Mars (Ahmad)

What are the names of all the moons of Mars?

```
PREFIX : <http://example.org/solarsystem#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>

SELECT ?moonName
WHERE {
  ?moon a :satellite ;
      :hasSatellite :Mars ;
      rdfs:label ?moonName .
}
```

Analyze the size difference between Mars' two moons

```
PREFIX : <http://example.org/solarsystem#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>

SELECT ?moonName ?radius
WHERE {
  ?moon a :satellite ;
      :hasSatellite :Mars ;
      rdfs:label ?moonName ;
      :radius ?radius .
}
```

Jupiter (Zabi)

Identify the smallest and largest Jupiter moons.

```
PREFIX : <http://example.org/solarsystem#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>

SELECT ?moonName ?radius
        WHERE {
```

```
                {
                  SELECT (MIN(?radiusValue) AS ?minRadius)
                        (MAX(?radiusValue) AS ?maxRadius)
                  WHERE {
                    ?moon a :satellite ;
                          :hasSatellite :Jupiter ;
                          :radius ?radiusValue .
                  }
                }
                ?moon a :satellite ;
                     :hasSatellite :Jupiter ;
                     :radius ?radius ;
                     rdfs:label ?moonName .
                FILTER(?radius = ?minRadius || ?radius = ?maxRadius)
               }
```

List all moons of Jupiter with a magnitude greater than 10

```
PREFIX : <http://example.org/solarsystem#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>

PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
SELECT ?moonName ?magnitude
WHERE {
  ?moon a :satellite ;
       :hasSatellite :Jupiter ;
       :magnitude ?magnitude ;
       rdfs:label ?moonName .
  FILTER(xsd:decimal(?magnitude) > 10)
}
```

Saturn (aiman)

Which moon of Saturn has the largest radius?

```
PREFIX : <http://example.org/solarsystem#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>

SELECT ?moonName ?radius
WHERE {
 {
   SELECT (MAX(?radiusValue) AS ?maxRadius)
   WHERE {
     ?moon a :satellite ;
          :hasSatellite :Saturn ;
          :radius ?radiusValue .
   }
 }
 ?moon a :satellite ;
      :hasSatellite :Saturn ;
      :radius ?radius ;
      rdfs:label ?moonName .
 FILTER(?radius = ?maxRadius)
}
```

Find the moon of Saturn with the highest magnitude

```
PREFIX : <http://example.org/solarsystem#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>

SELECT ?moonName ?magnitude
WHERE {
 {
```

```
    SELECT (MAX(xsd:decimal(?magnitude)) AS ?maxMagnitude)
    WHERE {
      ?moon a :satellite ;
          :hasSatellite :Saturn ;
          :magnitude ?magnitude .
    }
  }
  ?moon a :satellite ;
      :hasSatellite :Saturn ;
      :magnitude ?magnitude ;
      rdfs:label ?moonName .
  FILTER(xsd:decimal(?magnitude) = ?maxMagnitude)
}
```

Earth (Saad)

Which moon has the closest density to that of Earth's Moon?

```
PREFIX : <http://example.org/solarsystem#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>

SELECT ?moonName ?density (ABS(xsd:decimal(?density) - 3.34) AS ?densityDifference)
WHERE {
  ?moon a :satellite ;
      :density ?density ;
      rdfs:label ?moonName .
  FILTER(xsd:decimal(?density) > 0)  # To ensure the density is a positive number
}
ORDER BY ?densityDifference
LIMIT 1
```

find the planet with only one moon

```
PREFIX : <http://example.org/solarsystem#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>

SELECT ?planetName (COUNT(?moon) AS ?moonCount)
WHERE {
  ?planet a :Planet ;
        rdfs:label ?planetName .
  ?moon a :satellite ;
       :hasSatellite ?planet .
}
GROUP BY ?planetName
HAVING (COUNT(?moon) = 1)
```

Neptune & Uranus (Sramd)

Find the moons of Neptune with an albedo greater than 0.5

```
PREFIX : <http://example.org/solarsystem#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>

SELECT ?moonName ?albedo
WHERE {
  ?moon a :satellite ;
       :hasSatellite :Neptune ;
       :albedo ?albedo ;
       rdfs:label ?moonName .
  FILTER(xsd:decimal(?albedo) > 0.5)
}
```

Find the moon of Neptune with the lowest albedo

```
PREFIX : <http://example.org/solarsystem#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>

SELECT ?moonName ?albedo
WHERE {
 {
   SELECT (MIN(xsd:decimal(?albedo)) AS ?minAlbedo)
   WHERE {
     ?moon a :satellite ;
          :hasSatellite :Neptune ;
          :albedo ?albedo .
   }
 }
 ?moon a :satellite ;
      :hasSatellite :Neptune ;
      :albedo ?albedo ;
      rdfs:label ?moonName .
 FILTER(xsd:decimal(?albedo) = ?minAlbedo)
}
```

List all moons of Uranus with a radius less than 100 km

```
PREFIX : <http://example.org/solarsystem#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>

SELECT ?moonName ?radius
WHERE {
 ?moon a :satellite ;
```

```
        :hasSatellite :Uranus ;
        :radius ?radius ;
        rdfs:label ?moonName .
    FILTER(xsd:decimal(?radius) < 100)
}
```

Count the number of moons of Uranus

```
PREFIX : <http://example.org/solarsystem#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>

SELECT (COUNT(?moon) AS ?moonCount)
WHERE {
  ?moon a :satellite ;
        :hasSatellite :Uranus .
}
```