Institutionen för Data- och Systemvetenskap

STOCKHOLMS UNIVERSITET

KUNGLIGA TEKNISKA HÖGSKOLAN

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

Exam 2002-02-27

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 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.

Jacob Palme will come to the exam rooms around 18:00 to answer questions regarding the exam.

Notification of result by e-mail

Print your e-mail address on the front cover page of the exam, so that I can notify you by e-mail if you did not pass the exam. Print legibly!

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No.	Question in English		Max points
1.	Write an ABNF specification for Swedish social security numbers (personnummer) of the format like 16 12 01-0924, i.e. two digits, space, two digits, space, dash, four digits.	Skriv en ABNF-specifikation för svenska personnummer med ett format som t.ex. 16 12 01-0924, alltså två siffror, blank, två siffror, blank, två siffror, bindestreck, fyra siffror.	6

Solution:

```
Personnummer = 2*2DIGIT SPACE 2*2DIGIT SPACE 2*2DIGIT
               DASH 4*4DIGIT
```

2	Write an ASN.1 specification for sending the results of an exam. The results is a list of students, for each student the name and the social security number (personnummer) is specified, a list of question scores, with the score on each question, and a final verdict, which can be U, G or VG for SU students and U, 3, 4 or 5 for KTH students. Important: The format must allow an unlimited number of students, and an unlimited number of questions in the exam.	Skriv en ASN.1-specifikation för att sända resultatet av en tentamen. Resultatet är en lista över studenter, för varje student skickas namnet och personnumret och en lista på poäng på varje fråga i tentamen, samt ett slutligt betyg som kan vara U, G eller VG för SU-studenter och U, 3, 4 eller 5 för KTH-studenter. Viktigt: Formatet måste tillåta obegränsat antal studenter, och obegränsat antal frågor i varje examen.	6

Solution:

```
ExamResult ::= SEQUENCE {
                courseSegment UniversalString,
                examDate UTCTime,
                results ResultList }

ResultList ::= SEQUENCE OF IndividualResults

IndividualResult ::= SEQUENCE {
                studentName UniversalString,
                personnummer UniversalString,
                verdict Verdict,
                scores SEQUENCE OF Score }

Verdict ::= ENUMERATED {
                u (0), g (1), vg(2), kth3(3), kth4(4), kth5(5) }

Score ::= SEQUENCE {
                question INTEGER,
                scoring INTEGER }
```

3	Compare pros and cons for different ways, when communicating with users using HTTP/HTML, for the server to ”remember” who the user is and what the user has done in earlier steps of the dialouge between user and server.	Jämför för- och nackdelar med olika metoder att vid HTTP/HTML-kommunikation ”komma ihåg” vem användaren är och vad användaren gjort i tidigare steg under dialogen mellan användare och server.	6

Answer:

Method	Pros	Cons
Hidden fields in pages sent to the user (0,5)		1. Will only work if user accesses from a page where the hidden field is placed (2). 2. In some cases, requires transmission of much information back and forward between user and server (1).
Parameters in URLs in pages sent to the user (0,5)	User can save or bookmark the URL and reuse it at a later time (1).	Parameters are shown in the address field, which can be a problem if they contain passwords or other secret information (1).
Cookies (0,5)	Can be remembered also if user does something else in the meantime (same as 1).	3. Can only store a limited amount of information (1). 4. Some users disable cookies (1). 5. Funkar inte bra om flera personer använder samma dator (1). 6. Säkerhetsrisker om man sparar information om vem det är för länge, så att någon annan kan använda datorn i en företrädares namn (1).

4	Discuss the usage of the character tilde (~) in URLs, such as http://dsv.su.se/~jpalme. What is correct and what is incorrect according to the standards?	Diskutera användningen av tecknet tilde (~) i URLer, som t.ex. http://dsv.su.se/~jpalme. Vad är riktigt och vad är felaktigt enligt standarden?	6

Answer:

The character tilde (~) was originally a so-called unsafe character in URLs, which should be encoded as “%7e” (1). It is, however, so commonly used in un-encoded form, that it became de-facto standard is to allow it. In RFC 2396, the standard was modified to allow this character (5).

http://host.net/~u is a Unix convention for the personal area of the user with account name “u” on the server host.net (1).