Quiz 5

Subject: Data Structure
Due Date: 03.01.2024, 23:59

Problem1: Display octal equivalents of decimal numbers

Write a main program that takes decimal numbers(between 1000-200000) from an input file (decimal.txt) as an argument and put them into any data structure, then finds and displays their octal equivalents by using a stack (octal.txt), i.e convert the number with base value 10 to base value 8. Assume the maximum size of stack is 20.

Create a Stack class with:

- One constructor
- Push
- Pop
- Top
- isFull()
- isEmpty()
- Size

You must use ONLY stack(s) for decimal-to-octal operation, don't use other data structures such as normal array, string etc.

Algorithm:

- Store the remainder when the number is divided by 8 into a stack.
- Divide the number by 8 now
- Repeat the above two steps until the number is not equal to 0.
- Print the content now.

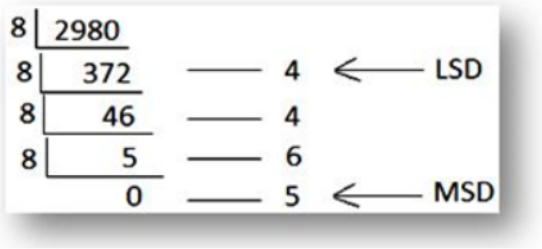

Figure 1: Representation of decimal-to-octal

1 Grading Policy

- Your work will be graded over a maximum of 100 points.
- Your total score will be partial according to the grading policy stated below.

Compiled	10p
Taking input files as arguments from command line and correct output	90p

2 Execution and Test

- Upload your java files to your server
- Compile your code (javac *.java)
- Run your program (java Main decimal.txt)
- Control your output

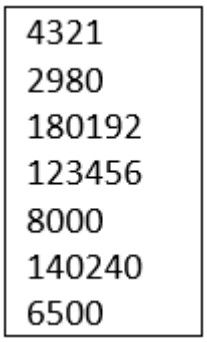

Figure 2: Example of input file(decimal.txt)

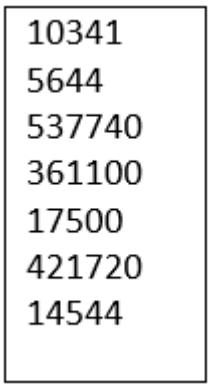

Figure 3: Example of output file (octal.txt)

Notes

- You MUST implement your own stack class.
- The name of input file is decimal.txt; the name of output file is octal.txt. Do not change the name of the files.
- Do not miss the submission deadline.
- Save all your work until the quiz is graded.