



Institutionen för Data-  
och Systemvetenskap

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



STOCKHOLMS  
UNIVERSITET



KUNGLIGA  
TEKNISKA  
HÖGSKOLAN

Exam 1999-06-01 with suggested answers

### **The following documents are allowed during the exam:**

- Documents in Compendium 1, printed on coloured paper.
- Documents in Compendium 2, printed on coloured paper.
- Documents in Compendium 3, printed on coloured paper.
- 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 18.30-21.00.

### **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.

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No.	Question in English	Question in Swedish	Max points
1	Write an ABNF specification for Swedish social security numbers, written in the format shown by the example 41 02 01-1410. It is an advantage if the syntax shows that a social security number consists of local elements: Date, month and day of birth, sequence number and check digit.	Skriv en ABNF-specifikation av syntaxen för personnummer, när dessa skrivs som i exemplet 41 02 01-1410. Det är en fördel om syntaxen visar hur personnumret består av logiska element: Födelseår, födelsemånad, födelsedag, löpnummer och kontrollsiffra.	6
<p><b>Solution 1:</b></p> <pre>year = 2D month = 2D day = 2D seqno = 3D checkdigit = D social-security-number = year " " month " " day                         "-" seqno checkdigit</pre> <p><b>Solution 2:</b><pre>year = 2D month = ("1" / "2" / "3" ) D day = ("0" / "1" / "2" / "3" ) D seqno = 3D checkdigit = D social-security-number = year " " month " " day                         "-" seqno checkdigit</pre><p><b>Solution 3:</b><pre>year = 2D month = "01" / "02" / "03" / "04" / "05" / "06" /         "07" / "08" / "09" / "10" / "11" / "12" Day   = "01" / "02" / "03" / "04" / "05" / "06" /         "07" / "08" / "09" / "10" / "11" / "12" /         "13" / "14" / "15" / "16" / "17" / "18" /         "19" / "20" / "21" / "22" / "23" / "24" /         "25" / "26" / "27" / "28" / "29" / "30" / "31" seqno = 3D checkdigit = D social-security-number = year " " month " " day                         "-" seqno checkdigit</pre><p><b>Note:</b> A correct social-security number (personnummer) in Sweden should never contain a letter. Numbers with letters in them are fictious numbers created by some systems in order to represent people who do not have any Swedish personnummer.</p></p></p>			

No.	Question in English	Question in Swedish	Max points
2	<p>What are the pros and cons of defining a protocol as a sequence of interactions within a single session (like SMTP) versus one single REQUEST, one single RESPONSE and then disconnecting (as in HTTP 1.0).</p>	<p>Vad är för- och nackdelar med att definiera ett protokoll som en sekvens av interaktioner inom samma session (som t.ex. i SMTP) resp. en enda REQUEST och ett enda RESPONSE och sedan bryts förbindelsen (som i t.ex. HTTP 1.0).</p>	6
	<p><b>Answer:</b></p> <p><b>Advantages with a single long session</b></p> <p>Only one login/authentication is needed, information about the status of a user is easy to keep from one interaction to another.</p> <p>Setting up and closing down sessions costs time and resources.</p> <p>Interactivity is possible, for example confirmations than required actions have been performed.</p> <p><b>Advantages with small sessions with immediate closing</b></p> <p>Keeping a session alive costs resources, especially on large servers with many users.</p> <p>Bookeeping for simple sessions is simpler, server need not use timeouts to stop inactive sessions, and timeouts are resource requiring.</p> <p>Different information is easy to download in parallel, which may give faster “progressive rendering” of, for example, web pages.</p>		
3	<p>Which are the most commonly occurring pieces of information which are put into the &lt;HEAD&gt; section of an HTML document.</p>	<p>Vilka är de vanligaste slagen av information som läggs i &lt;HEAD&gt;-sektionen i ett HTML-dokument.</p>	6



No.	Question in English	Question in Swedish	Max points
	<p><b>Answer:</b></p> <p>&lt;TITLE&gt; to specify a title for the window head is mandatory and very common. Other common fields are:</p> <p>&lt;meta HTTP-EQUIV ...&gt; to specify character set, etc.</p> <p>&lt;meta HTTP-EQUIV="PICS-Labels" ...&gt; to specify PICS rating info.</p> <p>&lt;META NAME="GENERATOR" ...&gt; web editor.</p> <p>&lt;META NAME="keywords" ...&gt; for search engines.</p> <p>&lt;META NAME="description" ...&gt; for search engines.</p> <p>&lt;META NAME="author" ...&gt; for search engines.</p> <p>&lt;META HTTP-EQUIV="Refresh" ...&gt; to specify automatic refresh.</p> <p>&lt;LINK REL="stylesheet" ,,&gt; or &lt;STYLE ...&gt; to reference or include style sheets.</p> <p>&lt;SCRIPT language="JavaScript"&gt; can be both in &lt;HEAD&gt; and &lt;BODY&gt; but neater and easier to hide from old browsers if in the &lt;HEAD&gt;.</p>		
4	Specify an extension to ESMTP, allowing a request that an e-mail message may not, for security reasons, be transmitted through certain countries.	Specificera en utvidgning av ESMTP för att begära att ett e-post-brev av säkerhetsskäl inte under sin befordran får passera vissa länder.	6



No.	Question in English	Question in Swedish	Max points
	<p><b>Answer:</b></p> <p><i>Note that this is not a real standard, it is a fictitious specification which might be part of a standard.</i></p> <p>This specifies an ESMTP extension to restrict routing of an e-mail to transmission through certain countries.</p> <p>Name: Restricted routing</p> <p>EHLO keyword: RESTRICTROUTE</p> <p>New SMTP verb:</p> <p>RESTRICTROUTE: countrycode 1*( " , " LWSP country-code)</p> <p>Values: A list of permitted ISO country codes.</p> <p>A message with this extension should not be forwarded to a server, which does not, itself, support this extension.</p> <p>A message with this extension should not be routed through forbidden countries. This requires a method of controlling the routing of IP packets, but that method is not specified here, since the specification here only specifies the ESMTP extension.</p> <p><b>Example:</b></p> <pre>S: 220 innosoft.com SMTP ready C: EHLO dbc.mtview.ca.us S: 250-innosoft.com S: 250 RESTRICTROUTE C: MAIL FROM:&lt;mrose@dbc..ca.us&gt; S: 250 sender &lt;mrose@dbc..ca.us&gt; OK C: RESTRICTROUTE: US, GB, FR, DE C: RCPT TO:&lt;kvc@in.nu&gt; S: 250 recipient &lt;kvc@in.nu&gt; OK C: DATA S: 354 enter mail, end with CRLF.CRLF ... C: . S: 250 message sent C: QUIT S: 221 goodbye</pre>		