Question 4 (PROGRAMMING)

A positive integer n is said to be "right-truncatable prime" if n and all the numbers obtained by progressively removing the right-most digit are prime numbers.

For example, 317 is right-truncatable prime because 317, 31, and 3 are prime numbers.

Write a C program that can filter from a list of numbers only the “right-truncatable prime” numbers within a certain range.

The list of numbers is provided as input to the program by means of a text file whose name is passed as the first parameter on the command line. The numbers are stored in the file on a single line and are separated by a space. **The file length is NOT known a priori**.

The minimum and maximum limits of the range are provided as the second and third parameters on the command line. The limits are included in the range.

The program shall display on the screen a message indicating how many numbers have passed the filter and create a file named "*filtered_numbers.txt*" containing these numbers. The numbers shall be saved in the output file one for each line. If no number satisfies the conditions, the program shall print the message "No Number Found".

Example of input file “numbers.txt” – right-truncatable prime numbers are highlighted:

10 13 255 17 **23** 14 18 32 **37** 883 **593** 4 6 18 **797** **739** 5 10 12

Example of execution:

```
c:\>filter.exe numbers.txt 13 200
```

Output on the screen:

```
The file contains 2 right-truncatable prime numbers between 13 and 200
```

Generated file “filtered_numbers.txt”:

```
23
37
```

Example of execution:

```
c:\>filter.exe numbers.txt 1000 2000
```

Output on the screen:

```
The file does not contain any right-truncatable prime number between 1000 and
2000
```

Generated file “filtered_numbers.txt”:

```
No Number Found
```