CS262, Lab Assignment 4:
Unique Digits
Due: Sunday, March 6 at 11:59 pm ET

Description:

Phineas and Ferb want to have fun and decided to play a new game using a calculator. They realized that a calculator has 10 digits (0, 1, 2, 3, 4, 5, 6, 7, 8, 9) and with those digits different numbers can be formed.

The name of the game is **Unique Digits** and the main rule is that a number cannot contain the same digit, for example **3**4**3** or **15**2**2** are not valid numbers. The game consists of, given an interval of two numbers A, B (1<=A<=B<=5000) create as many "*valid numbers*" as possible between the interval (that is, following the rule of NOT repeating a digit in a number).

Phineas and Ferb ask your help to code a C program that, given A and B, prints the valid numbers in the interval and displays the total valid numbers. <u>Assume</u> that the inputs of A, B are integers. The program must validate that the input restrictions are met. In case the input does not meet the requirements, an error message is displayed and the user prompted to re-enter both A and B again. Here are the restrictions:

- A and B range in [1 – 5000]
- A must be less equal than B (A<=B)

Input:
The program gets as input two integer values A, B (1<= A<=B<=5000), which represents the interval.

Output:
The program prints all valid numbers in ascending (each in a new line), and the total of them.

Sample Run:
Example 1

```
Enter the lower bound A [1-5000]: 2
Enter the upper bound B [1-5000]: 1
Input Error! Be sure A<=B

Enter the lower bound A [1-5000]: 22
Enter the upper bound B [1-5000]: 25

23
24
25
3
```

Example 2

```
Enter the lower bound A [1-5000]: 1231
Enter the upper bound B [1-5000]: 1237

1234
1235
1236
1237
4
```

Example 3

```
Enter the lower bound A [1-5000]: -1
Input Error! A must be in the range [1-5000]:

Enter the lower bound A [1-5000]: 999
Enter the upper bound B [1-5000]: 1020
0
```

Makefile:

Use the Makefile created for Lab3 and change all instances of `lab3` to `lab4`
Modify the line of `CFLAGS` as follows:

```
CFLAGS= -g -Wall -std=c89 -pedantic-errors
```

Submission:

You will submit a typescript file similar to the one of previous Labs:
1. Create a typescript file named `lab4_typescript_<username>_<labsection>`
2. Show that you are logged onto Zeus
3. Show a listing of your directory
4. Show a listing of your code
5. Remove any versions of the executable that may appear.
6. Compile the code using your `Makefile`
7. Show that the executable file was created
8. Run the executable using at a minimum the following inputs for A, B
   22, 25
   1231, 1237
   -1, After Error msg >> 999, 1020
   15, 10 >> After Error msg >> 4900, 5000
   You may add additional input samples if you wish.
9. Remove the executable using your `Makefile`
10. End the typescript
11. Be sure your directory ONLY contains the source file, script and Makefile
12. Verify your typescript file is correct, then change (`cd`) to the directory above
13. Create a `tarfile` of your `lab4_<username>_<labsection>` directory
14. Submit the `tarfile` to Blackboard

Congratulations! You have completed your assignment