

Πλάνο μελέτης και ύλη εξέτασης μαθήματος «ΤΕΧΝΟΛΟΓΙΕΣ ΔΙΑΔΙΚΤΥΟΥ»

Το διαγώνισμα θα αποτελείται από 20 ερωτήσεις με βαθμό 0.5 η καθεμία.

1^ο βήμα: Μελέτη διαφανειών e-class για διαλέξεις 1 – 4:

1. Διάλεξη - Επίπεδο εφαρμογής - Μέρος I.pdf

2. Διάλεξη - Επίπεδο εφαρμογής - Μέρος II.pdf

3. Διάλεξη - Επίπεδο εφαρμογής - Μέρος III.pdf

4. Διάλεξη - Επίπεδο εφαρμογής - Μέρος IV.pdf

Προαιρετικά: για βοήθεια/επανάληψη:

https://gaia.cs.umass.edu/kurose_ross/videos/2/

Ύλη βιβλίου Kurose-Ross: Κεφάλαιο 2 οποιασδήποτε έκδοσης

2^ο βήμα: Εξάσκηση των παρακάτω ερωτήσεων για τις διαλέξεις 1-4:

KNOWLEDGE CHECKS

ΠΗΓΗ: https://gaia.cs.umass.edu/kurose_ross/knowledgechecks/

CHAPTER 2: APPLICATION LAYER

1. Principles of Network Applications [expand](#)
2. The Web and HTTP [expand](#)
3. Email [expand](#)
4. The Domain Name Service: DNS [expand](#)
5. Peer-to-Peer File Distribution
6. Video Streaming and Content Distribution Networks [expand](#)
7. Socket Programming: Creating Network Applications [expand](#)

3^ο βήμα: Εξάσκηση των παρακάτω ασκήσεων για τις διαλέξεις 1-4:

INTERACTIVE END-OF-CHAPTER EXERCISES

ΠΗΓΗ: https://gaia.cs.umass.edu/kurose_ross/interactive/

Σημείωση: Όταν κάνετε refresh τη σελίδα, βγάζει λίγο διαφορετικά interactive exercises (π.χ. με άλλα νούμερα – αλλά ίδια μεθοδολογία).

CHAPTER 2: APPLICATION LAYER

- DNS - Basics
 - DNS - Iterative vs Recursive Query
 - DNS and HTTP delays (similar to Chapter 2, P7,P8)
 - HTTP GET (similar to Chapter 2, P4)
 - HTTP RESPONSE (similar to Chapter 2, P5)
 - Browser Caching
 - Electronic Mail and SMTP
 - A comparison of client-server and P2P file distribution delays (similar to Chapter 2, P22)
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4^ο βήμα: Στοχευμένη μελέτη διαφανειών e-class για τη διάλεξη 5:

5. Διάλεξη - Ποιότητα εμπειρίας.pdf

5^ο βήμα: Εξάσκηση των παρακάτω ερωτήσεων μόνο για τη διάλεξη 5:

1. ***What is the definition of Quality of Experience (QoE):***
 - a. The overall acceptability of an application or service, as perceived subjectively by the end-user
 - b. A measure of user performance based on both objective and subjective psychological measures of using an ICT service or product
 - c. The degree of your delight or annoyance over a product, application or service
 - d. All of the above
2. ***What are the main influence factors of Quality of Experience (QoE):***
 - a. Human, system/network, and context factors
 - b. System factors only
 - c. Human and context factors
 - d. None of the above
3. ***According to the IQX hypothesis:***
 - a. If QoE is very high, a small disturbance will strongly decrease it
 - b. If QoE is very high, a further disturbance will not be so perceived
 - c. If QoE is already low, a further disturbance will be greatly perceived
 - d. If QoE is very high, a small disturbance will not affect it
4. ***Which are the most important factors that influence the Quality of Experience of video streaming users (e.g. YouTube):***
 - a. Packet loss rate
 - b. Number and duration of stalling (video freezing) events
 - c. Initial video delay

d. Content

5. How can Quality of Experience (QoE) be estimated:

- a. Through subjective controlled experiments with human participants
- b. Through crowdsourcing techniques using the Internet
- c. Using objective quality estimation models
- d. All of the above

6° βήμα: Μελέτη διαφανειών e-class για διαλέξεις 6-7:

6. Διάλεξη - Δικτύωση Πολυμέσων - Μέρος I.pdf

7. Διάλεξη - Δικτύωση Πολυμέσων - Μέρος II.pdf

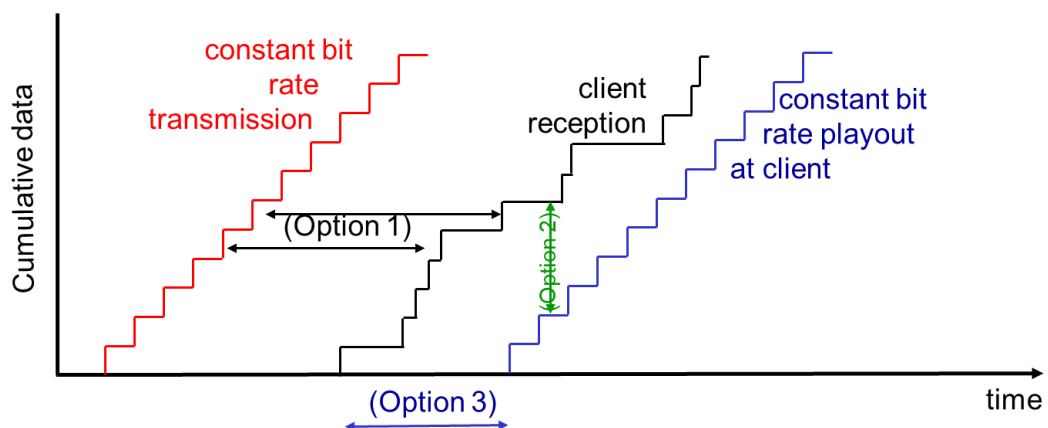
Ύλη βιβλίου Ύλη βιβλίου Kurose-Ross: Κεφάλαιο 9 της 7^{ης} έκδοσης **ΜΟΝΟ**
(βρίσκεται στα Έγγραφα στα Αγγλικά)

7° βήμα: Εξάσκηση των παρακάτω ερωτήσεων μόνο για τις διαλέξεις 6-7:

6. What is the objective of HTTP Adaptive Streaming (HAS)?

- a. To prevent video stalling (freezing) events
- b. To improve the viewing experience of the user (QoE)
- c. To adjust the video bit rate (representations) on the network conditions
- d. All of the above

7. Which one of the options shown in the Figure represents "jitter" (i.e., variable delay):



- a. Option 1
- b. Option 2
- c. Option 3
- d. None of the above

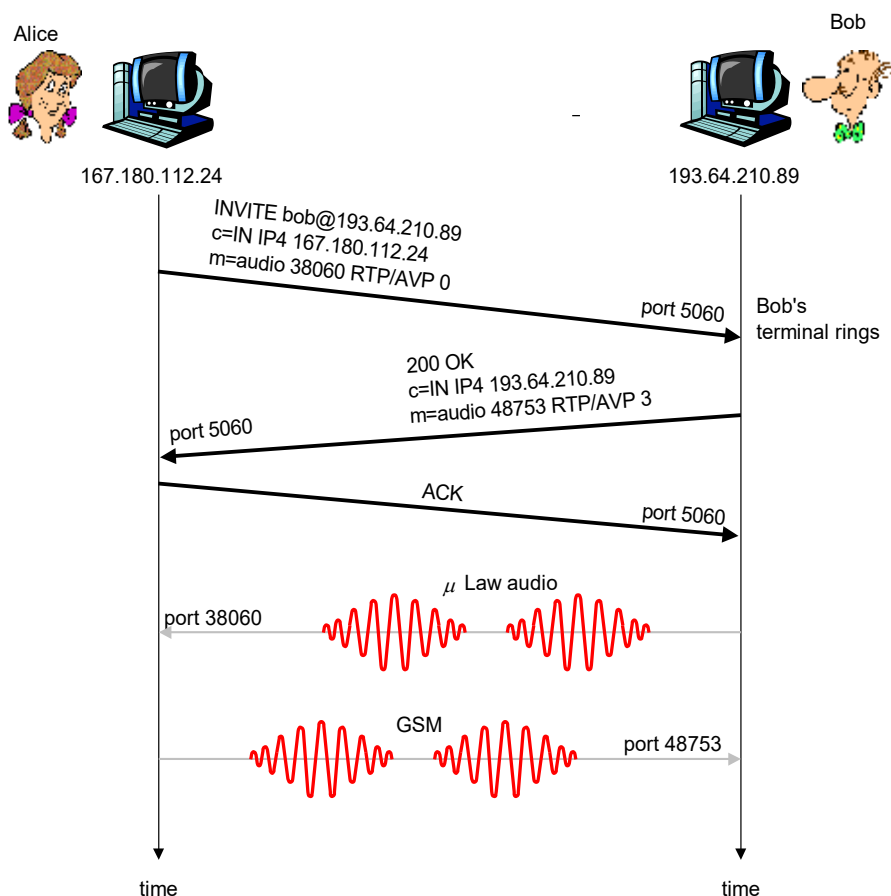
8. *How can the network support Quality of Service (QoS) for multimedia?*

- a. Making the best of best-effort service
- b. Offering differentiated services
- c. With per-connection QoS guarantees
- d. All of the above

9. *Which of the following protocols are used for real-time conversational applications?*

- a. RTP and SIP
- b. OSPF and BGP
- c. ARP and DNS
- d. DHCP and DNS

10. *Based on the following Figure, which one of the following statements are correct?*



- a. Bob will send the audio packets to port number 38060 at IP address 193.64.210.89.

- b. Alice will send the audio packets to port number 48753 at IP address 193.64.210.89.
- c. Bob will send the audio packets to port number 48753 at IP address 167.180.112.24.
- d. Alice will send the audio packets to port number 38060 at IP address 167.180.112.24.

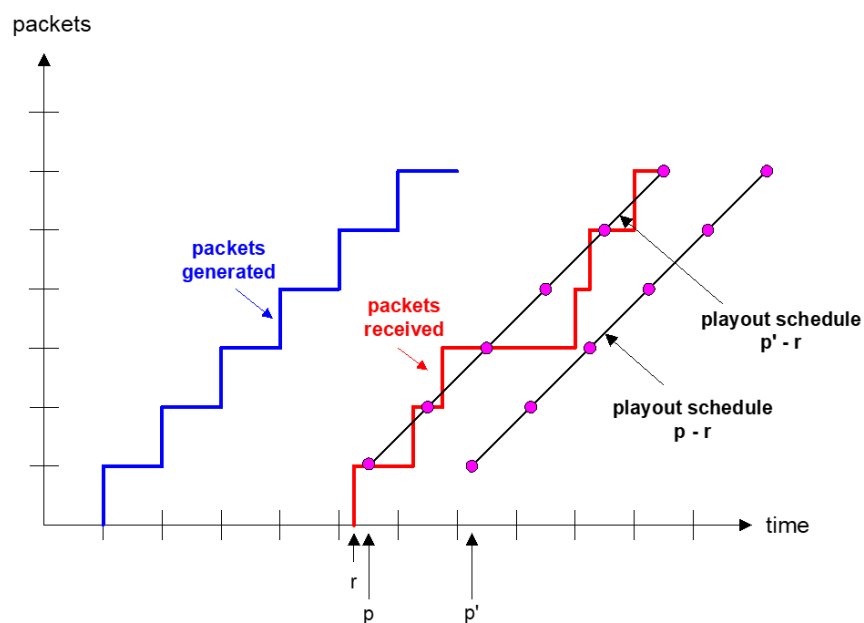
11. How can jitter be removed in VoIP applications?

- a. Using Forward Error Correction (FEC)
- b. Using multiple classes of service
- c. By delaying playout of chunks at the receiver
- d. None of the above

12. What is the reason for client-side buffering and playout delay?

- a. To help prevent imminent video freezing
- b. To compensate for network-added delay and jitter
- c. Both (a) and (b)
- d. To prevent packet losses

13. Based on the following Figure, which playout scheduler is better in terms of video stallings? Note that according to this Figure, the first packet is received at time r , while the first playout schedule begins at p and the second playout schedule begins at p' .



- a. The first playout schedule
- b. The second playout schedule
- c. Both have the same negative impact on the viewing experience

- d. Both have the same positive impact on the viewing experience

14. What is the purpose of Forward Error Correction (FEC) in VoIP applications?

- a. Recover from network delay
- b. Recovery from jitter
- c. Recovery from packet loss
- d. Encryption

15. Which of the following capabilities does the SIP protocol offer?

- a. It provides mechanisms for establishing calls between a caller and a callee over an IP network
- b. It provides mechanisms for the caller to determine the current IP address of the callee
- c. It provides mechanisms for call management, such as adding new media streams during the call
- d. All of the above

Οι ερωτήσεις θα είναι στα Αγγλικά, έχοντας ως πηγή απευθείας τις παραπάνω ερωτήσεις/ασκήσεις. Οι απαντήσεις θα είναι πολλαπλής επιλογής (ακόμη και στα Interactive Exercises), όπου θα επιλέγετε απλώς τη σωστή απάντηση (ΜΟΝΟ ΜΙΑ ΣΩΣΤΗ ΑΠΑΝΤΗΣΗ – ΟΧΙ ΑΡΝΗΤΙΚΗ ΒΑΘΜΟΛΟΓΙΑ).

Διάρκεια εξέτασης: 1 ώρα.

Αν υπάρχουν απορίες για τις ερωτήσεις, επικοινωνήστε μαζί μου στο eliotou@hua.gr.

Σημείωση: Οι βαθμοί των εργασιών (παρουσιάσεων) θα ανακοινωθούν μαζί με τους βαθμούς της εξέτασης (προς όφελος της βαθμολογίας των φοιτητών).

ΚΑΛΗ ΕΠΙΤΥΧΙΑ!