DSV Institutionen för Data-
och Systemvetenskap

STOCKHOLMS UNIVERSITET

KUNGLIGA TEKNISKA HÖGSKOLAN

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

Exam 2001-02-21

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.

Note 2: Some students may have the compendiums from the previous time this course was given. Some of 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 4: A few copies of these compendiums (part 1-3) will be available for loan during the exam for students who have not bought the compediums.

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 during the exam at 17:30-18:00 phone 0647-527 35, if that number does not reach me, try cell phone 0709-611 201.

Notification of result by e-mail

The results of the exam will be published in Daisy, and you will automatically get a message in First Class when the results are ready. If you do not have any First Class account, and want notification if you failed in the exam, then write your e-mail address on the front of the exam folder.

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No.	Question in English	Question in Swedish	Max points
1.	Which of the ASN.1 tags in the example below can be removed, and which tags are needed for the receiving agent to interpret the information sent to it?	Vilka av ASN-1-etiketterna i exemplet nedan kan tas bort, och vilka måste finnas kvar för att mottagande agent skall kunna tolka den information som sänds till den?	6

	Family ::= [APPLICATION 1] SEQUENCE {
	    father [1] Person OPTIONAL,
	    mother [2] Person OPTIONAL,
	    children [3] SEQUENCE OF Person OPTIONAL }
	
	Person ::= [APPLICATION 2] CHOICE {
	    socialsecuritynumber [1] NumericString,
	    phonenumber [2] NumericString,
	    name [3] Name }
	
	Name ::= [APPLICATION 3] CHOICE {
	    fullname [1] Fullname,
	    shortname [2] Shortname }
	
	FullName ::= [APPLICATION 4] SET {
	    givenname [1] UniversalString,
	    surname [2] UniversalString }
	
	ShortName ::= [APPLICATION 5] SET {
	    initials [1] UniversalString,
	    surname [2] UniversalString }		

	An extra copy of the text above is included at the end of this exam, which you can submit if you do not want to copy the ASN.1 text above.	En extra kopia av texten ovan bifogas sist i den här tentan, som du kan markera i om du vill slippa skriva av hela texten ovan.	

Solution (this is not the only possible solution)

Family ::= [APPLICATION 1] SEQUENCE {	Not used in shown code
father [1] Person OPTIONAL,	only one of the **Person** types need to be explicitly tagged in order to be different from the other
mother [2] Person OPTIONAL,	
children [3] SEQUENCE OF Person OPTIONAL }	This is the only **SEQUENCE OF** in the context, so the universal tag for **SEQUENCE OF** is enough to distinguish it
Person ::= [APPLICATION 2] CHOICE {	Disambiguated earlier
socialsecuritynumber [1] NumericString,	Only one of the **NumericStrings** need be tagged to disambiguate it from the others
phonenumber [2] NumericString,	
name [3] Name }	Has separate tags defined below
Name ::= [APPLICATION 3] CHOICE {	Only used once
fullname [1] Fullname,;	Has separate tags below
shortname [2] Shortname }	
FullName ::= [APPLICATION 4] SET {	only one of the two types used in Name must have a different tag from the universal tag for **SET**
givenname [1] UniversalString,	Only one in the context need have different tag from the universal tag for **UniversalString**
surname [2] UniversalString }	
ShortName ::= [APPLICATION 5] SET {	
inititals [1] UniversalString,	Only one in the context need have different tag from the universal tag for **UniversalString**
surname [2] UniversalString }	

Note:

A few student misunderstood the question and discussed which ASN.1 types could be removed, not which ASN.1 tags. However, to understand the difference between tags and types/elements is important in understanding both ASN.1 and XML.

2	There are two commonly used data types in FTP today. Which are they and which are the differences between them?	Det finns två idag vanligen använda datatyper vid filöverföring med FTP. Vilka är de och vad är skillnaderna mellan dem?	6

No.	Question in English	Question in Swedish	Max points
	Answer: They are the ASCII/TEXT and the IMAGE/BINARY type. Differences: Text is transformed to a canonical format for line breaks during transmission, and is at receipt transformed again to the line break convention in the receiving platform. Text may also be transformed to/from a standard character set before and after transmission. Binary information is sent as it is, byte by byte, with no transformation at all.		
3.	What is required, in order to be allowed to send 8-bit characters unencoded in e-mail according to e-mail standards?	Vad måste man göra, om man vill skicka 8-bitstecken okodade i e-post, och om man korrekt vill följa gällande standarder?	6
	Answer: Both these two actions must be performed, one is not enough: (1) Use ESMTP to negotiate 8BIT transmission. (2) Indicate 8BIT or BINARY as the MIME Content-Transfer-Encoding.		
4	An Internet search engine wants to measure which of the different links to web documents, listed by the search engine, are most often clicked on by its users. How can it measure this?	En sökmotor på Internet vill mäta hur ofta användare klickar på de olika länkarna i den länklista, som sökmotorn levererar till dem. Hur kan detta ordnas?	6
	Answer: Suppose the search engine web site has the URL http://search-engine.foo.net, and it wants to provide a link to http://listed-page.foo.bar. It can then provide the following link in its link list: http://search-engine.foo.net/countaccesses?listed-page.foo.bar When the user clicks, the user web browser will then access the search engine at http://search-engine.foo.net/countaccesses. This will count the link access, and will then return a HTTP redirect to http://listed-page.foo.bar. The user will not notice anything except a slight delay in delivery of the page. This method is commonly named "click-through". It is probably also possible to use some kind of "OnClick" Javascript code to report the clickthrough to the search engine.		