ('Ahmad','Jabbar','987987987','1969-03-29','980 Dallas, Houston
         TX','M',25000,'987654321',4),
213      ('James','Borg','888665555','1937-11-10','450 Stone, Houston TX','M',55000,null,1);
214
215   insert into project values
216     ('ProductX',1,'Bellaire',5),
217     ('ProductY',2,'Sugarland',5),
218     ('ProductZ',3,'Houston',5),
219     ('Computerization',10,'Stafford',4),
220     ('Reorganization',20,'Houston',1),
221     ('Newbenefits',30,'Stafford',4);
222
223   insert into works_on values
224     ('123456789',1,32.5),
225     ('123456789',2,7.5),
226     ('666884444',3,40.0),
227     ('453453453',1,20.0),
228     ('453453453',2,20.0),
229     ('333445555',2,10.0),
230     ('333445555',3,10.0),
231     ('333445555',10,10.0),
232     ('333445555',20,10.0),
233     ('999887777',30,30.0),
234     ('999887777',10,10.0),
235     ('987987987',10,35.0),
236     ('987987987',30,5.0),
237     ('987654321',30,20.0),
238     ('987654321',20,15.0),
239     ('888665555',20,null);
240
241   insert into dependent values
242     ('333445555','Alice','F','1986-04-04','Daughter'),
243     ('333445555','Theodore','M','1983-10-25','Son'),
244     ('333445555','Joy','F','1958-05-03','Spouse'),
245     ('987654321','Abner','M','1942-02-28','Spouse'),
246     ('123456789','Michael','M','1988-01-04','Son'),
247     ('123456789','Alice','F','1988-12-30','Daughter'),
248     ('123456789','Elizabeth','F','1967-05-05','Spouse');
249
250   insert into dept_locations values
251     (1,'Houston'),
252     (4,'Stafford'),
253     (5,'Bellaire'),
254     (5,'Sugarland'),
255     (5,'Houston');
256
257
258   --create and enforce foreign key constraints
259
260   alter table department
261   with nocheck add constraint fk_department_employee
262       foreign key (mgrssn) references employee(ssn);
263   go
264
265   alter table department
266       check constraint fk_department_employee;
267   go
268
```

```sql
269    alter table employee
270    with nocheck add constraint fk_employee_department
271        foreign key (dno) references department(dnumber);
272    go
273
274    alter table employee
275    with nocheck add constraint fk_employee_employee
276        foreign key (superssn) references employee(ssn);
277
278
279    alter table employee
280        check constraint fk_employee_department;
281    go
282
283    alter table employee
284        check constraint fk_employee_employee;
285    go
286
287    alter table project
288    with nocheck add constraint fk_project_department
289        foreign key (dnum) references department(dnumber);
290    go
291
292    alter table project
293        check constraint fk_project_department;
294    go
295
296    alter table works_on
297    with nocheck add constraint fk_works_on_employee
298        foreign key (essn) references employee(ssn);
299    go
300
301    alter table works_on
302    with nocheck add constraint fk_works_on_project
303        foreign key (pno) references project(pnumber);
304    go
305
306    alter table works_on
307        check constraint fk_works_on_employee;
308    go
309
310    alter table works_on
311        check constraint fk_works_on_project;
312    go
313
314    alter table dependent
315    with nocheck add constraint fk_dependent_employee
316     foreign key (essn) references employee(ssn);
317    go
318
319    alter table dependent
320    check constraint fk_dependent_employee;
321    go
322
323    alter table dept_locations
324    with nocheck add constraint fk_dept_locations_department
325        foreign key (dnumber) references department(dnumber);
326    go
327
328    alter table dept_locations
329    check constraint fk_dept_locations_department;
330    go
331
332    --drop foreign key constraints then drop tables
333
334    /*
335
336    alter table department
337        drop constraint fk_department_employee;
```

```sql
338    alter table employee
339        drop constraint fk_employee_department;
340    alter table employee
341        drop constraint fk_employee_employee;
342    alter table project
343        drop constraint fk_project_department;
344    alter table works_on
345        drop constraint fk_works_on_employee;
346    alter table works_on
347        drop constraint fk_works_on_project;
348    alter table dependent
349        drop constraint fk_dependent_employee;
350    alter table dept_locations
351        drop constraint fk_dept_locations_department;
352    go
353
354    drop table department;
355    drop table employee;
356    drop table project;
357    drop table works_on;
358    drop table dependent;
359    drop table dept_locations;
360    go
361
362    */
363
364
365
```