Organization: XXX

ALGORITHM TESTING RESULTS REPORT

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Description

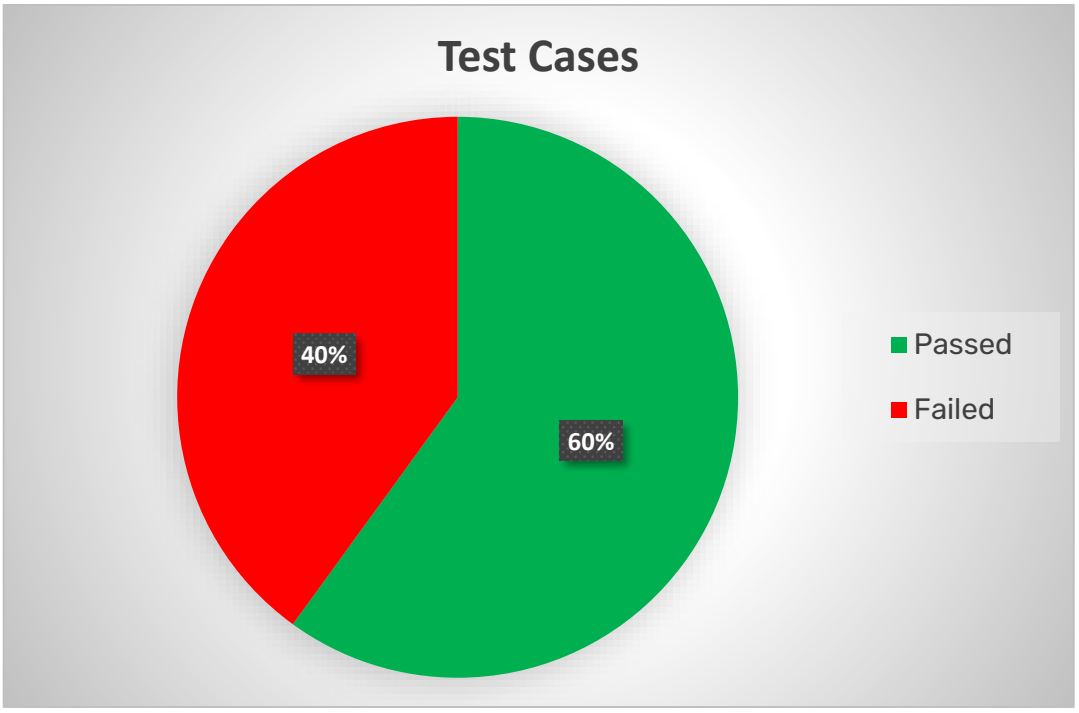
During testing a test suite method of 15 test cases was used which checks the operation of the algorithm.

The essence of testing is to check the operation of all mandatory functions of the algorithm.

Information on the progress of tests

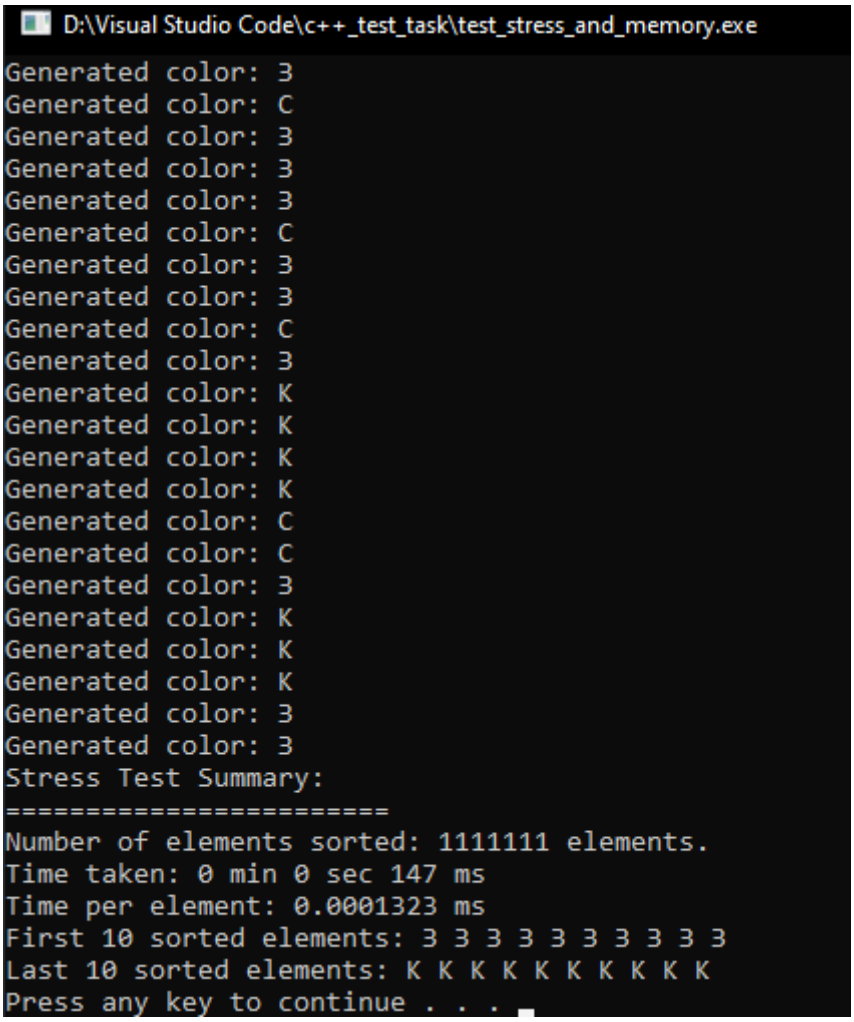
Table 1 - Test cases passed and failed during testing of the algorithm

Test Case ID	Test name	Status	Comments and recommendations
Test Suite #TS0001			
TCBS0001	Basic colors sorting	**Passed**	
TCBS0002	Empty colors array sorting	**Failed**	*There is no data validation check*
TCBS0003	One element sorting	**Passed**	
TCBS0004	One color elements sorting	**Passed**	
TCBS0005	Sorting elements with symbols	**Failed**	*There is no data validation check*
TCBS0006	Sorting elements with numbers	**Passed**	
TCBS0007	Inverse colors array	**Passed**	
TCBS0008	Random order colors	**Passed**	
TCBS0009	Two colors order	**Passed**	
TCBS0010	Unknown color element in array	**Passed**	
TCBS0011	Empty colors order	**Failed**	*There is no data validation check*
TCBS0012	Upper and lower colors elements	**Passed**	
TCBS0013	Incurrent colors array	**Failed**	*There is no data validation check*
TCBS0014	Limit colors array	**Failed**	*There is no data validation check*
TCBS0015	Incorrect array	**Failed**	*There is no data validation check*

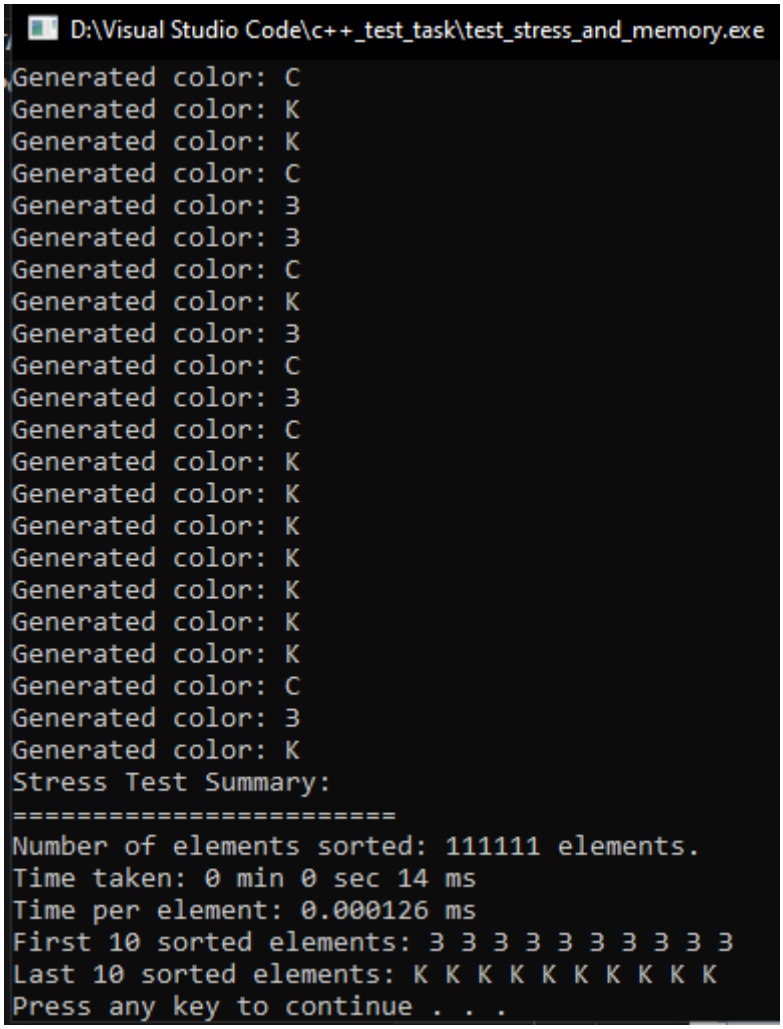


Picture 1 - Diagram of test case execution results.

In addition to the main test cases, a stress test was conducted with large arrays.



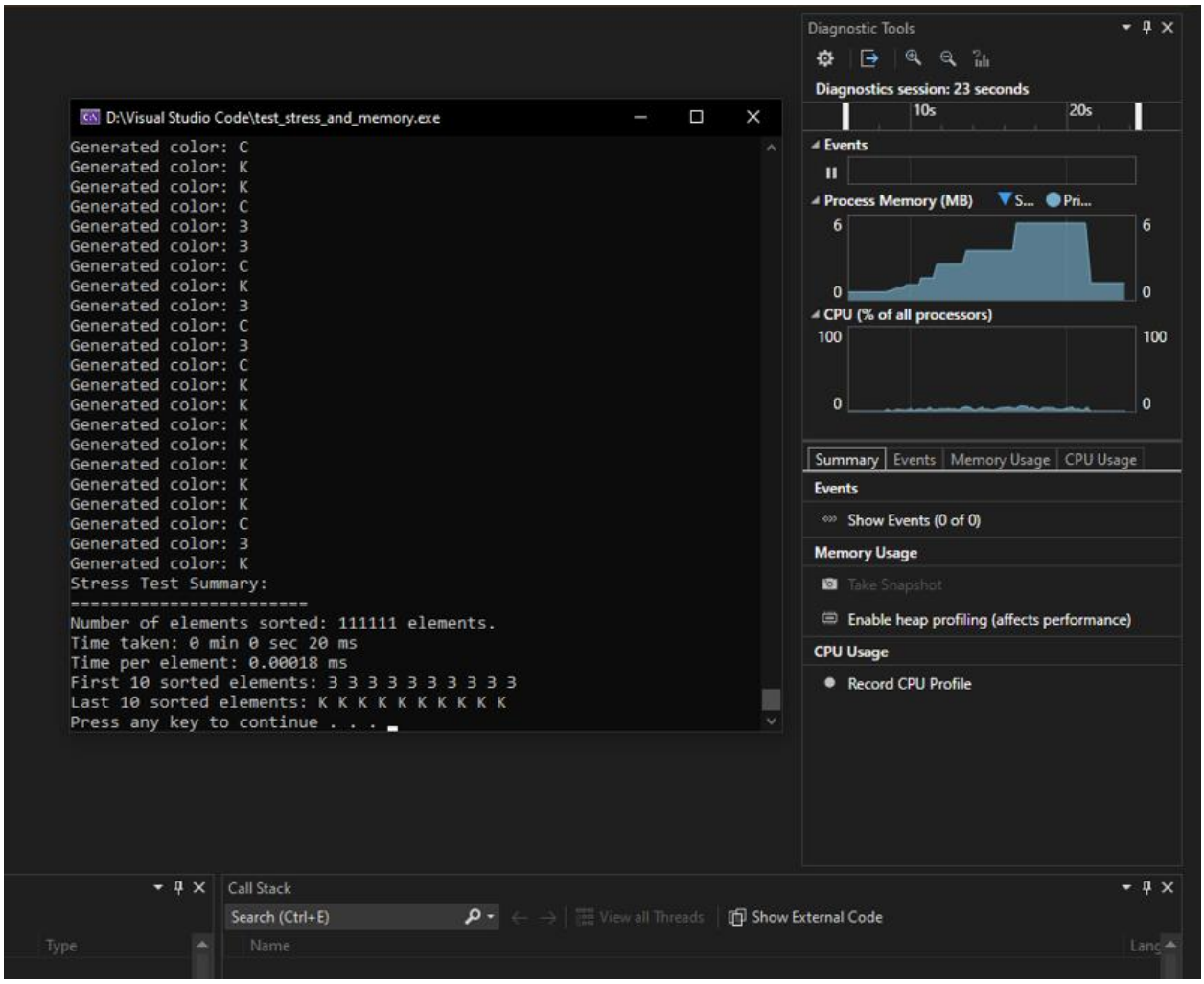
Picture 2 - Results of the stress test (1.111.111 elements).



Picture 3 - Results of the stress test (111.111 elements).

With 1 million 111 thousand 111 arguments, sorting occurs in 147 milliseconds, which shows a good result. With a value of 111 thousand 111 arguments, sorting occurs in 14 milliseconds, which indicates that the sorting time increases proportionally to the number of arguments.

A memory leak test was performed using Visual Studio on Windows 10.



Picture 4 - Results of the memory leaks (111.111 elements).

From the screenshots, it is clear that the main increase in memory is occupied by the array generator in the stress test. Then the array is sorted and the memory is freed.

It can be concluded that there are no memory leaks on Windows.

Conclusions from the test results

During the testing period, 6 defects out of 15 tests. Were identified which is 40% of all test cases. The main defects are the lack of verification of the validity of the input data.

The speed of the algorithm shows good indicators. At the same time, the speed of work directly depends on the amount of input data. Since the algorithm is designed for sorting a small order, the speed of work will not deteriorate much.

Below are the applications for detailed review:

- The list of defects is given in Application 1.
- The names of the work files are given in Application 2.

Application 1 – List of defects

Test Case ID	Bug Report	Expected Result:	Actual Result:	Severity	Priority
TCBS0002	**#BR0001**	Error or error text of incorrectly entered color array data (Error: Please, enter current colors.).	Test Failed in line 84. Output array: (Rusult is empty.).	Medium	**High**
TCBS0005	**#BR0002**	Error or error text of incorrectly entered color array data (Error: Please, enter current colors.).	Test Failed in line 111. Output array: (Rusult is empty.).	Medium	**High**
TCBS0011	**#BR0003**	Error or error text of incorrectly entered color order data (Error: Please, enter color order.).	Test Failed in line 165. Output array: (Rusult is empty.).	Medium	**High**
TCBS0013	**#BR0004**	Error or error text of incorrectly entered color array data (Error: Please, enter current colors.).	Test Failed in line 183. Output array: (Rusult is empty.).	Medium	**High**
TCBS0014	**#BR0005**	Error or error text about the limit of entered data for the color array (Error: Enter very large colors array (min: 1, maximum: 60).).	Test Failed in line 192. Output array: (3 x [61 элемент]).	Medium	Normal
TCBS0015	**#BR0006**	Error or error text of incorrectly entered color array data (Error: Please, enter current colors.).	Test Failed in line 201. Output array: (Oh! Oh! Oh! Error! Error! Error!).	Medium	Normal

Application 2 – Names of the work files

№	Name file	Description
1	Algorithm.exe	The algorithm that was tested
2	test_colors_sorting.exe	Test cases for the algorithm
3	test_stress_and_memory.exe	Stress test for the algorithm