

Quiz 5

Subject: Data Structure

Due Date: 06.06.2020 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.

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.



8	2980			
8	372	—	4	← LSD
8	46	—	4	
8	5	—	6	
	0	—	5	← MSD

Figure 1: Representation of decimal-to-octal

1 Execution and Test

- Upload your java files to your server account (dev.cs.hacettepe.edu.tr)
- Compile your code (javac *.java)
- Run your program (java Main decimal.txt)
- Control your output

A rectangular box containing seven lines of decimal numbers: 4321, 2980, 180192, 123456, 8000, 140240, and 6500.

```
4321
2980
180192
123456
8000
140240
6500
```

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

A rectangular box containing seven lines of octal numbers: 10341, 5644, 537740, 361100, 17500, 421720, and 14544.

```
10341
5644
537740
361100
17500
421720
14544
```

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.

- You can ask your questions via Piazza and you are supposed to be aware of everything discussed on Piazza.
- You must submit your work with the file hierarchy as stated below:
 - $\langle studentid \rangle.zip$
 - (*Main.java*, *.java)