

CS 2050 - Computer Science II (Spring 2020)
Midterm Exam Topics

- the main method overrides from the Object class in Java: toString, equals, and clone;
- array list: definition, static vs. dynamic, visual representation, pros and cons, basic operations (create, add, indexing, print, etc.), basic use;
- linked list (singly only): definition, detailed implementation using specialized and generic node types, visual representation, pros and cons, basic operations (create, add/head insert, append/tail insert, check for emptiness, indexing, insert, remove, print, etc.), basic use (instantiation, given a sequence of method calls be able to describe the state of a list, given a state of a list be able to describe the sequence of methods to get to that state);
- queues: definition and operating model, static vs. dynamic queue implementation, pros and cons, basic operations (push, pop, peek, and queue, print), basic use (similar to what was said about linked list), priority queues;
- stacks: definition and operating model, static vs. dynamic stack implementation, pros and cons, basic operations (push, pop, peek, and queue, print), basic use (similar to what was said about linked list);
- recursion: definition, implementation, base-case, call stack / stack frames, the stack overflow error;
- the exhaustive search algorithm: goal, implementation, disadvantage of a queue implementation;
- linear search: goal, implementations (with/without assumption).

Be ready to write short pieces of code, like the implementation of a method in a linked list/stack/queue, OR given an implementation of a data structure be able to write code to solve a particular problem, OR put a data structure on a specific state, for example. Questions may require you to draw a linked list/stack/queue. In addition, you may be asked to read code and answer questions about it.