Exam Study Outline ICS4U - Bloor CI June 2018

This outline has 2 pages

EXAM INCLUDES

All readings and exercises, tracing of pseudo-code and Java code, diagrams of arrays, linked lists and trees, complexity of algorithms and programs
All Java code and data structures of the EServer project with the exception of the code of tree rotations

TOPICS

Preliminary Unit

1. Primitives and objects, Input/Output
2. Decision Making: if, alternative-if, switch, truth-tables, order of operations
3. Repetition: for, while, do while
4. Strings and string methods
5. Methods
6. n/a
7. n/a
8. n/a
9. Classes
10. 1D and 2D arrays:
    a) From *Course Notes Preliminary 10 Arrays* Ex. 18-25
    b) From *Course Notes Preliminary 10 Arrays More Exercises* Ex. 1-4, 10, 12

Unit 1 Searching and Sorting, Complexity

Linear search: Ex. 1-4
Binary search: Ex. 5-15
Multiple arrays: Ex. 16-21, 23
Selection sort: Ex. 1
Bubble sort: Ex. 2
Insertion sort: Ex. 3
Merging sorted arrays: Ex.4

Unit 2 File Input/Output and application to Eserver

From *Course Notes Unit 2 1 File Input Output* Ex. 1-7
Text File I/O: Case Study - Text File Input/Output
From *Course Notes Preliminary 5 Methods*, page 6
Ex. 21-25, 27 (starting on page 17)

Eserver files: Messages, available list, indices
Eserver Pseudo Code 01 to *Eserver Pseudo Code 04* and Java code
Eserver Pseudo Code 09 to *Eserver Pseudo Code 14* and Java code

Unit 3 Data Structures I - Single Linked Lists and application to Eserver

From *Course Notes Unit 3 1 Data Structures I* Ex. 1-5
Eserver Pseudo Code 05 to *Eserver Pseudo Code 08* and Java code

Unit 4 Recursion and application to Eserver

From *Course Notes Unit 4 Recursion*: Ex.11.1-8; 11.2 1-6; 11.3 1-7
From *Course Notes Unit 4 Recursion Programming Exercises:* Ex. 1-11
The **Tree** class and recursive operations on trees

Unit 5 Data Structures II - Binary Trees and application to Eserver

From *Course Notes Unit 5 1 Data Structures II* Ex. 1-6
AVL Trees: Definition, balancing criteria and rotations:
https://en.wikipedia.org/wiki/AVL_tree
Eserver Pseudo Code 15 to *Eserver Pseudo Code 20b* and Java code

Unit 6 Indices in the Eserver

The sender index
The receiver index
Retrieving messages from full and partial identifications
Full and partial finding, printing, transmission string formation

Unit 7 Computer Science History

Material of any 3 presentations

Unit 8 Networking concepts and application to Eserver

The **main()** method and all dependent classes: Initialization, waiting and processing requests from clients,
The **NetIO** class: sockets, UTF transmission, client/server confirmations

ISU

All material relating to the Eserver project with the exception of tree rotation Java code