CO225: Software Construction

Lab 03: Arrays and Collections

Tasks :

A. Study the patterns that appear in Figure 01 and Figure 02. Complete the given java class (Lab03PartA) to get the number of rows as user input and print the patterns according to the user input.

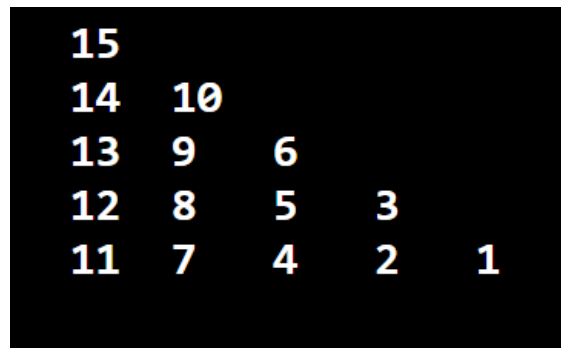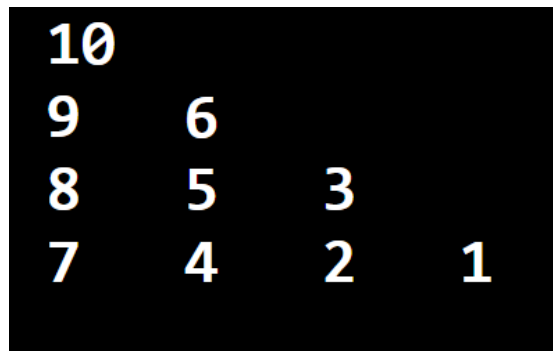Figure 01: When the number of rows (user input) = 5

Figure 02: When the number of rows (user input) =4

B. Complete the java class (Lab03PartB) to print two adjacent Capital letters with the index of the alphabet when a user enters the index as user input.
   a. Implement using array
   b. Implement using Map

Example :

The user enters 16, the system should print the following.
   <15 , O> , <17,Q>

The user enters 1, the system should print the following.
   <Null, Null> <2, B>

C. We have provided you with a CO225 Student list (regNo, name) in the given text file. You should write 3 java programs (Lab03PartC, Lab03PartD, Lab03PartE) using different data structures. Each of those programs should provide the following.

    a. When a user enters the regNo, the system should print that student's name. Users should enter regNo according to the following format.
       E/18/987
       E/08/008

    b. When a user enters only a letter as a user input, the system should list down all students' details (surname and regNo) whose surnames are starting from that letter.

    c. If the system cannot find any result with the above inputs or if the user enters inappropriate input, the System should print an error message indicating that.

    d. Compare the ease of implementation, and the performance of the above three different Java programs (Lab03PartC, Lab03PartD, Lab03PartE).

Instruction to Submit : You have to submit completed java programs as separate java files (Lab03PartA, Lab03PartB, Lab03PartC, Lab03PartD, Lab03PartE). Answers for Part (d) in Task C should be submitted as a separate .pdf file.