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Advanced Databases and Information Systems
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5. Sheet: Column Stores and NoSQL

Exercise 1 (Column Striping)
Assume you are given the following semi-structured representation of hotels.

```
hotelID : 'h1'
hotel :
     name : 'Palace Hotel'
staff :
     language : 'English'
staff :
     language : 'German'
     language : 'English'
staff :
     language : 'Spanish'
     language : 'English'

hotelID : 'h2'
hotel :
     name : 'Eden Hotel'
     address :
          city : 'Oldtown'
     roomprice :
          single : 85
          double : 120

hotelID : 'h3'
hotel :
     name : 'Leonardo Hotel'
     address :
          city : 'Newtown'
     roomprice :
          double : 100
staff :
      language : 'English'
staff :
     language : 'French'
```

- Apply the typing for nested records as introduced in the lecture. Try to infer which information is required and which is optional.
- Write down the document as key-value pairs.
- Add appropriate assignments for repetition- as well as definition levels to the key-value pairs.
- Write down the result as striped representation.

Exercise 2 (RDF Storage)
You are given the following snippet of the mondial RDF graph.

```
@prefix : <http://www.semwebtech.org/mondial/10/meta#>.
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>.
@prefix xsd: <http://www.w3.org/2001/XMLSchema#>.
<http://www.semwebtech.org/mondial/10/country/AL/> rdf:type :Country ;
        :name "Albania" ;
        :carCode 'AL' ;
        :area 28750 ;
        :capital <http://www.semwebtech.org/mondial/10/country/AL/city/Tirana/>.
<http://www.semwebtech.org/mondial/10/country/GR/> rdf:type :Country ;
        :name "Greece" ;
        :area 131940 ;
        :capital  <http://www.semwebtech.org/mondial/10/country/GR/province/Attikis/city/Athina/>.
<http://www.semwebtech.org/mondial/10/country/D/> rdf:type :Country ;
         :name "Germany" ;
         :localname "Bundesrepublik Deutschland (die)" ;
         :carCode 'D' ;
         :capital <http://www.semwebtech.org/mondial/10/country/D/province/Berlin/city/Berlin/>.
```

- Encode the graph as triple table.
- Encode the graph as property table.
- Show the tables after applying vertical partioning on the graph.