Fundamental Structures Lab 10
(Due Date: 04/11/2016 4:30 pm)

Program 1 - 25 pts

1. An input file **A1.txt** is given where each line consists of two integers: n and r.
2. Read each line of the input file using a loop and perform the following operations:
   (a) If n is a positive integer and r is a nonnegative integer where $r \leq n$, then find the number of r-permutations and r-combinations of a set with n elements **when repetition is NOT allowed**.
   (b) The output file **B1.txt** will contain 4 integers in the following format: n r r-permutations r-combinations.
   (c) If $r > n$, then print '$r > n$ error'.

Note: You have to read the file using loops. The number of lines in A1.txt can be more than 10.

```
Sample input:
7 2
8 9

Sample output:
7 2 42 21
8 9 r>n error
```

Program 2 - 25 pts

1. An input file **A2.txt** is given where each line consists of two integers: n and r.
2. Read each line of the input file using a loop and perform the following operations:
   (a) If n is a positive integer and r is a nonnegative integer where $r \leq n$, then find the number of r-permutations and r-combinations of a set with n elements **when repetition is allowed**.
   (b) The output file **B2.txt** will contain 4 integers in the following format: n r r-permutations r-combinations.

Note: You have to read the file using loops. The number of lines in A1.txt can be more than 10.

```
Sample input:
7 2
3 4

Sample output:
7 2 49 28
3 4 81 15
```

Submission Example

Extraction of LastnameFirstnameLab01.zip

```
    /Documents
        LastnameFirstnameLab01.zip
        /LastnameFirstnameLab01
            /prog1
                prog1.cpp
            /prog2
                prog2.cpp
                A2Output.txt
           /Bonus
               bonus.cpp
```

Important reminder: Minimum penalty of plagiarism is failing (F) grade in the course.