Final Exam - Long Question
Design & Analysis of Algorithm
Spring 2020

Reg. No. __L1f17BSCS0516_____
Time: 35 mins.

Instructions:
Student can attempt anyone question

1. The question must be solved on sheet(s) of paper.
2. Write your name and registration number on top of each sheet used, and sign it.
3. Take picture of your answer sheet and paste it in the Answer section of the Question.
4. Turn in the word file.
5. **ONLY PSEUDO-CODE IS ACCEPTABLE.**

Question1: (Marks 30)

You are given an array A of *n* distinct integers sorted in increasing order. Write an O(lg(n)) function, in **PSEUDO-CODE**, that finds an index ***i*** such that A[*i*] = *i* where 1<= *i* <= *n*. If no such index exists, algorithm returns -1.

Example 1:

Index	1	2	3	4	5	6	7	8	9	10
Array	2	3	5	7	9	11	23	34	45	67

Function returns: -1

Example 2:

Index	1	2	3	4	5	6	7	8	9	10
Array	-2	-3	-5	-7	-9	1	3	4	6	10

Function returns: 10

Answer: (**Paste your answer below.**)

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Presudo code

```
int ← findsIndex(A,n)
let start =  0
let end = n -1
while start != end
```



```
  let mid = start+(end-start)/2
        if A[mid] =   mid+1
                      return found at location mid+1
        if A[mid] >   mid+1
              end =  mid -1
        else
              start =  mid +1

end while
return -1
```