



Institutionen för Data-
och Systemvetenskap

***:96 (SU) and 2I1263 (KTH)
Internet Application Protocols
and Standards**

Exam 2002-03-06



STOCKHOLMS
UNIVERSITET



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The following documents are allowed during the exam:

1. Documents in Compendium 1, printed on coloured paper.
2. Documents in Compendium 2, printed on coloured paper.
3. Documents in Compendium 3, printed on coloured paper.
4. Documents in Compendium 7, printed on coloured paper.
5. Ordinary language dictionaries between English and Swedish.

Note 1: Compendium 4, 5, 6, 8 and 9 are not allowed during the exam. The exam supervisor will check that you do not have copies of compendiums 4, 5, 6, 8 and 9 printed on colour paper. Bringing such compendiums on coloured paper is cheating and can result in suspension of your rights to study.

Note 2: Underscoring and short handwritten notes in the yellow documents are allowed.

Note 3: A few copies of these compendiums (part 1-3 and 7) will be available for loan during the exam for students who have not bought the compendiums.

Important warning

It is not acceptable to answer an exam question by just a verbatim quote from the allowed documents above. You must show that you understand the question and your answer by using your own words.

Jacob Palme will come to the exam rooms around 18:00 to answer questions regarding the exam.

Notification of result by e-mail

Print your e-mail address on the front cover page of the exam, so that I can notify you by e-mail if you did not pass the exam. Print legibly!



Continued from the previous page.

No. Question in English

Max
points

1. Write an XML DTD for storing an ancestor structure for a person. By an ancestor structure is meant the name and birthdate of the person, and the same information recursively for his or her father and mother, grandfathers and grandmothers, etc., to an unlimited depth. The structure should allow stops at different depth in different branches, when some ancestor is not known any further.
- Skriv en XML DTD för att lagra en persons förfaders-struktur. Med förfaders-struktur means personens namn och födelsedatum, samma information för personens fader och moder, o.s.v. till farföräldrar och morföräldrar rekursivt till obegränsat djup. Strukturen skall tillåta stopp på olika nivåer där man inte känner till någons förälder.

Answer variant 1:

ancestors.dtd:

```
<!ELEMENT ancestors (father?,mother?)>
<!ATTLIST ancestors
  name CDATA #REQUIRED
  birthdate CDATA #REQUIRED
>
<!ELEMENT father (ancestors)>
<!ELEMENT mother (ancestors)>
```

ancestors.xml (example, not required):

```
<?xml version="1.0" standalone="no"?>
<!DOCTYPE ancestors SYSTEM "http://dsv.su.se/jpalme/internet-course/xml/ancestors.dtd">
<ancestors name="Per Nilsson" birthdate="410201">
  <father>
    <ancestors name="Erik Nilsson" birthdate="123455">
    </ancestors>
  </father>
  <mother>
    <ancestors name="Svea Nilsson" birthdate="120413">
      <father>
        <ancestors name="Inga Petri" birthdate="1234">
        </ancestors>
      </father>
      <mother>
        <ancestors name="Maria Björk" birthdate="18430212">
        </ancestors>
      </mother>
    </ancestors>
  </mother>
</ancestors>
13" id="p3"/>
<person name="Peter Svensson" birthdate="19123455" id="p2" mother="p4"/>
<person name="Magda Svensson" birthdate="18871215" id="p4"/>
</ancestor-id>
```

Note: An advantage with variant 2 over variant 1, might be that it can better cater for cases where the same person is an ancestor in several places.



Answer variant 2:

ancestor-id.dtd:

```
<!ELEMENT ancestor-id (person*)>
<!ELEMENT person EMPTY>
<!ATTLIST person
  name CDATA #REQUIRED
  birthdate CDATA #REQUIRED
  id ID #REQUIRED
  mother IDREF #IMPLIED
  father IDREF #IMPLIED
>
```

ancestor-id.xml (example, not required):

```
<?xml version="1.0" standalone="no"?>
<!DOCTYPE ancestor-id SYSTEM "http://dsv.su.se/jpalme/internet-
course/xml/ancestor-id.dtd">
<ancestor-id>
<person name="Per Svensson" birthdate="19410201" id="p1" father="p2"
mother="p3"/>
```

<person name="Maria Svensson" birthdate="191204

- | | | | |
|---|---|--|---|
| 2 | How is it possible to send binary data in e-mail, even though e-mail is based on sending text messages? | Hur är det möjligt att sända binära data i e-post, trots att e-post-standarderna baseras på att man sänder text-meddelanden? | 6 |
|---|---|--|---|

Answer:

Method 1: Encode the binary into text using the Content-Transfer-Encoding: BASE64.

Method 2: Marking the binary data as Content-Transfer-Encoding: Binary. This require prior agreement, through ESTMP, that both the sending and receiving mail agent can handle binary and 8bit data.

- | | | | |
|---|---|---|---|
| 3 | What is meant by an HTTP proxy server, and why are they used? | Vad menas med en HTTP proxy-server, och varför använder man sådana? | 6 |
|---|---|---|---|

Answer:

A HTTP proxy is an intermediate agent between the HTTP client and the HTTP server storing a page to be downloaded. Such intermediate agents can cache copies of recently accessed pages, so that users get them faster and at less load on distant network connections. They can also have functions to stop viruses and other unsuitable content. They share the problem which most caching schemes have, such as that there may be a risk that users get outdated versions of a recently changed web page.



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No.	Question in English		Max points
4	You have been given the task of specifying a standards extension to the HTTP standard, to allow a HTTP request to indicate the age of the person making the request. Write such a specification in a format which might actually be sent as a proposal to a standards organisation.	Du har fått i uppgift att skriva en standard som till HTTP gör ett tillägg, som gör att man kan ange åldern på den person, som sänder HTTP-requested. Skriv en sådan specification i ett format som skulle kunna sändas in som ett förslag till en standardiseringsorganisation.	6

Answer:

The HTTP Requestor Age Header

The HTTP Requestor Age Header allows an HTTP client to indicate the age of the user when making a request (2).

The syntax of this header is (4):

```
Requestor-age = "Requestor-Age:" LWSP 1*3DIGIT
```