

Algorithmics	Student information	Date	Number of session
	UO:300896 Surname: De San Claudio Mesa Name: Alejandro	13/03/25	5

Activity 1. [Map Colouring]:

<i>n</i>	<i>t</i> Colouring (ms)
8	0.16
16	0.35
32	0.96
64	2
128	4
256	8
512	22
1024	34
2048	69
4096	137
8192	277
16384	559
32768	1143
65536	2321

The method contains a for loop that is executed always n times $[O(n)]$

Inside the for loop there is a do while loop, which is executed while containsColor() method is true. This method contains a for each loop which best complexity is $O(1)$ and the worst case is $O(n)$.

So when bestCase $O(1)$, while is executed n times $[O(1) * O(n)] = O(n)$

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When worstCase $O(n)$, while is executed once $[O(n) * O(1)] = O(n)$

So total complexity is $O(n)$ (for loop) * $O(n)$ (do while and for each loops) = $O(n^2)$