Chapter 5 Exercise 4 and 6 Solutions

4. 3NF relations for Millennium College are:
   - **OBJECT** (OID, Object_Type)
   - **INSTRUCTOR** (OID, Instructor_Name, Instructor_Location)
   - **COURSE** (OID, Course_No, Course_Title, Instructor_Name)
   - **STUDENT** (OID, Section_No, Student_Name, Major)
   - **OUTCOME** (OID, Student_No, Course_No, Grade)

6. Transforming Table 5-2 to relations:
   a. **PART SUPPLIER**

<table>
<thead>
<tr>
<th>Part_No</th>
<th>Description</th>
<th>Vendor_Name</th>
<th>Address</th>
<th>Unit_Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1234</td>
<td>Logic Chip</td>
<td>Fast Chips</td>
<td>Cupertino</td>
<td>10.00</td>
</tr>
<tr>
<td>1234</td>
<td>Logic Chip</td>
<td>Smart Chips</td>
<td>Phoenix</td>
<td>8.00</td>
</tr>
<tr>
<td>5678</td>
<td>Memory Chip</td>
<td>Fast Chips</td>
<td>Cupertino</td>
<td>3.00</td>
</tr>
<tr>
<td>5678</td>
<td>Memory Chip</td>
<td>Quality Chips</td>
<td>Austin</td>
<td>2.00</td>
</tr>
<tr>
<td>5678</td>
<td>Memory Chip</td>
<td>Smart Chips</td>
<td>Phoenix</td>
<td>5.00</td>
</tr>
</tbody>
</table>

   b. Part_No → Description
      Vendor_Name → Address
      Part_No, Vendor_Name → Unit_Cost

   c. **Insert anomaly:** we cannot insert a new vendor unless we also include a part number.
      **Delete anomaly:** if we delete part information, we also lose information about a vendor who supplies that part.
      **Modification anomaly:** if a vendor address changes, we have to modify all records (or rows) for that vendor.

d. 

   e. **1NF**

   f. **PART SUPPLIER**

      Part_No | Description
      Part_No | Vendor_Name | Unit_Cost