564. Find the Closest Palindrome

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- Total Accepted: **1139**
- Total Submissions: **7368**
- Difficulty: **Hard**
- Contributors:anvesh2

Given an integer n, find the closest integer (not including itself), which is a palindrome.

The 'closest' is defined as absolute difference minimized between two integers.

Example 1:

```
Input: "123" Output: "121"
```

Note:

1. The input **n** is a positive integer represented by string, whose length will not exceed 18.
2. If there is a tie, return the smaller one as answer.

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```
class Solution {
public:
    string nearestPalindromic(string n) {
        int l = n.size();
        set<long> candidates;
```

```
// biggest, one more digit, 10...01
candidates.insert(long(pow(10, l)) + 1);
// smallest, one less digit, 9...9 or 0
candidates.insert(long(pow(10, l - 1)) - 1);
// the closest must be in middle digit +1, 0, -1, then flip left to right
long prefix = stol(n.substr(0, (l + 1) / 2));
for ( long i = -1; i <= 1; ++i ) {
    string p = to_string(prefix + i);
    string pp = p + string(p.rbegin() + (l & 1), p.rend());
    candidates.insert(stol(pp));
}
long num = stol(n), minDiff = LONG_MAX, diff, minVal;
candidates.erase(num);
for ( long val : candidates ) {
    diff = abs(val - num);
    if ( diff < minDiff ) {
        minDiff = diff;
        minVal = val;
    } else if ( diff == minDiff ) {
        minVal = min(minVal, val);
    }
}
return to_string(minVal);
```

```
    }

};
```