

Q3.

a)

An array $[i_1, i_2, \dots, i_n]$ where $i_{k+1} = i_k + 1$ for all $0 < k < n$ will have $O(1)$ search time.

b)

An array $[i_1, i_2, \dots, i_n]$ where $i_k = 2^k$ for all $0 < k \leq n$ will have $O(n)$ search time.

Search key: i_{n-1} (second largest element in array)