



Institutionen för Data-  
och Systemvetenskap

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

Exam 2002-10-19



STOCKHOLMS  
UNIVERSITET



KUNGLIGA  
TEKNISKA  
HÖGSKOLAN

**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 around 12:00 to the exam room to answer questions regarding the exam.

---

*Continued on the next page*



*Continued from the previous page.*

No.	Question in English	Max points
1.	Give an ASN.1 specification of a protocol unit for transferring a list of people, and for each person indicating which other person is his/her father and mother. Fathers and mothers outside the listed people need not be specified. The solution must be able to handle two different people with the same name.	6

*One possible solution:*

**Personlist ::= SEQUENCE OF Person**

```
Person ::= SEQUENCE {  
    name VisibleString,  
    socialSecurityNumber Id,  
    father Id OPTIONAL,  
    mother Id OPTIONAL }
```

**Id ::= NumericString (SIZE (10)) -- Social security no without space and dash**

Many students gave variants of the following solution

**Personlist ::= SEQUENCE OF Person**

```
Person ::= SEQUENCE {  
    name VisibleString,  
    socialSecurityNumber Id,  
    father Person OPTIONAL,  
    mother Person OPTIONAL }
```

**Id ::= NumericString (SIZE (10)) -- Social security no without space and dash**

I gave five points to this solution, since it requires a lot of repetition of information. For example if we have John father of Mary and Eliza then the name of John has to be repeated twice. Since the socialsecuritynumber is a unique identification of a person, it is enough to indicate the parent with this number.



No.	Question in English		Max points
2	Discuss privacy risks emanating from the use of cookies.	Beskriv risker för intrång i personlig integritet som uppstår genom användning av cookies.	6

*Possible answer:*

- Cookies allow a server to recognize a user between connections.
- Server can save information about a user's surfing behaviour such as which pages a user searched for or what a user bought through the Internet.
- This is however restricted, since a server only can see what the user has done on that particular server.
- But servers can co-operate to combine their information. Most well-known is the co-operation between servers and the company Doubleclick, which has a very high percentage of all Internet advertising, gets info from many different web servers, and can combine this to make a profile of a user.
- Doubleclick says they only use this to send user-adjusted advertisements, but can we trust them?
- If a user fills in name and e-mail address, the server can combine this with other cookie-produced knowledge to know who you are. A spam e-mail may also contain a hidden HTTP retrieval, which will send your e-mail address and cookie to a server.
- If several people share the same computer one might get access to information for the other user.
- Someone who can get access to your computer (physically, using viruses, etc.) can read your cookie-file, which may contain sensitive information. This risk, of course, is not limited to cookies but to other sensitive information, such as passwords which a user might store, history files in web browsers, etc. Cookies can also contain sensitive information in clear text which someone who eavesdrop on your connections can read.
- These risks can be reduced using different techniques. Examples are to let users see what is stored in their cookies, let them control who can set cookies for them, and how long time the cookies are valid. A fifteen-minute cookie is obviously less dangerous than a cookie with unlimited life-time, which in practice is about three months.



No.	Question in English		Max points
3	Describe an existing example of a standard which allows future extensions, and where client and server can agree on which of a larger set of extensions both support.	Berätta om ett existerande exempel på en standard som tillåter framtida utvidgningar, genom en mekanism där klient och server kan komma överens om vilka av en mängd utvidgningar som båda stödjer.	6

*Answer:*

The ESMTP (2) extension to SMTP (1 without ESMTP) starts with agreeing to use ESMTP (and not basic SMTP) (1) and then the server sends a list of which extensions it supports (3). The client then selects those services it wants to use, and which the server supports, and can use them in the rest of the session.

To some extent, XML can also be seen as such a standard, since a client can send new types of XML by providing its description through DTD or Schema, CSS and XSLT.

HTTP has a mechanism by which the client can tell the server which media types and languages it prefers, which also can be seen as such an extensible standard.

4	Describe at least two different rating systems that can be specified based on the PICS platform.	Beskriv minst två olika bedömningssystem, som kan specificeras baserade på PICS-plattformen.	6
---	--	--	---

*Answer:*

The MPPA rating system gives a rating on a single scale indicating at which age a child can see a certain film with and without parental guidance. (3)

The RSAC rating systems rates a document on several different scales, such as nudity/sex, violence, and use of profane language. (3)