COP4540: Database Management
Fall 2009

Project Specification

Due Date: November 25, 2009 in the class.

Project Description:

Task 1. Design and develop a database using the Microsoft Access database system

Consider a small private practice hospital with the following data.

**Patient:**

<table>
<thead>
<tr>
<th>Patient #</th>
<th>Patient F_Name</th>
<th>Patient L_Name</th>
<th>Address</th>
<th>Sex</th>
<th>Phone #</th>
<th>Date of Admission</th>
<th>Date of Discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>8379</td>
<td>Selena</td>
<td>Dimas</td>
<td>617 Valley Vista</td>
<td>F</td>
<td>305-678-3345</td>
<td>08/31/09</td>
<td>09/15/09</td>
</tr>
<tr>
<td>4238</td>
<td>Mark</td>
<td>Dolan</td>
<td>818 River Run</td>
<td>M</td>
<td>786-567-1243</td>
<td>05/10/09</td>
<td>05/25/09</td>
</tr>
<tr>
<td>3047</td>
<td>Annette</td>
<td>Larreau</td>
<td>127 Sandhill</td>
<td>F</td>
<td>510-456-3245</td>
<td>10/20/09</td>
<td>null</td>
</tr>
<tr>
<td>5838</td>
<td>Brian</td>
<td>Wiggins</td>
<td>431 Walnut</td>
<td>M</td>
<td>612-562-4339</td>
<td>07/03/08</td>
<td>07/29/08</td>
</tr>
<tr>
<td>6143</td>
<td>Wendell</td>
<td>Thomas</td>
<td>928 Logan</td>
<td>M</td>
<td>305-672-1459</td>
<td>09/20/09</td>
<td>null</td>
</tr>
</tbody>
</table>

**Charges:**

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Item Code</th>
<th>Patient Number</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room Semi-Private</td>
<td>200</td>
<td>4238</td>
<td>1600</td>
</tr>
<tr>
<td>Speech Therapy</td>
<td>350</td>
<td>3047</td>
<td>750</td>
</tr>
<tr>
<td>Radiology</td>
<td>275</td>
<td>4238</td>
<td>150</td>
</tr>
<tr>
<td>Physical Therapy</td>
<td>409</td>
<td>5838</td>
<td>600</td>
</tr>
<tr>
<td>EKG Test</td>
<td>500</td>
<td>8379</td>
<td>200</td>
</tr>
<tr>
<td>Standard IV</td>
<td>470</td>
<td>8379</td>
<td>150</td>
</tr>
<tr>
<td>EEG Test</td>
<td>700</td>
<td>4238</td>
<td>200</td>
</tr>
</tbody>
</table>

**Doctors:**

<table>
<thead>
<tr>
<th>Doctor</th>
<th>Specialization</th>
<th>Patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Han</td>
<td>Cardio</td>
<td>8379</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6143</td>
</tr>
<tr>
<td>Derek Smith</td>
<td>Neurology</td>
<td>5838</td>
</tr>
<tr>
<td>Geoffrey James</td>
<td>General Medicine</td>
<td>4238</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3047</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5838</td>
</tr>
</tbody>
</table>
Please help them design and develop a database to manage its data effectively.

**Note:** The above-mentioned data are poorly organized. Therefore, in your design, you might find it is necessary to create more tables and add some new attribute(s) as the primary key(s) for the table(s). In addition, during your design process, you need to check the query requirements mentioned in **Task 2** to ensure that all the required queries are supported by your database.

**Requirements:**
- Create an entity-relationship diagram for the model you plan to use in your system, showing the cardinality constraints.
- Design the relational schema and document it using the standard table representation (giving column headings, underlining primary keys, and using arrows to represent foreign keys).
- Implement the database called *company* in **Microsoft Access** (make sure that both primary keys and foreign keys are specified) and import all the data accordingly.

**Task 2. Write SQL queries to extract information**

Please write SQL queries (**do not** use query wizard/GUI) to extract the following information. All these queries are based on your database *company* developed in the **Task 1**. For each question, write the SQL query and save it in the *company* database under a different query name, for example, query1, query2, etc. Make sure it works correctly.

<table>
<thead>
<tr>
<th>Query</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Query 1</td>
<td>Retrieve the names and the phone numbers of all the male patients.</td>
</tr>
<tr>
<td>Query 2</td>
<td>Retrieve the names and the addresses of all the patients who have an assigned doctor.</td>
</tr>
<tr>
<td>Query 3</td>
<td>Retrieve the names of all the doctors who have more than one assigned patient.</td>
</tr>
<tr>
<td>Query 4</td>
<td>Retrieve the names of the patients who have been admitted for less than 7 days.</td>
</tr>
<tr>
<td>Query 5</td>
<td>Retrieve the names of the patients who are still admitted.</td>
</tr>
<tr>
<td>Query 6</td>
<td>Retrieve the names of the patients who first name starts with ‘S’.</td>
</tr>
<tr>
<td>Query 7</td>
<td>Retrieve the names of the patients who are admitted for more than 15 days.</td>
</tr>
<tr>
<td>Query 8</td>
<td>List the total charge for each patient incurred so far.</td>
</tr>
<tr>
<td>Query 9</td>
<td>Retrieve the names of the patients who have more than one incurred item.</td>
</tr>
<tr>
<td>Query 10</td>
<td>Retrieve the total number of male and female patients.</td>
</tr>
<tr>
<td>Query 11</td>
<td>Retrieve the names of the patients who have more than one assigned doctor.</td>
</tr>
</tbody>
</table>

**Submission**

Save your entity-relationship diagram, relational schema and the database (including all the queries) on a CD. In the meantime, print out a document that contains the entity-relationship diagram, relational schema, all the queries and the query results. You need to turn in both the hardcopy and the softcopy.
**Grading Policy**

<table>
<thead>
<tr>
<th>Category</th>
<th>Grade Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Database Design &amp; Implementation</td>
<td>50%</td>
</tr>
<tr>
<td>Queries &amp; Results</td>
<td>40%</td>
</tr>
<tr>
<td>Documentation (Clarity, organization, presentation)</td>
<td>10%</td>
</tr>
</tbody>
</table>