

Basi di Dati 2 - Assignment

Documents

Document 1

```
<?xml version="1.0" encoding="UTF-8"?>
<student>
  <firstName> Luca </firstName>
  <lastName> Rossi </lastName>
  <id> 281283 </id>
  <plan>
    <courses year="3">
      <course>
        <name> Programmazione Orientata agli Oggetti </name>
        <shortName> P00 </shortName>
        <record>
          <grade> 30 </grade>
          <date> 13/06/11 </date>
        </record>
      </course>
      <course>
        <name> Analisi e progettazione del software </name>
        <shortName> APS </shortName>
      </course>
    </courses>
    <courses year="2">
      ...
    </courses>
  </plan>
</student>
```

Document 2

```
<?xml version="1.0" encoding="UTF-8"?>
<email>
  <from> luca.rossi.917@gmail.com </from>
  <to> atzeni@dia.uniroma3.it </to>
  <content>
    Dear <person> Paolo </person>,
    here are some very hard exercises for the upcoming assignment
    of <course> Basi di Dati 2 </course>:
    <exercises>
      <exercise>
        <topic> DTD </topic>
        <description> From Instance to DTD </description>
      </exercise>
      <exercise>
        <topic> XPath </topic>
        <description> Find students with average grade
        better than 26 </description>
      </exercise>
    </exercises>
    Best Regards,
    <person> Luca </person>
  </content>
</email>
```

Exercises

Da consegnare (su Moodle, vedere il sito) almeno due giorni prima dell'esame. Predisporre un file zip o rar con le soluzioni di ciascun esercizio e un breve documento che illustri i test eseguiti e i relativi risultati (con schermate oppure file di output).

DTD

1. Define a DTD that validates *Document 1*
2. Define a DTD that validates *Document 2*

XSD

1. Define an XSD that validates *Document 1*
2. Define an XSD that validates *Document 2*

XPath

With reference to Document 1:

1. Find students who have passed POO with grade > 24
2. Find students with average grade > 26
3. Find students who have passed more exams in the 2nd year than in the 3rd

XQuery

With reference to Document 1:

1. For each student, return distinct couples of exams passed with the same grade
2. Return students who improved their average grade in the 3rd year with respect to the 2nd.

Example result:

```
<students>
  <student>
    <id>281283</id>
    <avg year="3"> 28 </avg>
    <avg year="2"> 26 </avg>
  </student>
  <student>
    <id>281374</id>
    <avg year="3"> 27 </avg>
    <avg year="2"> 24 </avg>
  </student>
</students>
```