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Tematica de concurs
pentru ocuparea postului de asistent, pe perioadă determinată, poz. 43, din Statul de funcţii al Departamentului de Calculatoare şi Tehnologia Informaţiei, anul universitar 2016-2017

A. Tematica pentru proba scrisă şi proba orală

1. Binary trees; Binary search trees – Expression evaluation, Huffman coding
2. Balanced trees – AVL trees, Splay trees, Red-Black trees
3. Multiway trees – 2-3 trees, B trees
4. Strings – Substring search, Trie trees
5. Graphs – Shortest paths (SSSP, APSP)
6. Graphs – Minimum Cost Spanning Trees
7. Graphs - Topological sort, Max Flow Problems
8. NP – complete problems – SAT, TSP, graph colouring
9. Random numbers generation methods - Mid-Square, LCG
10. Random variables. Distributions
11. Construction and validation of the simulation model.
12. Sequential execution and simulations analysis (outflows)
13. Simulation Validation. Estimators and statistical inference
14. Dynamical models: Petri networks
15. Temporal models: temporized Petri networks
16. Discrete Event Systems
17. Queueing Systems and Queueing Networks
18. Web services –REST
19. Modelarea aplicaţiilor Web
20. Arhitecturi pentru aplicaţii Web -MVC
21. Tehnologii pentru aplicaţii Web
22. Testarea aplicaţiilor Web
23. Managementul proiectelor Web
24. Procesul de dezvoltare a aplicaţiilor Web
25. Web aplications security
26. Agile software development

B. Tematica lucrărilor de laborator

1. BST trees
2. AVL trees
3. B trees, 2-3 trees
4. TRIE trees
5. Graphs – Distances (Dijkstra, Bellman-Ford)

6. Graphs – Minimum Cost Spanning Trees (Prim, Kruskal)
7. Graphs – Max Flow (Ford-Fulkerson)
8. NP – complete problems TSP, graph colouring
9. Random numbers and variables generators
10. Construction and validation of the simulation model
11. Comparison between implemented algorithms and default generators
12. Logical Models for Discrete Event Systems
13. Temporal and Statistical Models for Discrete Event Systems
14. Dynamical models: Petri Nets
15. Simulation Languages
16. Queueing Systems and Queueing Networks Modeling and Simulation
17. Instalare şi configurare (JDK, Tomcat, MySQL, Eclipse)
18. Web Design (XHTML & CSS)
19. Arhitecturi pentru aplicaţii Web –MVC
20. JavaScript & Jquery
21. Servlets & JSP
22. Ajax
23. Agile software development

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