	An Empirical Evaluation of GifHub Copilor's Code Generation									
D	Correctness	Validity	Time Complexity Generated	Time Complexity Canonical	Space Complexity Generated	Space Complexity Canonical	security_rating			Flesch Reading Ease Sco
•	0	1	O(n/2)	O(n/2) O(n)	O(1) O(n)	O(1) O(n)	1.0	0	0	86.30078261 66.70778378
:	1	1	O(1) O(n)	O(n) O(n)	O(1)	O(1)	1.0	0	0	57.5075 74.1812253
	1	1	O(n)	O(n)	O(1)	O(1)	1.0	0	0	56.06863636
	0.33333333	1	O(n) O(n)	O(n) O(N)	O(n) O(n)	O(n) O(n)	1.0	0	0	77.53888889 76.17473743
	1	1	O(n)	O(n) O(n)	O(n) O(1)	O(n) O(1)	1.0	0	0	76.62128205 95.47425806
	1	1	O(n)	O(n)	O(n)	O(1)	1.0	0	0	96.271875
11	1	1	O(n) O(n)	O(n*2) O(n)	O(1) O(n)	O(n) O(n)	1.0	0	0	67.44863221 106.9421657
3	1	1	O(n) O(log/min(a, b)	O(n) O(log(n)	O(1) O(1)	O(1)	1.0	0	0	92.97200758 73.36107143
4	1	1	O(n*2)	O(n*2)	O(n)	O(n)	1.0	0	0	85.94034483
15	1	1	O(n) O(n)	O(n) O(n)	O(n) O(n)	O(n) O(n)	1.0	0	0	95.86875 57.29355603
7 8	-1 0.75		O(n) O(n)	O(n) O(n)	O(n) O(1)	O(n) O(1)	1.0	0	0	102.4487719 73.85168421
9	0.4	1	O(n)	O(n)	O(n)	O(n)	1.0	0	0	68.37098532
0	0	1	O(n)	O(n*2) O(n)	O(1) O(n)	O(1) O(n)	1.0	0	0	92.74522581 91.23365385
2 3	1	1	O(n) O(n)	O(n) O(n)	O(n) O(1)	O(n) O(n)	1.0	0	0	86.05141141
4	0	1	O(n)	O(n)	O(1)	O(1)	1.0	0	0	88.55205128
5	0.25	1	O(n) O(n)	O(sqrt(n) O(n)	O(n) O(n)	O(n)	1.0	0	0	80.51247253 76.27522727
7	1	1	O(n)	O(n)	O(n)	O(n)	1.0	0	0	55.81373188 78.45666667
8 9	1	1	O(n)	O(n) O(n)	O(n) O(n)	O(n) O(n)	1.0	0	0	78.45666667 81.76888889
1	0.916666667	1	O(n) O(n)	O(n) O(n)	O(n) O(1)	O(n) O(1)	1.0	0	0	136.8099519 74.3356746
2	-1	0	O(n)	O(log n)	O(1)	O(1)	1.0	0	0	115.5453348
4	1	1	O(n) O(n)	O(n)	O(n) O(n)	O(n) O(n)	1.0	0	0	107.8272922
5	1	1	O(n)	O(n) O(n)	0(1)	O(1) O(n)	1.0	0	0	127.7467857
	0	1	O(n)	O(nlogn)	O(1) O(n)	O(n)	1.0	0	0	107.7549032
,	0	1	O(n) O(n)	O(n) O(n)	O(n) O(1)	O(n)	1.0	0	0	101.1573168 96.92927273
•	0.77777778		O(n°2)	O(n*3)	O(n)	O(1)	1.0	0	0	75.07437276
	0	1	O(n) O(n)	O(n)	O(1) O(n)	O(1) O(n)	1.0	0	0	72.76675054 156.4108953
	0.666666667	1	O(n)	O(n*2)	O(n)	O(1)	1.0	0	0	82.53392478
	1.5	1	O(log(x) O(1)	O(log(x) O(n)	O(log(x) O(1)	O(log(x) O(1)	1.0	0	0	75.55163462 89.24166667
	0.6	1	O(n)	O(n) O(nlogn)	O(1) O(n)	O(n) O(n)	1.0	0	1 0	103.144769
	1	1	O(n)	O(n)	O(1)	O(1)	1.0	0	0	42.81115385
	1	1	O(log n) O(n)	O(n) O(n)	O(1) O(n)	O(1) O(n)	1.0	0	0	149.6288235 89.45958333
		1	O(n)	O(n)	O(n)	O(n)	1.0	0	0	40.58147059
	1	1	O(n) O(1)	O(n) O(n)	O(1)	O(1) O(n)	1.0	0	0	115.4844886 149.3075
	0.571428571	1	O(n) O(2h)	O(n) O(2%)	O(n) O(n)	O(n) O(n)	1.0	0	0	80.86031674
	-	1	O(n)	O(n)	O(n)	O(n)	1.0	0	0	56.175
	0.5	1	O(n) O(n log n)	O(n) O(n*2)	O(1) O(n)	O(1) O(n)	1.0	0	0	84.61825 152.6891599
	1	1	O(n)	O(n)	O(1)	O(1)	1.0	0	0	76.63625
	1	1	O(n) O(n)	O(n) O(n)	O(n) O(n)	O(1) O(n)	1.0	0	0	131.34
	0.2	1	O(n)	O(n) O(n)	O(n) O(n)	O(n) O(n)	1.0	0	0	117.4645 82.925
	0.428571429	1	O(n)	O(n)	O(1)	O(1)	1.0	0	0	84.33007353
	0.6	1	O(n) O(n)	O(n)	O(n) O(1)	O(n) O(1)	1.0	0	0	89.29833333 75.59397138
	-1	0	O(n)	O(n)	O(n)	O(n)	1.0	0	0	91.17703041
	0.25	1	O(n) O(n)	O(n) O(n)	O(n) O(n)	O(n)	1.0	0	0	87.72147059 105.4555486
	0.33333333	1	O(n)	O(n)	O(n)	O(n)	1.0	0	0	97.42844156
	0.555555556	1	O(1) O(n)	O(1) O(n)	O(1) O(1)	O(1) O(1)	1.0	0	0	88.58986631 90.48789077
	0.888888889	1	O(n)	O(N) O(n)	O(1) O(1)	O(1) O(n)	1.0	0	0	80.73196762 98.55045455
	0.5	1	O(n)	O(n*3)	O(1)	O(1)	1.0	0	0	79.89166159
	0.5	1	O(1)	O(logs) O(1)	O(1) O(1)	O(1)	1.0	0	0	82.45291667 70.21013062
	1	1	O(n)	O(n)	O(1)	O(1)	1.0	0	0	96.83307826
,	0.625	1	O(n) O(n)	O(log(n) O(n)	O(n) O(1)	O(n) O(1)	1.0	0	0	64.25072791 75.66153249
	0.33333333	1	O(n)	O(n)	O(n)	O(n)	1.0	0	0	109.4425
	0.8125	1	O(n) O(1)	O(n) O(n)	O(1)	O(1)	1.0	0	0	54.0406006 73.168
	0.5	1	O(n)	O(n) O(n)	O(n) O(1)	O(n) O(1)	1.0	0	1 0	110.0958333 98.94192308
	0.428571429		O(n)	O(n)	O(n)	O(n)	1.0	0	0	53.96431174
,	0.666666667	1 0	O(n) O(n)	O(n/2) O(nlogn)	O(n) O(n)	O(n/2) O(n)	1.0	0	0	103.2818654
,	0	1	O(n)	O(n)	O(n)	O(n)	1.0	0	0	67.29007837
	0.714285714	1	O(n log n) O(n)	O(nlogn) O(n)	O(n) O(1)	O(1) O(n)	1.0	0	1	99.78605489
	0.8	1	O(1)	O(1)	O(1)	O(1) O(n)	1.0	0	0	96.60511384 74.81905738
	0.22222222	1	O(n) O(n)	O(n) O(n)	O(1) O(n)	O(1)	1.0	0	0	124.4488462
	0.857142857	1	O(n) O(n)	O(n) O(n*2)	O(1) O(n)	O(1) O(n)	1.0	0	0	21.99005435 78.10506311
	0.25	1	O(n)	O(n)	O(1)	O(1)	1.0	0	0	74.4275
	0.571428571	0	O(n) O(1)	O(n) O(1)	O(1)	O(1)	1.0	0	0	55.62722222 60.47520415
10	-1	0	O(n) O(n)	O(n) O(n)	O(n) O(n)	O(n) O(n)	1.0	0	0	85.93071429 89.77094162
2	0.5	1	O(1)	O(log(n)	O(1)	O(1)	1.0	0	0	85.63133787
3	0.1688888887	1	O(1) O(n)	O(log(m·n+1) O(n)	O(1) O(n)	O(1) O(n)	1.0	0	0	98.70296443 82.25958333
5	0.2	1	O(n)	O(n)	O(n)	O(n)	1.0	0	0	115.4627734
7	0.5	1	O(n)	O(n) O(n)	O(n) O(1)	O(n) O(1)	1.0	0	0	105.7395047 77.17299206
8	4	0	O(n)	O(n)	O(1)	O(n)	1.0	0	0	106.5632727
0	0.571428571	1	O(N) O(n)	O(n) O(n)	O(1) O(1)	O(n) O(1)	1.0	0	0	54.45982983 87.36054656
1 2	0.111111111	1	O(n)	O(n) O(n)	O(n) O(n)	O(n) O(n)	1.0	0	0	92.50742941 86.94911791
3	0	1	O(n)	O(n)	O(n)	O(n)	1.0	0	0	97.54379252
4 5	0.33333333	1	O(n) O(n/2)	O(n) O(n°m°capacity)	O(1) O(n)	O(1) O(N'M)	1.0	0	0	85.57419118 101.9375946
6	0.857142857	1	O(n log n) O(n)	O(n log n) O(n)	O(n) O(n)	O(n)	1.0	0	0	105.3074799 80.19692308
8	0.307692308	1	O(n)	O(n)	O(1)	O(n) O(1)	1.0	0	0	58.504
9	0.33333333	1	O(n) O(n log n)	O(N) O(nlogn)	O(n) O(n)	O(N) O(n)	1.0	0	0	84.05368285
1 2		1	O(n)	O(n)	O(1)	O(1)	1.0	0	0	105.412619 117.6675
3	-1	0	O(n) O(n)	O(n) O(n)	O(1) O(n)	O(1) O(n)	1.0	0	0	82.18070837
5	0.375	1	O(1) O(n)	O(1) O(n)	O(1) O(n)	O(1) O(n)	1.0	0	0	91.81655657 87.6228662
7	0.846153846	1	O(n)	O(n)	O(n)	O(n)	1.0	0	0	113.3910511 78.88963811
3	0.125	1	O(1)	O(n) O(n)	O(1) O(1)	O(1)	1.0	0	0	98.10625
9	0.1	1	O(N*2 * k) O(n)	O(n*2) O(n)	O(N'2 ' k) O(n)	O(n/2) O(n)	1.0	0	2	102.9382108 110.0120588
1	0.857142857	1	O(n)	O(n)	O(1)	O(1)	1.0	0	1	92.41176136
2	0.714285714	1	O(n) O(n)	O(n) O(n)	O(n) O(n)	O(n) O(1)	1.0	0	0	71.00068238 116.435
4	-1	0	O(n)	O(n)	O(1)	O(1)	1.0	0	0	32.79423077
	-1	0	O(nlogn) O(n)	O(n) O(n)	O(1) O(n)	O(1) O(n)	1.0	0	0	59.632 54.2230914
5	-1	0	O(1)	O(n)	O(1)	O(1)	1.0	0	0	74.18333333
5		1	O(1) O(n)	O(1) O(n)	O(1) O(n)	O(1)	1.0	0	0	19.49483871 85.23981884
5 6 7 8 9	0.25	1	O(n)	O(n)	O(n) O(1)	O(n) O(1)	1.0	0	0	52.1054731 66.85145161
5 7 8 9	0.25	4	O(1) O(n)	O(n)	O(1)	O(n)	1.0	0	0	96.80089397
5 7 8 9 1 2	0.25 0.6 0.730769231 0.272727273	1	O(n) O(1)	O(n) O(n)	O(n) O(1)	O(n) O(1)	1.0	0	0	73.18448864 64.32730805
5 6 7 8 9 1 2 3 4	0.25 0.6 0.730769231	1		O(nlogn)	O(n)	O(n)	1.0	0	0	86.87896104
5 6 7 8 9 9 1 2 3 4 5	0.25 0.6 0.730769231 0.272727273 0.714285714 0.333333333	1 1 0	O(n log n)		O(1)	O(1)	1.0	0	0	101.9325 114.5828226
5 6 7 8 9 0 1 2 3 6	0.25 0.6 0.730769231 0.272727273 0.714285714 0.333333333 -1 0.571428571	1 1 0 1	O(n log n) O(n)	O(n)		1.5.5				
5 6 7 8 9 6 7 8	0.25 0.6 0.730769231 0.272727273 0.714285714 0.333333333 -1 0.571428571 0.5 0.285714286	1 0 1	O(n log n) O(n) O(n/2) O(n)	O(n) O(n*0) O(n)	O(1) O(n)	O(n)	1.0	0		60.21389048
5 6 7 8 9 6 7 8 9	0.25 0.6 0.730769231 0.272727273 0.714285714 0.33333333 -1 0.571428571 0.5 0.285714285 0.142857143	1 1 0 1 1 1	O(n log n) O(n) O(n) O(n*2) O(n) O(n) O(n log n) O(n)	O(n) O(n/0) O(n) O(n) O(n)	O(1) O(n) O(n)	O(n)	1.0	0	0	80.41368817
3 3 4 3 6 7 8 9 11	0.25 0.6 0.730769231 0.272727273 0.714285714 0.333333333 -1 0.571428571 0.5 0.285714286	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	O(n log n) O(n) O(n'2) O(n'2) O(n) O(n log n) O(n) O(n)	O(n) O(n) O(n) O(n) O(n)	O(1) O(n) O(n) O(n) O(1) O(n)	O(1) O(1)	1.0 1.0 1.0	0 0	1 0 0	80.41368817 95.86875 86.80169872
5 6 7 8 9 9 1 2 3	0.25 0.6 0.730769231 0.272727273 0.714285714 0.33333333 -1 0.571428571 0.285714285 0.1428571438 0.9	1 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	O(n log n) O(n) O(n) O(n*2) O(n) O(n) O(n log n) O(n)	O(n) O(n/0) O(n) O(n) O(n)	O(1) O(n) O(n) O(1)	O(n) O(1)	1.0 1.0	0	0	80.41368817 95.86875
5 6 7 8 9 9 9 11 1 2 2 3 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	0.25 0.6 0.730769231 0.272727273 0.714285714 0.33333333 -1 0.571428571 0.57142857 0.285714286 0.142857143 0.9 0.428571429 1 0.9 0.428571429	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	O(n log n) O(n) O(n) O(n) O(n) O(n) O(n) O(n) O(	O(n)	O(1) O(n) O(n) O(n) O(1) O(n) O(n) O(n) O(n) O(n) O(n) O(n)	O(n) O(1) O(1) O(n) O(n) O(n)	1.0 1.0 1.0 1.0 1.0 1.0	0 0 0 0 0 0 0	1 0 0 0 0 1	80.41365817 95.86875 86.80169872 67.7098046 62.22058824 46.4737449
5 6 7 8 9 0 1 1 2 3 3 4 4 4 5 5 6 6 7 7 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	0.25 0.6 0.730709231 0.272727273 0.714092714 0.33333333 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	5 5 5 5 5 7 7 8 8 8 8 8 8 8 8 8 8 8 8 8	O(in log n) O(in)	O(n)   O(n)	O(1) O(n) O(n) O(n) O(1) O(n) O(n) O(n) O(n) O(n) O(n) O(1) O(1) O(1) O(1)	O(n) O(1) O(1) O(n) O(n) O(n) O(n) O(1) O(1) O(1) O(1)	1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	0 0 0	1 0 0 0 0 1 1 0	80.41368817 95.86875 86.80169872 67.708046 62.2005824 46.4737449 66.81071429 52.97909091
5 6 7 8 9 0 1 1 2 3 4 4 5 6 7 7 8 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	0.25 0.6 0.730709231 0.27327273 0.714085714 0.333333333 1 1 0.571428571 0.55 0.285714286 0.442857143 1 1 0.2702222222 0.5 1 0.07142857 1 0.0000000000000000000000000000000000		Clin log n) Clin l	Ole   Ole	O(1) O(n) O(n) O(n) O(1) O(n) O(n) O(n) O(n) O(n) O(n) O(1) O(1) O(1) O(1) O(1) O(1)	O(n) O(1) O(1) O(n) O(n) O(n) O(1) O(1) O(1) O(1) O(1) O(1)	1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	0 0 0 0 0 0 0 0	1 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0	80.41368817 95.85875 86.80169872 67.7080046 62.2205824 46.4737449 66.81071429 52.97909091 78.19795455
5 6 7 8 9 0 1 1 2 3 4 4 5 5 6 7 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	0.25 0.6 0.6 0.730709231 0.272727273 0.71-0.292714 0.71-0.292714 1 0.571-0.292714 0.571-0.292714 1 0.571-0.292714 1 0.2927222222 0.5 1-1 0.0071-0.292714 0.900000000000000000000000000000000000	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Clin lag n) Clin(n) Cl	Ole)	O(1) O(1) O(1) O(1) O(1) O(1) O(1) O(1)	O(n) O(1) O(1) O(1) O(n) O(n) O(1) O(1) O(1) O(1) O(1) O(N) O(N) O(1)	1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	0 0 0 0 0 0 0 0 0 0 0 0	1 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0	80.41368817 90.86875 86.80169872 67.706946 62.2005824 66.4737449 66.81071429 52.97909091 78.1979455 98.8005678 106.1200566
155 155 155 155 155 155 155 155 155 155	0.25 0.6 0.730709231 0.272727273 0.714285714 0.3333333333 -1 0.55 0.286714285 0.386714286 0.438671428 0.9 0.428671428 0.9 0.428671428 0.9 0.428671428 0.9 0.428671428 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.		Cylin log n)	Ole)	OCT) OPR OPR OPR OCT) OPR OPR OCT) OPR OCT) OCT) OCT) OCT) OCT) OCT) OCT) OCT)	O(n) O(1) O(1) O(n) O(n) O(1) O(1) O(1) O(1) O(1) O(1) O(1) O(1	1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	0 0 0 0 0 0 0 0 0 0 0 0	1 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0	80.41268817 95.86875 86.80169872 67.708046 62.22008824 46.4737449 66.81077429 52.9750001 71.10705465 58.8905678