CSE 230 Problem Set 07

# Problem 23.1: Year Class

Consider the following class diagram:



Consider the following method definitions:



Classify the level of abstraction of the following class which stores a year as an int. Justify your answer. Hint: What happens when you subtract 2030 from today’s year?

# Problem 23.2: Date-Time Class

Consider the following class diagram:



The Unix operating system represents time using the POSIX format. Here, time starts on the 1st of January 1970. Time is stored as a 32-bit integer, representing the number of seconds since that date. Classify the level of abstraction of the following class implementing POSIX date/time:



Classify the level of abstraction of the following class and justify your answer. Hint: What happens on the 19th of January 2038?

# Problem 23.3: File Name Class

Consider the following class diagram:



Consider the following method definitions: Note that the isGreater() method is used to sort files by their name so they are presented to the user in alphabetical order.



Classify the level of abstraction of the following class and justify your answer. Hint: What happens when I try to list “a.txt” and “B.txt” in the same directory?

# Problem 23.4: Chess Piece Class

Consider the following class diagram:



Classify the level of abstraction of a class designed to store a chess piece on a chess board. The member variable is a single character where ‘r’ corresponds to a white rook and ‘R’ corresponds to a black one. Note that the getValue() method returns the character corresponding to each chess piece.

# Problem 23.5: Angle Class

Classify the level of abstraction of a class that stores an angle. This allows the client to work equally with radians (where 2π is a complete loop around a circle) and degrees (where 360° is a complete loop).