

## Sheet 10 – Examples for while and for-loops

Please write all commands in the MATLAB editor into one single m-file and save it in a folder that you specifically dedicate to this workshop. If you don't know how a command is being used type "help [commandname]" into the command window. Comment each code line briefly to document what it is doing.

### Exercise 1:

Rewrite the program displaying prime numbers from the manuscript (Example 60) using only while-loops (no for-loops) such that only prime numbers (no other numbers) are displayed. Use the Debug-Mode to go through the code and verify. What is the 50<sup>th</sup> prime number?

### Exercise 2:

Consider the number sequence  $s = [1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9\ 0\ 9\ 8\ 7\ 6\ 5\ 4\ 3\ 2\ 1]$ . Let MATLAB calculate the following tasks:

What is the largest sum of 5 consecutive digits?

What is the largest product of 4 consecutive numbers?

What is the smallest sum of 3 consecutive digits?

### Exercise 3 (optional):

Implement a Roulette-game! Therefore, let the user choose at the beginning either "red" or "black", or a number between 0 and 36 (input-command) and as a second input how much money the user wants to set. Then design the roulette-wheel as a random process and tell the user on the command line the result of the current game-trial as well as the amount of money lost or won. Double the amount on a win on "red" or "black" and multiply by 36 on meeting the correct number. Each game-trial should end with the question whether or not another trial should be done, which will start the procedure anew.