For teachers only

Questions: (* questions can be used for evaluation)

1. Assume that you will take 1 second to search for a given number how long will it take to search the number 2

7	9	11	13	5	2	4	3	5

Answer

7	9	11	13	5	2	4	3	5
1 sec	1 sec	1 sec	1 sec	1 sec	1 sec			

Total time to search = 6 seconds

2. How long will it take to search for the number 50 which does not exist in the table?

7	9	11	13	5	2	4	3	5
1 sec	1 sec	1 sec	1 sec	1 sec	1 sec	1 sec	1 sec	1 sec

Total time to search = 9 seconds

3. Write the algorithm for searching for the number 3 from the numbers

1	9	3	12

Algorithm for searching for the number 3

1. Pick the first number
2. Check if the number is equal to 3
3. If the number is equal to 3 display "Found number 3" and stop the search
4. If not pick the next number and repeat steps from 2 to 4 until all numbers in the list are exhausted
5. If the number has not been found in the list display "Number 3 not found"

    Pseudo code for teachers
    For each number in the list:
        Check if the number = 3
            If yes display "Number is found"
    End

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> If list was searched and number was not found
> display "Number is not found"

4. We are trying to introduce an extension of searching linearly here. You can start from the beginning, and the friend can start from the end. Or, you can start from column 1 (odd columns), while your friend can start from column 2 (even columns). The point here is to ask the other person to stop searching if the number is found. Also, there has to be an ending point for the algorithm too. Let the students figure that out. Do point out that when one person finds the number, how will the other person know? Some "message" needs to be given to the other person – like "Stop – I've found the number!".

5. For 20, the algorithm becomes tricky. You and your friend might cross each other in case you start from the beginning and he starts from the end. What can you do in that case? Divide, and keep checking till you reach the middle. If you divide searching into even and odd columns, then there will be no crossing over. Ask the students to write down the best case and worst case times for any of the approaches.

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