```sql
 1  -- move to default database
 2  USE master;
 3  GO
 4
 5  -- create a new database
 6  DROP DATABASE IF EXISTS  SpeedingTicket;
 7  CREATE DATABASE SpeedingTicket;
 8  GO
 9
10  -- switch to new database
11  USE SpeedingTicket;
12  GO
13
14  -- CREATE TABLES
15  -- table: User
16  DROP TABLE IF EXISTS [User]
17  CREATE TABLE [User]
18  (
19      UserID INT IDENTITY NOT NULL,
20      UserFirstName VARCHAR(32) NOT NULL,
21      UserLastName VARCHAR(32) NOT NULL,
22      UserAddress  VARCHAR(255) NOT NULL,
23      UserPhoneNum VARCHAR(32) NOT NULL,
24          -- checking constraint for phone number
25          CHECK (UserPhoneNum LIKE '[0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9]'),
26      PRIMARY KEY (UserID)
27  );
28  GO
29
30  -- default constraint for User's First Name
31  ALTER TABLE [User]
32      DROP CONSTRAINT IF EXISTS DF__User__UserFirstName;
33  ALTER TABLE [User]
34      ADD CONSTRAINT DF__User__UserFirstName DEFAULT ('') FOR UserFirstName;
35
36  -- table: Staff
37  DROP TABLE IF EXISTS Staff;
38  CREATE TABLE Staff (
39      StaffID INT IDENTITY NOT NULL,
40      StaffFirstName VARCHAR(32) NOT NULL,
41      StaffLastName VARCHAR(32) NOT NULL,
42      StaffPhoneNum VARCHAR(32) NOT NULL,
43      StaffAddress VARCHAR(255) NOT NULL,
44      PRIMARY KEY (StaffID)
```

```
45 );
46 GO
47
48 -- table: Ticket
49 DROP TABLE IF EXISTS Ticket;
50 CREATE TABLE Ticket (
51     TicketID INT IDENTITY NOT NULL,
52     Issue VARCHAR(1024) NOT NULL,
53     DateIssued DATETIME NOT NULL,
54     DateResolved DATETIME NULL,
55     UserID INT NULL,
56     StaffID INT NULL,
57     TicketCategoryID INT NOT NULL,
58     PRIMARY KEY (TicketID)
59 );
60 GO
61
62 -- table: TicketCategory
63 DROP TABLE IF EXISTS TicketCategory;
64 CREATE TABLE TicketCategory (
65     TicketCategoryID INT IDENTITY NOT NULL,
66     CategoryName VARCHAR(32) NOT NULL,
67     CategoryDescription VARCHAR(255) NOT NULL,
68     PRIMARY KEY (TicketCategoryID)
69 );
70 GO
71
72 -- table: Comment
73 DROP TABLE IF EXISTS Comment;
74 CREATE TABLE Comment (
75     CommentID INT IDENTITY NOT NULL,
76     CommentDate DATETIME NOT NULL,
77     CommentMade VARCHAR(1024) NOT NULL,
78     TicketID INT NOT NULL,
79     UserID INT NULL,
80     StaffID INT NULL,
81     PRIMARY KEY (CommentID)
82 );
83 GO
84
85 -- table: Task
86 DROP TABLE IF EXISTS Task;
87 CREATE TABLE Task (
88     TaskID INT IDENTITY NOT NULL,
89     TaskName VARCHAR(32) NOT NULL,
90     TaskInformation VARCHAR(255) NOT NULL,
```

```
 91      DateTaskFinished DATETIME NULL,
 92      TicketID INT NOT NULL,
 93      StaffID INT NULL,
 94      PRIMARY KEY (TaskID)
 95  );
 96  GO
 97
 98  -- table: Hardware
 99  DROP TABLE IF EXISTS Hardware;
100  CREATE TABLE Hardware (
101      HardwareID INT IDENTITY NOT NULL,
102      HardwareName VARCHAR(32) NOT NULL,
103      HardwareDescription VARCHAR(80) NOT NULL,
104      PurchaseDate DATETIME NOT NULL,
105      SerialNumber VARCHAR(32) NOT NULL,
106      PRIMARY KEY (HardwareID)
107  );
108  GO
109
110  -- table: HardwareTicket
111  DROP TABLE IF EXISTS HardwareTicket;
112  CREATE TABLE HardwareTicket (
113      TicketID INT NOT NULL,
114      HardwareID INT NOT NULL,
115      PRIMARY KEY (TicketID, HardwareID)
116  );
117  GO
118
119  -- ALTER TABLES
120  -- foreign key constraints
121  -- table: Ticket
122  ALTER TABLE Ticket
123  ADD CONSTRAINT FK__Ticket__UserID
124  FOREIGN KEY (UserID)
125  REFERENCES [User] (UserID) ON DELETE SET NULL ON UPDATE
     SET NULL;
126  GO
127
128  ALTER TABLE Ticket
129  ADD CONSTRAINT FK__Ticket__StaffID
130  FOREIGN KEY (StaffID)
131  REFERENCES Staff (StaffID) ON DELETE SET NULL ON UPDATE
     SET NULL;
132  GO
133
134  ALTER TABLE Ticket
```

```
135 WITH CHECK ADD CONSTRAINT FK__Ticket__TicketCategoryID
136 FOREIGN KEY (TicketCategoryID)
137 REFERENCES TicketCategory (TicketCategoryID) ON DELETE
    CASCADE ON UPDATE CASCADE;
138 GO
139
140 -- table: Comment
141 ALTER TABLE Comment
142     DROP CONSTRAINT IF EXISTS FK__Comment__UserID;
143 ALTER TABLE Comment
144     ADD CONSTRAINT FK__Comment__User__UserID
145     FOREIGN KEY (UserID)
146     REFERENCES [User] (UserID);
147 GO
148
149 ALTER TABLE Comment
150     DROP CONSTRAINT IF EXISTS FK__Comment__TicketID;
151 ALTER TABLE Comment
152     ADD CONSTRAINT FK__Comment__TicketID
153     FOREIGN KEY (TicketID)
154     REFERENCES Ticket (TicketID);
155 GO
156
157 ALTER TABLE Comment
158     DROP CONSTRAINT IF EXISTS FK__Comment__StaffID;
159 ALTER TABLE Comment
160     WITH CHECK ADD CONSTRAINT FK__Comment__StaffID
161     FOREIGN KEY (StaffID)
162     REFERENCES [Staff] (StaffID);
163 GO
164
165 -- table: Task
166 ALTER TABLE Task
167     DROP CONSTRAINT IF EXISTS FK__Task__TicketID;
168 ALTER TABLE Task
169     ADD CONSTRAINT FK__Task__TicketID
170     FOREIGN KEY (TicketID)
171     REFERENCES Ticket (TicketID) ON DELETE CASCADE ON
    UPDATE CASCADE;
172 GO
173
174 ALTER TABLE Task
175     DROP CONSTRAINT IF EXISTS FK__Task__StaffID;
176 ALTER TABLE Task
177     ADD CONSTRAINT FK__Task__StaffID
178     FOREIGN KEY (StaffID)
```

```
179         REFERENCES Staff (StaffID);
180 GO
181
182 -- table: HardwareTicket
183 ALTER TABLE HardwareTicket
184     DROP CONSTRAINT IF EXISTS
    FK__HardwareTicket__HardwareID;
185 ALTER TABLE HardwareTicket
186     ADD CONSTRAINT FK__HardwareTicket__HardwareID
187     FOREIGN KEY (TicketID)
188     REFERENCES Ticket (TicketID);
189 GO
190
191 ALTER TABLE HardwareTicket
192     DROP CONSTRAINT IF EXISTS FK__Item__ItemID;
193 ALTER TABLE HardwareTicket
194 WITH CHECK ADD CONSTRAINT FK__Item__ItemID
195 FOREIGN KEY (HardwareID)
196 REFERENCES Hardware (HardwareID) ON DELETE CASCADE ON
    UPDATE CASCADE;
197 GO
198
199 -- INDEX STATEMENTS
200 CREATE INDEX IX__User__UserFirstNameLastName ON [User] (
    UserFirstName, UserLastName);
201 CREATE INDEX IX__Staff__StaffFirstNameLastName ON Staff (
    StaffFirstName, StaffLastName);
202 GO
203
204 -- INSERT STATEMENTS
205 INSERT INTO [User] (UserFirstName, UserLastName,
    UserAddress, UserPhoneNum)
206 VALUES ('Chandler', 'Bing', '25 Place Avenue', '9024021111
    '),
207         ('Monica', 'Gellar-Bing', '77 Heavenly Way', '
    9021777171'),
208         ('Ross', 'Gellar', '123 Dinosaur Parke', '
    9025558888'),
209         ('Rachel', 'Green', '02 Fashion Avenue', '
    9024447777'),
210         ('Joseph', 'Tribianni', '12 Howyoudoin court', '
    9028557354'),
211         ('Phoebe', 'Buffay', '74 Smelly Cat Lane', '
    9021458877');
212
213 INSERT INTO [Staff] (StaffFirstName, StaffLastName,
```

```
213  StaffPhoneNum, StaffAddress)
214  VALUES ('Matthew', 'Perry', '9025587789', '123 Address
     Road'),
215          ('Courtney', 'Cox', '9021478526', '456 Location
     Drive'),
216          ('David', 'Schwimmer', '9023114587', '789
     Destination Highway'),
217          ('Jennifer', 'Anniston', '9021257448', '321 Area
     Village'),
218          ('Matt', 'LeBlanc', '9021236547', '654 Pizza Road'
     ),
219          ('Lisa', 'Kudrow', '9024715544', '987 Music Way');
220
221  -- USING IDENTITY_INSERT TO OVERRIDE THE AUTOMATIC
     IDENTITY GENERATION
222  SET IDENTITY_INSERT TicketCategory ON;
223  INSERT INTO TicketCategory (TicketCategoryID, CategoryName
     , CategoryDescription)
224  VALUES (701, 'Hardware', 'There is an issue with hardware
     or physical components'),
225          (702, 'Software', 'There is an issue with software
     components'),
226          (703, 'Account', 'There is an issue with the user
     account'),
227          (704, 'Internet', 'There is an issue with the
     network connection'),
228          (705, 'General Questions', 'User needs help with
     multiple general questions');
229  SET IDENTITY_INSERT TicketCategory OFF;
230
231  INSERT INTO Hardware (HardwareName, HardwareDescription,
     PurchaseDate, SerialNumber)
232  VALUES ('MSI Optix', 'PC Monitor, Resolution: 1920x1080,
     Refresh Rate: 144Hz, Aspect Ratio: 16:9', '2020-04-11 02:
     30:00', 'MAH241C'),
233          ('Asus ROG Swift', 'PC Monitor, Resolution:
     3840x2160, Refresh Rate 144Hz, Aspect Ratio: 16:9', '2020-
     04-02 07:00:00', 'PG65UQ'),
234          ('Asus TUF Gaming', 'PC Monitor, Resolution:
     3840x2160, Refresh rate: 144Hz, Aspect Ratio: 16:9', '2020
     -01-20 02:00:00', 'VG279QM'),
235          ('Asus ROG Strix', 'PC Monitor, Resolution:
     1920x1080 Refresh Rate: 75Hz, Aspect Ratio: 16:9', '2020-
     02-14 02:00:00', 'XG279Q'),
236          ('Logitech Hero', 'Mouse, Connection Type: Wired,
     Maximum DPI: 16000, Color: Black', '2020-02-09 09:00:00',
```

```
236 'G502'),
237        ('Logitech Lightspeed', 'Mouse, Connection Type:
    Wired, Maximum DPI: 16000, Color: Black', '2020-03-20 08:
    00:00', 'G702'),
238        ('Corsair Harpoon', 'Mouse, Connection Type: Wired
    , Maximum DPI: 16000, Color: Black', '2020-02-02 04:00:00'
    , 'AX213'),
239        ('Razer Naga Trinity', 'Mouse, Connection Type:
    Wireless, Maximum DPI: 14000, Color: White', '2020-02-21
    01:00:00', 'RZ123'),
240        ('SteelSeries Rival', 'Mouse, Connection Type:
    Wireless, Maximum DPI: 6000, Color: Pink', '2020-04-02 04:
    00:00', 'SS321'),
241        ('Razer Basilisk', 'Mouse, Connection Type:
    Wireless, Maximum DPI: 12000, Color: Blue', '2020-01-12 02
    :04:00', 'RZB744');
242
243 INSERT INTO Ticket (Issue, DateIssued, DateResolved,
    UserID, StaffID, TicketCategoryID)
244 VALUES ('Mouse does not function', '2020-02-23 02:00:00',
    NULL, 1, 1, 701),
245        ('Applications keep crashing', '2020-01-02 04:00:00
    ', '2020-01-12 02:00:00', 2, 2, 702),
246        ('Applications are very slow', '2020-03-01 02:30:00
    ', '2020-03-07 02:00:00', 3, 3, 702),
247        ('Monitor is cracked', '2020-01-24 05:30:00', NULL
    , 4, NULL, 701),
248        ('User forgot password and security questions', '
    2020-01-03 05:00:00', '2020-01-04 02:00:00', 3, 4, 703),
249        ('Internet Connection is down, says connected but
    no internet', '2020-04-02 07:00:00', NULL, 5, 5, 704),
250        ('User forgot password', '2020-03-30 02:00:00', '
    2020-04-10 05:30:00', 6, 6, 703),
251        ('Monitor fell and screen is cracked', '2020-02-01
    01:00:00', NULL, 2, 4, 701),
252        ('User is confused how to change desktop background
     and customizing the desktop', '2020-04-15 02:00:00', '
    2020-04-16 08:00:00', 1, 2, 705),
253        ('User has questions about computer set up', '2020-
    03-20 02:10:00', '2020-03-21 04:00:00', 2, 1, 705);
254
255 INSERT INTO Task (TaskName, TaskInformation,
    DateTaskFinished, TicketID, StaffID)
256 VALUES ('Check hardware', 'Check the user mouse', '2020-02
    -25 02:00:00', 1, 1),
257        ('Replace hardware', 'Order mouse for user and
```

```
257  replace it', NULL, 1, NULL),
258          ('Check software', 'Check user software', '2020-01-
     07 04:00:00', 2, 2),
259          ('Fix software', 'Uninstall and reinstall software'
     , '2020-01-12 02:00:00', 2, 2),
260          ('Check Software', 'Check user software', '2020-03-
     04 04:00:00', 3, 3),
261          ('Fix Software', 'Update software', '2020-03-07 02:
     00:00', 3, 3),
262          ('Replace hardware', 'Order monitor for user and
     replace it', NULL, 4, NULL),
263          ('Reset account', 'reset user account', '2020-01-04
      04:00:00', 5, 4),
264          ('Check connection', 'Check internet connection',
     NULL, 6, 5),
265          ('Reset account', 'reset user account', '2020-04-10
      05:00:00', 7, 6),
266          ('Replace hardware', 'Order monitor for user and
     replace it', NULL, 8, 4),
267          ('Contact user', 'Send comment to user to get info
     and help,', '2020-04-16 01:00:00', 9, 2),
268          ('Contact user', 'Send comment to user to get info
     and help,', '2020-03-21 02:00:00', 10, 1);
269
270  INSERT INTO Comment (CommentDate, CommentMade, TicketID,
     UserID, StaffID)
271  VALUES ('2020-03-02 02:00:00', 'What color do you want for
      the mouse?', 1, NULL, 1),
272          ('2020-01-04 03:00:00', 'I forgot my security
     questions', 5, 3, NULL),
273          ('2020-04-04 04:00:00', 'Did you try to unplug then
      plug back the modem?', 6, NULL, 5),
274          ('2020-04-16 05:00:00', 'How do I change or
     customize my desktop?', 9, 1, NULL),
275          ('2020-03-21 07:00:00', 'What do you need help with
     ?', 10, NULL, 1);
276
277  INSERT INTO HardwareTicket (TicketID, HardwareID)
278  VALUES (1, 7),
279          (4, 2),
280          (8, 2);
281
282  -- DELETE STATEMENTS
283  -- deleting a user that created a ticket
284  GO
285  DELETE FROM [User]
```

```sql
286 WHERE UserID = 4;
287
288 DELETE FROM Ticket
289 WHERE UserID = 4;
290
291 DELETE FROM Comment
292 WHERE UserID = 4;
293
294 DELETE FROM HardwareTicket
295 WHERE TicketID = 1;
296
297 DELETE FROM Task
298 WHERE TicketID = 1;
299
300 DELETE FROM Comment
301 WHERE TicketID = 1;
302
303 GO
304
305 -- Deleting staff that is assigned a ticket
306 DELETE FROM Ticket
307 WHERE StaffID = 1;
308
309 DELETE FROM Comment
310 WHERE TicketID = 10;
311
312 DELETE FROM Task
313 WHERE TicketID = 10;
314
315 DELETE FROM HardwareTicket
316 WHERE TicketID = 10;
317
318 GO
319
320 -- Deleting a ticket that has a task and a comment
321 DELETE FROM Ticket
322 WHERE TicketID = 9;
323
324 DELETE FROM HardwareTicket
325 WHERE TicketID = 9;
326
327 DELETE FROM Task
328 WHERE TicketID = 9;
329
330 DELETE FROM Comment
331 WHERE TicketID = 9;
```

```
332
333 GO
334
335 -- Deleting hardware that has more than one ticket
336 DELETE FROM Hardware
337 WHERE HardwareID = 2;
338
339 DELETE FROM HardwareTicket
340 WHERE TicketID = 4;
341
342 DELETE FROM HardwareTicket
343 WHERE TicketID = 8;
344
345 GO
346
347 -- UPDATE STATEMENTS
348 -- assigning staff to a ticket
349 UPDATE Ticket
350 SET StaffID = 2
351 WHERE TicketID = 4;
352 GO
353
354 -- finishing a task
355 UPDATE Task
356 SET DateTaskFinished = '2020-04-17 02:00:00'
357 WHERE TicketID = 6;
358 GO
359
360 -- changing the UserID of a user that created tickets to a
      new value
361 UPDATE Ticket
362 SET UserID = 2
363 WHERE TicketID = 7;
364 GO
365
366 -- SELECT STATEMENTS
367 -- retrieving all the open tickets
368 SELECT T.TicketID, Issue, DateIssued, DateResolved, UserID
    , T.StaffID, TicketCategoryID FROM Ticket T
369 LEFT OUTER JOIN Task S ON T.TicketID = S.TicketID WHERE
    DateResolved IS NULL;
370
371 -- retrieving all tickets issued after February 1, 2020
    and before March 20, 2020
372 SELECT TicketID, Issue, DateIssued FROM Ticket WHERE
    convert(DATETIME, DateIssued)
```

```
373 BETWEEN '2020-02-01 12:00:00.000' AND '2020-03-20 11:59:00
    .000';
374 GO
375
376 -- retrieving all tickets for two specific ticket
    categories
377 SELECT TicketID, Issue, TC.TicketCategoryID, CategoryName
    FROM Ticket T
378 INNER JOIN TicketCategory TC on T.TicketCategoryID = TC.
    TicketCategoryID
379 WHERE TC.TicketCategoryID = 701
380    OR TC.TicketCategoryID = 702;
381 GO
382
383 -- retrieving all tickets assigned to a specific staff
    member and ordering it by the date is was issued
384 SELECT StaffID, DateIssued, TicketID
385 FROM Ticket
386 WHERE StaffID = 2
387 ORDER BY DateIssued;
388 GO
389
390 -- retrieving all of the names of the users and the number
     of tickets each user has issued
391 SELECT UserFirstName, UserLastName, COUNT(TicketID) AS
    NumTicketsIssued
392 FROM [User] LEFT OUTER JOIN Ticket T on [User].UserID = T.
    UserID
393 GROUP BY UserFirstName, UserLastName
394 ORDER BY UserLastName;
395 GO
396
397 -- retrieving all tickets that contain comments with the
    word "security"
398 SELECT C.TicketID, CommentMade, Issue FROM Comment C
399 LEFT OUTER JOIN Ticket T on T.TicketID = C.TicketID
400 WHERE CommentMade LIKE '%security%';
401 GO
402
403 -- retrieving all categories for tickets that have more
    than two active
404 -- and staff that have not been assigned to any staff
405 SELECT T.TicketCategoryID FROM Ticket T RIGHT JOIN Ticket
    C ON T.TicketID = C.TicketID
406 WHERE T.TicketID IN (SELECT IIF(COUNT(TicketID) > 0,
    TicketID, '')
```

```
407        FROM Task WHERE Task.StaffID IS NULL
408        GROUP BY TicketID);
409 GO
410
```