



Institutionen för Data-
och Systemvetenskap

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



STOCKHOLMS
UNIVERSITET



KUNGLIGA
TEKNISKA
HÖGSKOLAN

Exam 1999-08-23

The following documents are allowed during the exam:

- a) Documents in Compendium 1, printed on coloured paper.
- b) Documents in Compendium 2, printed on coloured paper.
- c) Documents in Compendium 3, printed on coloured paper.
- d) Ordinary language dictionaries between English and Swedish.

Note 1: Compendium 4 and 5 are not allowed during the exam.

Note 2: Some students may have the compendiums from the previous time this course was given. These compendiums have yellow paper only on the front page of the allowed documents, and there was a separate document Appendix A: ASN.1 syntax (basic items) which is allowed during the exam.

Note 3: Compendium 4 was wrongly printed on yellow paper in August 1998, but is not allowed during the exam.

Note 3: A few copies of these compendiums 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.

Questions during the exam

Jacob Palme can be reached by phone 08-664 77 48 between 10.30-11.30.

Notification of result by e-mail

If you write your e-mail address on the front cover page of the exam, then you will be notified by e-mail if you did not pass the exam.

No.	Question in English	Question in Swedish	Max points
1	Write an ASN.1 specification to control a video recorder. The specification should allow the requestor to tell the recorder to rewind the tape, play the tape, and record a certain television channel at a certain time.	Skriv en ASN.1-specifikation för att styra en videobandspelare. Specifikationen skall ge möjlighet att instruera bandspelaren att spola tillbaka bandet, spela upp bandet och spela in från en viss kanal vid en viss tidpunkt.	6
		<i>Continued on the next page</i>	



No.	Question in English	Question in Swedish	Max points
	<p>Solution 1:</p> <pre> Command ::= SEQUENCE { [1] operation Operation, [2] channel INTEGER OPTIONAL, [3] start GeneralizedTime OPTIONAL, [4] end GeneralizedTime OPTIONAL } Operation ::= ENUMERATED { rewind (1), play(2), record(3) } </pre> <p>Solution 2:</p> <pre> Command ::= SEQUENCE { [0] rewindfirst BOOLEAN, [1] operation Operation, [2] channel INTEGER OPTIONAL, [3] start GeneralizedTime OPTIONAL, [4] end GeneralizedTime OPTIONAL } Operation ::= ENUMERATED { none(1), play(2), record(3) } </pre> <p>Solution 3:</p> <pre> Command ::= CHOICE { play [0] NULL, rewind [1] NULL, record [2] Record } Record ::= SEQUENCE { channel [1] INTEGER, start GeneralizedTime OPTIONAL, end GeneralizedTime OPTIONAL } </pre>		
2	<p>How are new articles passed from one Usenet news server to another? Describe all the connections and commands that might be used. Discuss problems with the methods described.</p>	<p>Hur överförs nya artiklar från en Usenet news-server till en annan? Beskriv alla uppkopplingar och kommandon som kan används. Diskutera problem med de beskrivna metoderna.</p>	6
<p>Reply:</p> <p><i>(Note: This reply contains considerably more information than was required for full score on the exam.)</i></p> <p>There are several ways to do this.</p> <p>Method (1) is that the receiving server connects to the server with news and uses the NEWNEWS command to get a list of new articles. It then checks if it already has some of these articles, and gets the rest with a series of GROUP and ARTICLE command.</p> <p>Method (2) is that the receiving server connects and issues a LIST</p>			



No.	Question in English	Question in Swedish	Max points
	<p>command. Based on knowledge of which articles the receiving server has already received, it can then use a series of GROUP and ARTICLE commands to get the articles it does not yet have.</p> <p>Method (3) is for the server with news to connect to the receiving server and use the IHAVE command to list all new articles which have arrived, and the receiving server responds to each IHAVE command with indication whether it wants that article or not.</p> <p>Method (4) is to send all news in a batch operation of UUCP over TCP, or even to use mail for this purpose.</p> <p>Method (5) is to allow remote execution (rnews) from one server to another.</p> <p>Method (1) is rarely used, because it is often awkward for servers, and many servers have disabled this command.</p> <p>Since a news server may receive articles from more than one other server, it is important to reject multiple copies of the same article. To avoid sending data not needed, the receiving server will, with method (2) often first use the HEAD command to look at the article header and check if the server already has a message with this Message-ID, before downloading the full text. A non-standard, but commonly used command XOVER will get the Message-IDs in a faster way.</p> <p>All methods have a problem in that to transfer a large amount of articles, many interactions back and forward are needed. To avoid delay time, pipelining (streaming) is necessary. The IHAVE method can get a new document available faster on the receiving server, since the server with news can initiate a connection immediately when a new article has arrived. The IHAVE method tends to cause smaller downloads more often, which is an advantage, since large downloads can take a long time. A disadvantage with IHAVE is that the sending server has to keep a list of which newsgroups are wanted by each receiving server.</p>		
3	<p>When a user connects to a search engine on the web, and fills in a search query, the string sent to the search engine might be</p> <p>http://www.euroseek.net/query?query=tropical+flowers&lang=en</p> <p>What HTML code caused this string to be sent?</p>	<p>När en användare kopplar sig till en sökmotor på webben, och fyller i sökformuläret, sänds strängen nedan till sökmotorn.</p> <p>Vilken HTML-kod orsakade att denna sträng sändes?</p>	6

No.	Question in English	Question in Swedish	Max points
	<p>Solution 1:</p> <pre><!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 3.2//EN"> <HTML><HEAD> </HEAD><BODY> <FORM ACTION="http://www.euroseek.net/query" METHOD=get NAME="searchform"> <INPUT TYPE="TEXT" NAME="query">
 Limit to Language:&nbsp; <SELECT NAME="lang" SIZE=1> <OPTION VALUE="wo" selected>Any <OPTION VALUE="sv">Svenska </SELECT> <input type="submit"> </FORM> </BODY></HTML></pre> <p>Solution 2, same as solution 1 but replace <SELECT> with:</p> <pre><input type="radio" name="lang" value="en">English <input type="radio" name="lang" value="sv">Swedish</pre> <p>Solution 3, same as solution 1 but replace <SELECT> with:</p> <pre><input type="text" name="lang">This solution is not so neat, since how should the user know that English is specified as "en" and not as "English"</pre> <p>Rättningsmall</p> <pre><!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 3.2//EN"> <HTML><HEAD></pre>		
4	<p>What are the advantages of encoding text with the UTF-8 encoding of Unicode/ISO 10646 as compared to ISO Latin One (8859) and UTF-16?</p>	<p>Vad är fördelarna med att koda text med UTF-8-metoden för kodning av Unicode/ISO 10646, jämfört med ISO Latin One (8859) and UTF-16?</p>	6
<p>Answer:</p> <p>Advantage with UTF-8 as compared to ISO UTF-16: Most of the US-ASCII characters are sent in the same format as in US-ASCII, which means that old software which does not understand Unicode/ISO 10646 will still understand most of the characters . Another advantage is that for text which mostly uses only ASCII character, fewer number of octets need to be transported .</p> <p>Advantage with UTF-8 as compared to ISO Latin One (8859): Larger selection of character, the same character set can be used for all languages .</p>			