ASSIGNMENTS WEEK 3

1. PEER-TO-PEER (50 PT)

The application responsible for most of the internet traffic is probably peer-to-peer (P2P) file sharing. The most popular P2P protocol is the bittorrent protocol. More on the bittorrent protocol can be found on the-bittorrent-protocol and wiki. Also have a look again at the XChange assignment.

a) Can you mention some other popular P2P file sharing protocols ?

b) What are the stakeholders in a peer-to-peer network like XChange? What are their concerns?

c) What are the advantages and disadvantages of P2P filesharing compared to client/server file sharing? Discuss at least the 5 major perspectives (from the SSA book).

d) Why do P2P networks have excellent scalability? Give numerical examples and graphs to support your answer.

e) Explain in what way the integrity of (shared) files is preserved.

f) Explain what is meant by torrent index and tracker. And why is it difficult to forbid torrent indexes and trackers ?

g) Evaluating availability, what are in your opinion the weak points in the architecture of the protocol ?

h) Can you think of a design pattern that is comparable to the role of a tracker in the bittorrent protocol ?

i) Can you imagine how the architecture of bittorrent could be applied to a complex application or system ? If so, give an example.

j) Explain in your own words the working of a bittorrent peer-to-peer system by drawing deployment and sequence diagrams. Supplement the drawings with text. Go into depth about which data is on which node, hashes, etc.

2. ENTERPRISE ARCHITECTURE (50 PT)

There questions concern the article *Enterprise Architecture for Systems Engineers* by IBM.

a) Explain in your own words what “stovepipe systems” are (p.1).
b) Explain in your own words what “business/IT alignment” is (p.1).
c) Explain in your own words what “governance” is (p.1).
d) Explain in your own words the relationship between programs and projects (p.3).

From page 5 onwards the article gets a little abstract because the authors don’t give an example. We will use the one below.

The RDW (“Dienst Wegverkeer”, www.rdw.nl) is a Dutch governmental organization which registers cars, drivers licenses, etc. They currently have a large legacy base on mainframe/Cobol (both databases and applications). One of their programs, which is called Platform Independence, is to migrate from the mainframe to a Microsoft platform.

e) Give three reasons why the RDW would want to migrate away from the mainframe.
f) Give two reasons why the RDW would *not* want to migrate away from the mainframe.
g) Which one of the strategic goals on http://www.rdw.nl/overrdw/Paginas/Strategische-doelstellingen.aspx is the main driver for this program?
h) Think of three possible projects that could be part of the program Platform Independence.