

T-110.5140 Network Application Frameworks

5/2013 Examination

The use of a calculator is ok. All other material is forbidden.

Remember to include the following information in your paper: the course name, date, student ID, name, and signature.

Choose 3 of the 4 topics below and write essays on them. Each topic has additional questions as hints on what kind of material you should include. Discuss other relevant issues as well. Remember to consider what is important and what is not when writing your essay.

In some questions you are required to state your own views. Pay attention that you also justify your opinions.

1. WebSocket vs WebRTC

Describe what are these technologies and how they differ from each other. In what cases it would make sense to use them and how to choose which of them to use?

2. Data interchange

You are a project manager considering how to implement data transfer between a web server and a client. Your customers have been using XML traditionally. What other alternatives could you suggest to them? What kind of arguments would you have in favor of those? What would be the benefits of continuing in the old XML way? What would be your recommendation? Remember to consider also the non-technical reasons that might influence the decision.

3. SPARQL for semantic web

What is the role of SPARQL in semantic web applications? Illustrate how it relates to RDF (you may want to use the attached code snippets for this). What is the difference between SPARQL and SQL? What kind of real applications could benefit from these technologies?

```
@prefix foaf: <http://xmlns.com/foaf/0.1/> .
```

```
@prefix people: <http://example.com/People/> .
```

```
people:John foaf:name "Johnny Lee Outlaw" .
```

```
people:John foaf:mbox <mailto:jlow@example.com> .
```

```
people:Peter foaf:name "Peter Goodguy" .
```

```
people:Peter foaf:mbox <mailto:peter@example.org> .
```

```
people:Carol foaf:mbox <mailto:carol@example.org> .
```

```
PREFIX foaf: <http://xmlns.com/foaf/0.1/>
```

```
SELECT ?name ?mbox
```

```
WHERE {
```

```
  ?x foaf:name ?name .
```

```
  ?x foaf:mbox ?mbox }
```

4. Mobile applications

Discuss what kind of issues should be considered when you are selecting a mobile development platform for

- a) creation of a research prototype that aims to monitor and improve the happiness level of the user
- b) development of a cloud-based commercial consumer solution that finds candidates for ride sharing by matching the route histories of users of the service.

Don't go too deeply into the operation of these hypothetical applications. Instead, think what kind of technical and business needs arise and how the different mobile platforms match these needs. Discuss both a) and b) cases and pay attention to the aspects that are different, and similar, in the two cases.

You may use the data in the attached table in your discussion. Remember to consider also if there are other aspects, which are not listed in the table.

	Android	IOS	WP	Symbian
Units sold Q1-Q3/2012	308 million	53 million	12 million	24 million
Device Variants	Many	Some	Some	Many
Easy if you know...	Java	Objective C	C# or Silverlight	Qt and C++, or Java
Dev platform	Linux, Mac, Windows	Mac	Windows	Linux, Mac, Windows
Cost to Develop	Free	Free	Free	Free
Cost to distribute	\$25	\$99 / year	\$99 / year	1 €
Competition in app space	Fierce	Fierce and controlled	Not much	Not much

Units sold data: Gartner, Nov 2012
Smartphones only, no tablets / iPod touch