Master of Science in “Computer Science”

Computer Networks

Fall Semester 2015-16

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E-class: «Δίκτυα Υπολογιστών – ΠΜΣ ΕΥ»

Objective

- The in-depth understanding of:
  - the fundamental issues on computer networks
  - of the main networking architectures and protocols, of the most important technologies with emphasis on the Internet, and
  - of issues on the specification and provision of services

Course Outline (I)

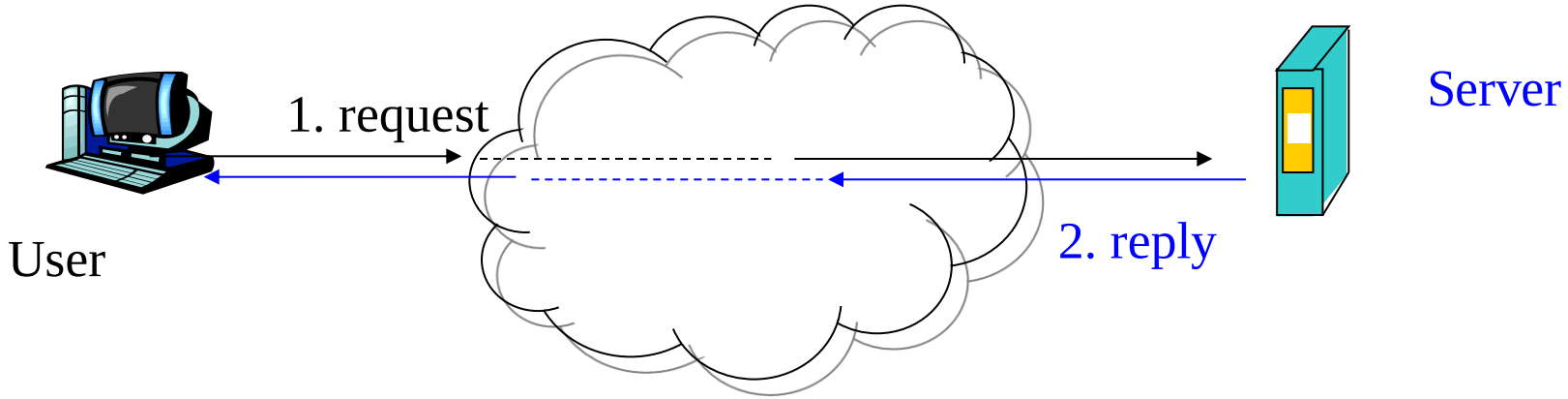
- Overview of main concepts on computer networks
- Applications
  - Peer-to-peer, Skype etc.
- TCP – Flow and Congestion control
- Data link layer protocols
- Internet technologies and services
- Routing algorithms and their implementations
- Business roles in the Internet, and interactions among them

Course Outline (II)

- Local Area Networks' (LAN) technologies – emphasis on Wireless LANs
- Quality of Service and related mechanisms
  - ATM technology and services
- Fair allocation of network resources in the Internet.
- Introduction on network management and control by means of economic mechanisms
- Modern topics: MPLS, SDN (Software Defined Networks), NFV (Network Function Virtualization) etc.

One of the main objectives

- Students will learn **all** the steps and functions required for the provision of services in the Internet
  - E.g. How is this interaction of messages really implemented ? Which protocols are employed and what messages are sent and to whom?



Bibliography

- "Computer Networking: A Top-Down Approach Featuring the Internet", James F. Kurose and Keith W. Ross, 6th edition, Addison Wesley, 2012.
  - Ελληνική μετάφραση από τις εκδόσεις Γκούρδας
- Material from the Internet: scientific articles, recent technologies etc.
- Possibly some material from "Pricing Communication Networks: Economics, Technology, and Modelling", Costas Courcoubetis and Richard Weber, Wiley, 2003.

Course Requirements

- 2 sets of written exercises
- 1 set of Wireshark exercises
  - ~15% of the grade

- Project report and presentation about scientific and technological topics of current interest
  - Assigned on the 9th week: ~10% of the grade

- Final written examination
  - 75% of the grade