

CISC 3115 TY3  
C27b: Exercises

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# Exercises

- C27b-1: passenger seat assignment using a priority queue (1<sup>st</sup> class and economy class)
- (Optional) C27b-2: Infix expression evaluation
- (Optional) C27b-3: Compute directory size (including subdirectory) without using recursion

# C27b-1: Passenger Seat Assignment

- This is to extend the example program discussed in class. We assign seat on an airplane for passengers in a queue. We now consider that passengers have priority, i.e., the 1<sup>st</sup> and economy classes.
  - Create directory C25b-1 in your weekly programming repository
  - Randomly generate a number of passengers to form a queue, and randomly assign one of the two classes
  - Use PriorityQueue to assign seats, the passengers in the 1<sup>st</sup> class have higher priority
    - Assume the aircraft has only one cabin.
    - The passengers in the 1<sup>st</sup> class get to pick a seat first. You may simulate it by randomly assign a seat (no user interaction). You can list available seat and enter one from the list if you wish to.
  - Use git to make submission.

# (Optional) C27b-2: Infix Evaluation

- Complete the example program in section 20.11 in the textbook
  - Create directory C25b-1 in the weekly programming repository
  - Enter, compile, and run the programs in Section 20.11 (Listing 20.12)
  - (Optional of the optional) revise the program to add an operator " $\wedge$ ", i.e., the power operator, e.g.,  $2^3 = 2 * 2 * 2 = 8$ . Note that the power operator has higher precedence than  $*$  and  $/$
  - Use git to make a submission

# (Optional) C27b-3: Directory Size

- This is exercise 20.18 in the textbook. We wrote a program to compute total size in bytes of a directory including all files and subdirectories using recursion. You are to redesign the program using iteration instead, for which, we use a Queue data structure. The algorithm is given in exercise 20.18
  - Create directory C25b-3 in your weekly programming repository
  - Implement the algorithm using a queue in exercise 20.18
  - Use git to make a submission