First Missing Integer

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Given an unsorted integer array, find the first missing positive integer.

Example:

Given `[1,2,0]` return 3,

`[3,4,-1,1]` return 2,

`[-8, -7, -6]` returns 1

Your algorithm should run in `O(n)` time and use constant space.

See Expected Output

Seen this question in a real interview before Yes

No

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Notes

All Notes (/profile/karandeep-singh_845/notes/?ref=problem-page)

02 : 07 : 59

Current Possible Score: 0 Max Score: 300

monokai Medium Seek Help

C++17 (gcc-9.2)

```
1  int Solution::firstMissingPositive(vector<int> &A)
2    for(int i=0;i<A.size();i++){
3          if(A[i]>0 && A[i]<=A.size() && A[A[i]-1]!=
4              swap(A[i],A[A[i]-1]);
5              i--;
6          }
7      }
8      for(int i=0;i<A.size();i++){
9
10         if(A[i]!=i+1) return i+1;
11     }
12     return A.size()+1;
13 }
14
```

Test with custom input Test Submit

Keyboard shortcuts: Test Ctrl + t Save Ctrl + s Submit Ctrl + Alt + s Autocomplete Ctrl + Space

Correct Answer. You got 41/300 points!

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All hints are now accessible without any penalty.

Solution discussion thread has been unlocked below.

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Next you should solve the problem

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Hints

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Solution Approach (/courses/1/topics/2/problems/first-missing-integer/hints/147/)

Complete Solution (/courses/1/topics/2/problems/first-missing-integer/hints/148/)

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Discussion

Problem Discussion | **Solution Discussion**

Post a comment (https://discuss.interviewbit.com/session/sso?

This thread is for people who have solved the problem.
You may discuss your solutions here.

kartikey-raut about 21 hours ago

Solution in c++ using array 0

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kartikey-raut

```
int Solution::firstMissingPositive(vector &A)
{
int n=A.size();
int ar[n+1]={0};
int x;
for(x=0;x<n;x++)
{
if(A[x]>0 && A[x]<=n+1)
ar[A[x]-1]++;
}

for(x=0;x<n+1;x++)
{
   if(ar[x]==0)
        return x+1;
}
return x+1;

}
```

shubhamsihag80_7044b 1 day ago

Best Optimization with O(n) solution in Java using PriorityQueue 0

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amith181it105_64a353 4 days ago

Short and Simple Sol O(n) and O(1) 3

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YASHU_GARG

```
int Solution::firstMissingPositive(vector<int> &A) {
int n=A.size();
for(int i=0;i<n;i++)
{
    while(A[i]>0 && A[i]<=n && A[A[i]-1]!=A[i])//Becau
se of Zero base indexing
    {
        swap(A[A[i]-1],A[i]);//Swap
    }
}
for(int i=0;i<n;i++)
{
    if(A[i]!=(i+1))
    return i+1;
}
return n+1;
```

}

pawar-hrishikesh

This does not seem O(n)

YASHU_GARG

why???
any reason???
i think its O(n) as we visit each number only ones ...Like if number is already in its right place then we do nothing.

amith181it105_64a353

Essentially, you’re sorting the vector, which has a lower bo und of O(nlogn) worst case.

---

vivek-baghela 12 days ago

Why is this just partially correct!? 0

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vivek-baghela

int Solution::firstMissingPositive(vector &A) {
int i=1, k;
while(i){
if(find(A.begin(), A.end(), i) != A.end()){
i++;
}
else{

```
        break;
    }
}
return i;
```

}

---

pallav-jain_301 13 days ago

Solved it using priority queue 2

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rishabh-chaturvedi_5

```
int Solution::firstMissingPositive(vector &A)
{
priority_queue<int,vector,greater > p;
int i,count=1;
for(i=0;i<A.size();i++)
{
if(A[i]>0)
p.push(A[i]);
}
if(p.size()==0)
return 1;
else
{
while(!p.empty())
{
if(p.top()!=count)
{
return count;
break;
}
p.pop();
count++;
}
return count;
}
}
```

nitin-kamath

You are using extra space.

pallav-jain_301

Insertion alone took NLogN time.
time to insert in priority queue logN.
inserting n items results in nlogn.

---

sakshi-singh_569 17 days ago

C++ solution.Any suggestions would be appreciated 0

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sakshi-singh_569

int Solution::firstMissingPositive(vector &A) {

```
int i=A.size()-1;
vector<int>::iterator it1, it2;
it1=A.begin();
it2=A.end();
sort(A.begin(),A.end());
while(A[i]>0 && i>=0)
{
    it2--;
    i--;
}
A.erase(it1,it2);
int j=1;
for(int i=0;i<A.size();i++)
{
    if(A[i]!=j)
    {
        return j;
    }
    else
    {
        j++;
    }
}
return j;
```

}

himanshuwalia099_70e 18 days ago

Java perfect Solution .. Short and Simple Sol O(n) and O(1) 0

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madhankumar-chellamu 20 days ago

Python solution not working 0

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pragyakapoor11_ad8a0 24 days ago

Python code passing all test cases. Slightly long but works amazing 0

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vishaldbhat_c6c174ee 28 days ago

A O(n) time and O(1) solution in Java 0

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soumick-pyne 28 days ago

Best c++ solution for first missing integer O(n) time and O(1) space 1

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yash_0311

int Solution::firstMissingPositive(vector &arr) {

// logic goes like this
// segregated all positive number from negative and ze ro
// negative and zeros are on the right side of the array

```
if(!arr.size()) return 1;

int j=arr.size()-1,ns=0;
for(int i=arr.size()-1;i>=0;i--){
    if(arr[i]<=0){
        int temp = arr[i];
        arr[i] = arr[j];
        arr[j] = temp;
        j--;
        ns++;
    }
}
```

// size denotes the size of the positive numbers in the a rray

```
int size = arr.size() - ns;
if(!size) return 1;
```

// below code marks negative of the number on an inde x if that index is present in the array.

```
for(int i=0;i<size;i++){
    if(abs(arr[i])-1 < size && arr[abs(arr[i])-1] > 0)
        arr[abs(arr[i])-1] = -arr[abs(arr[i])-1];
}
```

// first index which is non-negative+1 will be our answe r and if all are negative then answer will be size+1.

```
for(int i=0;i<size;i++){
    if(arr[i]>0) return i+1;
}
```

```
return size+1;
}
```

soumick-pyne

To take care of cases of duplicate values, that may turn ne gative values back to positive (if even number of duplicate values are present). You should take the abs() of arr[abs(a rr[i])-1] before multiplying with -1.

---

aasiya-mansoori_539 29 days ago

Working solution in C++ 1

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vishal-patidar_959 about 1 month ago

Easy solution o(n) time and o(1) space c++ 0

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stelios357 about 1 month ago

Regarding TLE error even though my solution is quite close to the tutuorial(Python 3) 0

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p4praneethchandra350 about 1 month ago

Time complexity - O(n), Space - O(1). C++ solution 0

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ankitbando2017735 about 1 month ago

Simple Python with a Set 1

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yugam-bahl about 1 month ago

Easy code for the prob 0

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demen18 about 1 month ago

Simple C++ code using binary search 0

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nishant-joshi_133 about 1 month ago

C++ Solution Linear Time Constant Space 5

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Simple solution in cpp 0

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aditya-mohan_940 about 2 months ago

A different solution using O(n) complexity and O(1) space 0

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akumar111 about 2 months ago

Python Solution is wrong for the input [-2,0,-8,16,15,10,0,17,12,-1,5,-3,8,1,-8,5,-7,-1] 0

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harsh-m-agarwal about 2 months ago

Can anyone tell the problem in my sol 0

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For a pythoner it might be a long code but it is easy to understand 0

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dipanshu-verma_168 2 months ago

O(n) time; O(1) space 2

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harshil-sagar_271 3 months ago

A different perspective to solution 0

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sujeet-kushwaha 3 months ago

C++ code.runs in O(n) with O(1) space 0

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aks99398700588064 3 months ago

Soln in c using a number line 1

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vishv9100 3 months ago

What is the issue in my code's time complexity? 0

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