

Comparison between Graham scan and Gift Wrapping Algorithm:

Note: Python and C++ code is shared in the same folder. Given time is observed in Python compiler.

Part 1: n= no of points h= no of points in the hull t= time taken

<u>Graham Scan Algorithm</u>	<u>Gift Wrapping Algorithm</u>	
N= 100 h= 10 T= 0.0017346	N= 100 h= 10 T= 0.00417	N= 100 h= 12 T= 0.00486
N= 1000 h= 15 T= 0.008477	N= 1000 h= 15 T= 0.03061	N= 1000 h= 21 T= 0.0427
N= 2000 h= 19 T= 0.016328	N= 2000 h= 19 T= 0.0790	N= 2000 h= 27 T= 0.1077
N= 5000 h= 23 T= 0.0408339	N= 5000 h= 23 T= 0.2210	N= 5000 h= 25 T= 0.2395
N= 10000 h= 20 T= 0.0779	N= 10000 h= 20 T= 0.4162	N= 10000 h= 19 T= 0.38223

Part 2: N = h

N = h	<u>Graham Scan Algorithm</u> Time taken	<u>Gift Wrapping Algorithm</u> Time taken
10	0.000806	0.002236
20	0.0009229	0.002935
30	0.001172	0.004135

Conclusion: Gift wrapping algorithm ($O(n \cdot h)$) works better in case of $n > h$ as compare to Graham Scan algorithm ($O(n \log n)$). In case of $n=h$ or nearly equal then, case will be opposite to the mentioned one above.