**Institutionen för Data-
och Systemvetenskap**

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

Exam-2006-10-21-solved.doc

**STOCKHOLMS
UNIVERSITET**

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The following documents are allowed during the exam:

1. Documents in Compendium 1, printed on colored paper.

2. Documents in Compendium 2, printed on colored paper.

3. Documents in Compendium 3, printed on colored paper.

4. Documents in Compendium 7, printed on colored paper.

5. Documents in Compendium 9, printed on colored paper.

6. Ordinary language dictionaries between English and Swedish.

Note 1: Compendium 0, 4, 5, 6 and 8 are not allowed during the exam.

Note 2: The exam supervisor will check that you do not have copies of the disallowed compendiums. Bringing such compendiums on colored paper is cheating and can result in suspension of your rights to study.

Note 3: Underscoring and short handwritten notes in the yellow documents are allowed.

Note 4: A few copies of the allowed compendiums will be available for loan during the exam for students who have not brought 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 will be availble by phone 08-664 77 48 for clarification of exam questions until 12:00.

No.	Question in English	Question in Swedish	Max points
1	What are the pros and cons of each of ABNF, ASN.1 and XML as languages for specificaiton of the coding of network protocols.	Vilka är för- och nackdelarna med vart och ett av ABNF, ASN.1 och XML som språk för specifikation av kodningen av nätverksprotokoll.	6

Answer:

Specification system	ABNF	XML	ASN.1
Pros	• Simple and easy to read both specification and data. • Can specify almost any textutal protocol	• Can specify data structures • Easy to read transmission format • Syntax checkers available • Can easily be accessed from the WWW	• Can specify data structures • Compact transmission format • Good for binary data • No framing problems
Cons		• Inefficient, wordy	• Unreadable data without a program

No.	Question in English	Question in Swedish	Max points
2	Write an XML specification for transmission of a travel itinerary, containing a series of travel segments from one place to another place with a certain departure and arrival time for each travel segment.	Skriv en XML-specifikation för att överföra en resplan, som innehåller en serie delresor från en plats till en annan plats vid en given avresetid och ankomsttid för varje delresa..	6

No.	Question in English	Question in Swedish	Max points

Answer alterntive 1:

DTD:

```
<!ELEMENT exam061021a (step+)>
<!ELEMENT step EMPTY>
<!ATTLIST step
    from CDATA #REQUIRED
    to CDATA #REQUIRED
    departure CDATA #REQUIRED
    arrival CDATA #REQUIRED
>
```

XML:

```
<exam061021a>
    <step from="Stockholm" to="Amsterdam"
        departure="20061105:06:23"
        arrival="20061105:08:53" />
    <step from="Amsterdam" to="Stockholm"
        departure="20061105:17:23"
        arrival="20061105:20:23" />
</exam061021a>
```

Answer alternativ 2:

DTD:

```
<!ELEMENT exam061021b (step+)>
<!ELEMENT step (from,to,departure,arrival)>
<!ELEMENT from (#PCDATA)>
<!ELEMENT to (#PCDATA)>
<!ELEMENT departure (year,month,day,hour,minute)>
<!ELEMENT arrival (year,month,day,hour,minute)>
<!ELEMENT year (#PCDATA)>
<!ELEMENT month (#PCDATA)>
<!ELEMENT day (#PCDATA)>
<!ELEMENT hour (#PCDATA)>
<!ELEMENT minute (#PCDATA)>
```

XML:

```
<exam061021b>
    <step>
        <from>Stockholm</from>
        <to>Amsterdam</to>
        <departure>
```

No.	Question in English	Question in Swedish	Max points

```
                <year>2006</year>
                <month>11</month>
                <day>05</day>
                <hour>06</hour>
                <minute>23</minute>
            </departure>
            <arrival>
                <year>2006</year>
                <month>11</month>
                <day>05</day>
                <hour>08</hour>
                <minute>53</minute>
            </arrival>
        </step>
        <step>
            <from>Amsterdam</from>
            <to>Stockholm</to>
            <departure>
                <year>2006</year>
                <month>11</month>
                <day>05</day>
                <hour>17</hour>
                <minute>23</minute>
            </departure>
            <arrival>
                <year>2006</year>
                <month>11</month>
                <day>05</day>
                <hour>19</hour>
                <minute>53</minute>
            </arrival>
        </step>
</exam061021b>
```

Note 1: One could argue that answer alternative 1 is not proper XML, since it users non-XML markup (for example the separation character ":"). However, this kind of mixture of XML and non-XML formatting is very common and can thus not be regarded as incorrect XML.

Note 2: Since the exam question did not specify whether DTD or XML or both was required, I gave full score for either only DTD or only XML.

No.	Question in English	Question in Swedish	Max points
3	Is it possible, using HTTP, to request download of a page only if that page has been modified after a certain date? If yes, how?	Är det möjligt i HTTP att begära nedladdning av en sida endast om sidan har ändrats sedan en viss tidpunkt. Om ja, hur?	6

Answer:

Put in the HTTP request header an header field like:

```
If-Modified-Since: Sat, 29 Oct 1994 19:43:31 GMT
```

No.	Question in English	Question in Swedish	Max points
4	The "Message-ID" header field is mandatory in Usenet News but optional in e-mail. Why is it mandatory in Usenet News?	Fältet "Message-ID" i huvudet på ett meddelande är obligatoriskt i Usenet News men inte obligatoriskt i e-post. Varför är det obligatoriskt i Usenet News?	6

Answer:

Because the Message-ID is used for loop control in the distribution of messages between servers, and the method used for distribution between servers in Usenet News entails a large risk for loops.