

The following exercises are designed to ensure that you understand Turtle syntax for RDF.

1. The following is a simple Turtle document. How many triples are represented here? What does it appear to say?

```
<http://www.w3.org/People/Berners-Lee/card#i>
  <http://www.w3.org/1999/02/22-rdf-syntax-ns#type>
    <http://xmlns.com/foaf/0.1/Person> .
<http://www.w3.org/People/Berners-Lee/card#i>
  <http://xmlns.com/foaf/0.1/name>
    "Tim Berners-Lee"@en .
<http://www.w3.org/People/Berners-Lee/card#i>
  <http://xmlns.com/foaf/0.1/name>
    "Τιμ Μπέρνερς Λι"@gr .
```

*The three triples above state that Tim Berners-Lee is a person, and has the name “Tim Berners-Lee” in English (language code “en”) and “Τιμ Μπέρνερς Λι” in Greek (language code “gr”).*

2. The above Turtle document is fairly verbose, and could be made simpler. List all the possible ways you can think of to make the document more succinct while remaining valid Turtle.

*There are a number of ways to shorten the above triples. The most succinct way to phrase them is:*

```
@prefix foaf: <http://xmlns.com/foaf/0.1/> .

<http://www.w3.org/People/Berners-Lee/card#i> a foaf:Person ;
  foaf:name "Tim Berners-Lee"@en , "Τιμ Μπέρνερς Λι"@gr .
```

3. The following is another Turtle document. How many triples are represented here?  
What does it appear to say?

```
@prefix foaf: <http://xmlns.com/foaf/0.1/> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix corp: <http://www.example.org/corp#> .

<http://www.pipian.com/people/pipian/card#me> a foaf:Person;
  foaf:name "Ian Jacobi"@en, "イアン・ジャコービ"@jp ;
  foaf:age 24 ;
  <http://purl.org/vocab/relationship/collaboratesWith> [
    is corp:director of [
      rdfs:label "World Wide Web Consortium"@en ] ] .
```

*There are seven triples above:*

```
@prefix foaf: <http://xmlns.com/foaf/0.1/> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix corp: <http://www.example.org/corp#> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .
@prefix : <http://www.pipian.com/people/pipian/card#me> .

:me a foaf:Person .
:me foaf:name "Ian Jacobi"@en .
:me foaf:name "イアン・ジャコービ"@jp .

:me foaf:age "24"^^xsd:int .
:me <http://purl.org/vocab/relationship/collaboratesWith> _:director .
_:w3c corp:director _:director .
_:w3c rdfs:label "World Wide Web Consortium"@en .
```

*It (roughly) says that Ian Jacobi is a person whose name is “Ian Jacobi” in English (language code “en”) and “イアン・ジャコービ” in Japanese (language code “jp”), collaborates with someone who is a director of something named the “World Wide Web Consortium.”*

4. The following is a Turtle document has a number of errors in it. Try to correct it.

```
@prefix geo http://www.w3.org/2003/01/geo/wgs84_pos#  
@prefix foaf http://xmlns.com/foaf/0.1/
```

```
http://example.org/people/jlambda#me a foaf:Person geo:SpatialThing  
  name "Joe Lambda" . # foaf has this property  
  geo:lat "42.373611" ;  
  geo:long "-71.110556" ;
```

*One possible way to correct the above is as follows (changes underlined in red):*

```
@prefix geo: <http://www.w3.org/2003/01/geo/wgs84_pos# > .  
@prefix foaf: <http://xmlns.com/foaf/0.1/ > .  
  
<http://example.org/people/jlambda#me > a foaf:Person, geo:SpatialThing ;  
  foaf:name "Joe Lambda" ;  
  geo:lat "42.373611" ;  
  geo:long "-71.110556" .
```

*It's also possible to add datatypes to the geo:lat and geo:long properties, but this is not required.*

5. Try to render the following statement in Turtle:

“Marge vs. the Monorail” is the twelfth episode of The Simpsons's fourth season and originally aired on January 14, 1993 on Fox. It was written by Conan O'Brien and directed by Rich Moore. Leonard Nimoy and Phil Hartman guest star.<sup>1</sup>

Note that there are a number of different methods to represent this statement, but it is good practice to reuse ontologies that already exist. Thus, you may wish to use the following ontologies, descriptions of which are provided at the appropriate URIs:

The Programmes Ontology (to describe TV and radio shows), standard prefix “po:”  
<<http://www.bbc.co.uk/ontologies/programmes/2009-09-07.shtml>>

RDF Schema (for labels), standard prefix “rdfs:”  
<<http://www.w3.org/TR/rdf-schema/>>

Friend of a Friend (to describe people), standard prefix “foaf:”  
<<http://xmlns.com/foaf/spec/>>

XML Schema Datatypes (to qualify dates and numbers), standard prefix “xsd:”  
<<http://www.w3.org/TR/xmlschema-2/>>

*One possible serialization (adhering closely to the data model set out by the Programmes Ontology) is given on the next page. Note that as all of the URIs generated are local blank-node URIs (given by the \_: prefix), this output is NOT linked data friendly since the entities can't be referred from outside the document.*

---

<sup>1</sup> Text graciously taken from the Wikipedia article “Marge vs. the Monorail”:  
<[http://en.wikipedia.org/wiki/Marge\\_vs.\\_the\\_Monorail](http://en.wikipedia.org/wiki/Marge_vs._the_Monorail)>

@prefix foaf: <http://xmlns.com/foaf/0.1/> .  
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .  
@prefix po: <http://purl.org/ontology/po/> .  
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .

*\_:margevmono a po:Episode ;  
    po:position 12 ;  
    po:author \_:conanobrien ;  
    po:director \_:richmoore ;  
    po:actor \_:leonardnimoy , \_:philhartman .*

*\_:simpsonso4 a po:Series ;           # Note that the Programmes Ontology uses Series for  
    po:position 4 ;                # what Americans would call a Season.  
    po:episode \_:margevmono .*

*\_:simpsons a po:Brand ;            # Note that the Programmes Ontology uses Brand  
    po:series \_:simpsonso4 ; # for what Americans would call a Series.  
    rdfs:label "The Simpsons" .*

*\_:fox a po:Service ;  
    rdfs:label "Fox" .*

*\_:margevmonobc a po:FirstBroadcast ;  
    po:broadcast\_on \_:fox ;  
    po:broadcast\_of [ a po:OriginalVersion ; is po:version of \_:margevmono ] ;  
    po:schedule\_date "1993-01-14"^^xsd:date .*

*\_:conanobrien a foaf:Person ;  
    foaf:name "Conan O'Brien" .*

*\_:richmoore a foaf:Person ;  
    foaf:name "Rich Moore" .*

*\_:leonardnimoy a foaf:Person ;  
    foaf:name "Leonard Nimoy" .*

*\_:philhartman a foaf:Person ;  
    foaf:name "Phil Hartman" .*