The Tutorial Questions and Lab Projects of Week 1

Tutorial Questions

1. Give five types of hardware resource and five types of data or software resource that can usefully be shared. Give examples of their sharing as it occurs in distributed systems.

2. A user arrives at a railway station that she has never visited before, carrying a PDA that is capable of wireless networking. Suggest how the user could be provided with information about the local services and amenities at that station, without entering the station's name or attributes. What technical challenges must be overcome?

3. What are the advantages and disadvantages of HTML, URLs and HTTP as core technologies for information browsing? Are any of these technologies suitable as a basis for client-server computing in general?

4. A search engine is a web server that responds to client requests to search in its stored indexes and (concurrently) runs several web crawler tasks to build and update the indexes. What are the requirements for synchronisation between these concurrent activities?

5. The host computers used in peer-to-peer systems are often simply desktop computers in users' offices or homes. What are the implications of this for the availability and security of any shared data objects that they hold and to what extent can any weaknesses be overcome through the use of replication?

6. Distinguish between buffering and caching.

7. Describe possible occurrences of each of the main types of security threat (threats to processes, threats to communication channels, denial of service) that might occur in the Internet.

Lab Projects

Task 1

1. Download the `WebClient1.java` from Week 1 block of the unit Moodle site.

2. Compile and run the Java program.

3. What protocols have been used for the communication between `WebClient1` and the server?

4. What has been downloaded by `WebClient1`? You should answer this question by reading the source code of `WebClient1` and comparing its output (page1.txt) with the source page of https://www.oracle.com/.

Task 2

1. Download the `WebClient2.java` from Week 1 block of the unit Moodle site

2. Compile and run the Java program.

3. What protocols have been used for the communication between `WebClient2` and the server?

4. What has been output from `WebClient2`? Answer this question by reading the source code of `WebClient2` and checking the properties of the web page.

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