INFO0010: Introduction to Computer Networking

Guy Leduc

Questions of the oral exam

2021-2022

At the oral exam, students have to expose clearly and in a synthetical way one part of the course, and prove their in-depth understanding by answering questions. Students who have not completed all their project assignments and labs are not allowed to take this exam.

Students will select at random one of the questions from the list below. However, before the random drawing, they are allowed to indicate the question they do not want to present, without penalty, but with a short explanation. Students have half an hour to synthesize their question on one blackboard before the presentation and discussion. A bonus is given to students who take the exam in English, but French is also allowed.

Note however that the material is not limited to this list. During the exam, students may be questioned on any topic covered by the course, and should make connections between all parts, including links with the question they did not want to present.

1. HTTP protocol, web caching, HTTP 2 and 3
2. Principles of DNS
3. Socket programming (UDP and TCP), addressing and (de)multiplexing in the transport layer
4. Reliable data transfer: design steps of the Alternating-Bit protocol, its efficiency, error detection techniques (checksum, CRC)
5. Reliable data transfer: GBN and SR sliding window protocols, TCP error control improvements
6. TCP timer, flow control, connection establishment and closure
7. TCP congestion control, TCP average goodput and fairness, other TCP variants
8. Network layer: Data plane versus control plane, IP addressing, DHCP, IP forwarding, router architecture
9. Network layer: NAT, IP fragmentation, IPv6, ICMP
10. Routing: setting link costs, Link-State routing, OSPF
11. Distance Vector routing, RIP
12. Internet structure, interdomain routing, BGP
13. Link-Layer: addresses, LANs, ARP, multiple access protocols (CSMA, CSMA/CD, Ethernet's CSMA/CD)
14. Link-Layer: switching, self-learning, spanning tree, differences between hubs, switches and routers, VLANs