(3) Implement using multithreading concept,
Given a string str of length N.
The task is to find out the lexicographically smallest string when at most 1 swap is allowed. That is 2 indices $1 <= i, j <= n$ can be chosen & swapped
This operation can be performed at most one time. Ex

ip: str: String
o/p: gtring

Approach: Sort given string, replace the 1st unmatched char with the last occurence of that character
ex if we have string sort ginrst
s - g unmatch, replace s with last occurig g to get gtrins

We can use Multithreading here by sorting the string & making comparisons simultaneously

```
class main Rex i extends Thread {
String sort (String s) {
    char temp[] = s.toCharArray();
    Arrays.sort(temp)
    return new String(temp);
}
```

```
String lexi_swap(String s) {
    int len = s.size();
    int last_occur[26]; // to store last occurrence
                        // of every character
    Arrays.fill(last_occur, -1);
    for (int i = len-1; i >= 0; i--) {
        int c = s[i] - 'a';
        if (last_occur[c] == -1) {
            last_occur[c] = i;
        }
    }
    char[] sorted_string = s;
    Arrays.sort(sorted_string);
    for (int i = 0; i < len; i++) {
        if (s[i] != sorted_string[i]) {
            int c = sorted_string[i] - 'a';
            int last_occ = last_occur[c];
            char t = s[last_occ];
            s[last_occ] = s[i];
            s[i] = temp;
            break;
        }
    }
    return String.valueOf(s);
}
Solution(String name) { super(name); }
```

```
public static void main (String [] args) {
// create 2 threads for demo
  Thread name t1 = new Thread name ("S1");
  Threadname t2 = new Thread name ("S2");
  S.O.P ("Thread 1 = " + t1.getName());
  S.O.P ("Thread 2 = " + t2.getName());
  t1.start();
  t2.start();   String test = "string";
// demo thread ends ——————— //
  S.O.P ("Smallest lexicographical
String after 1 swap = " + lexi-swap(test);
  // test
}
}
class ThreadName Extends Thread {
  Threadnaming (String s) {
      super (s);
  public void run() {
      S.O.P ("Thread is running");
  }
}
```

O/P:

Thread 1 : S1
Thread 2 : S2
Thread is running ...
Thread is running ...
Smallest lexicographical string after 1 swap is gtring