DOCTORAL SCHOOL OF INFORMATICS
COMPLEX EXAM SUBJECT

Computer systems (main subject)

1. Computer, computer system definition, main parts, their task(CPU, microcontroller, memory, I/O devices)
2. Operating systems(OS), definition, OS evolution, user interfaces, recent types, CPU relation (kernel vs. user level)
3. Files, directories, file systems, their roles, disk management, standard scheduling algorithms.
4. Processes, parallel processes, critical sections, mutual exclusions, implementations, semaphores, monitors, other „mutexes”(spinlock, …)
5. Process sheduling, well known schedulers, latest used schedulers (Linux,Windows)
6. Inter Process Communication (IPC) functionality, main IPC features, IPC in practices
7. Input/Output devices, resources, I/O controllers, interrupts, deadlock handlers, basic I/O schedulers
8. Memory management, virtual, segmentational memory management, memory pages, essential page replacement algorithms.
9. Real Time operating system definition, features, real time features in latest operating systems.
10. Embedded systems, their roles, usage, main features of embedded operating systems, types.
11. IoT devices, relation of embedded, real-time, computer systems.
12. Computer virtualisation, definition, main features, his ancestry, latest types(VMWare, HyperV,KVM,etc.)computer clusters, cloude services(IaaS,PaaS,SaaS).

Literature:

Andrew S. Tanembaum, Albert S. Woodhull: Operációs rendszerek, Panem, 2. kiadás, 2007.
Andrew S. Tanembaum, Herbert Bos: Modern Operating Systems 4th edition, 2015
K.C. Wang: Embedded and Real-Time Operating Systems, Springer,2017
P. Yosifovich,A. Ionescu, M.E. Russinovich,D.A.Solomon: Windows Internals 7th ed. Part1, MS Press,2017