DEPARTMENT OF

COMPUTER SCIENCE & ENGINEERING

Discover. Learn. Empower.

Experiment Title: 3.1

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Branch: CSE **Section/Group:** MM_806 / B

Semester: 5th **D.O.P.:** 11-10-2022

Subject Name: PBLJ **Subject Code:** 20CSP-321

1. Aim/Overview of the practical:

Create a palindrome creator application for making a longest possible palindrome out of given input string.

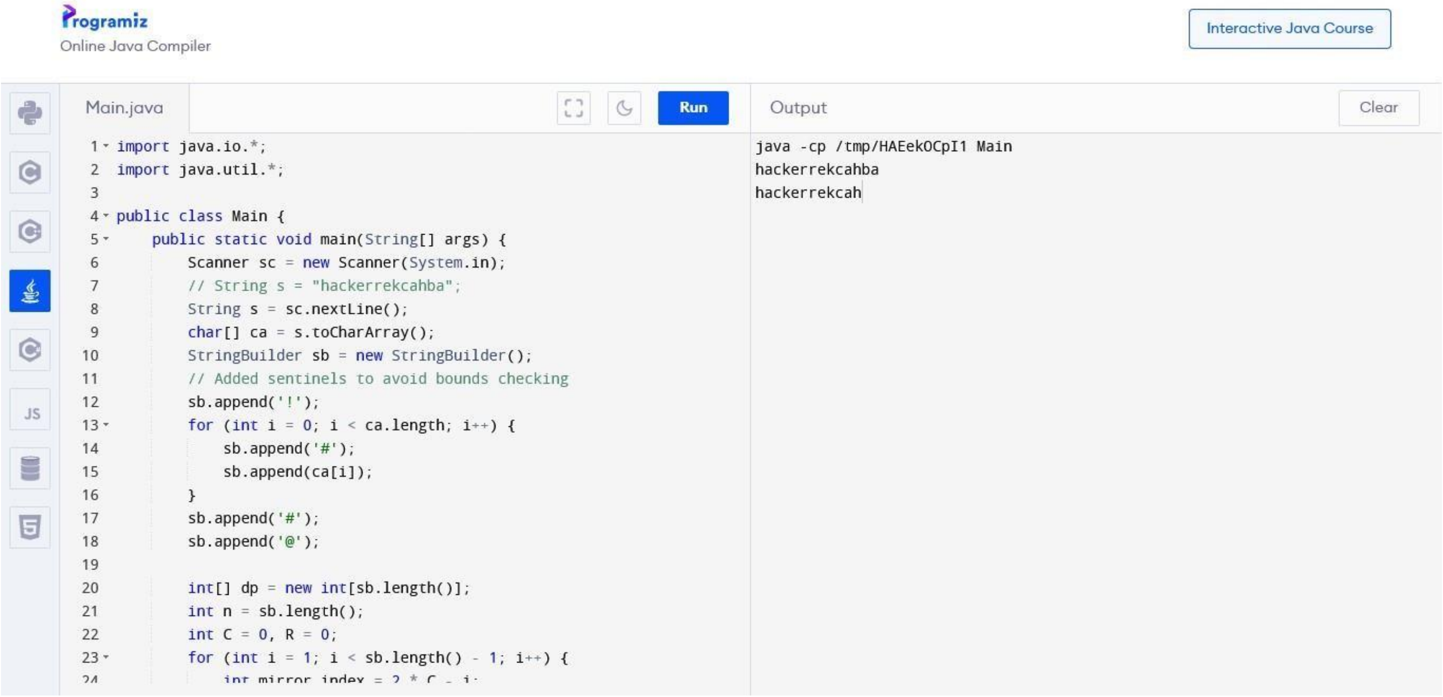
2. Task to be done

Given a string, find the longest substring which is a palindrome.

3. Code

```
import java.io.*; import
java.util.*;

public class Main {          public static void
main(String[] args) {
        Scanner sc = new Scanner(System.in);
                // String s = "hackerrekcahba";
                String s = sc.nextLine();
                char[] ca = s.toCharArray();
                StringBuilder sb = new StringBuilder();
                // Added sentinels to avoid bounds checking
                sb.append('!');
                 for (int i = 0; i < ca.length; i++) {
                        sb.append('#');
                sb.append(ca[i]);  }
        sb.append('#');
        sb.append('@');

        int[] dp = new int[sb.length()]; int n = sb.length(); int C = 0,
        R = 0; for (int i = 1; i < sb.length() - 1; i++) {   int
        mirror_index = 2 * C - i;           dp[i] = (R > i) ? Math.min(R
        - i, dp[mirror_index]) : 0;

                while (sb.charAt(i + 1 + dp[i]) == sb.charAt(i - 1 - dp[i])) {
                dp[i]++;
                }

                if (i + dp[i] > R) {
                        C = i;
                        R = i + dp[i];
                }
        }

        int maxLen = 0; int centerIndex = 0;
        for (int i = 0; i < sb.length() - 1; i++) {
                if (dp[i] > maxLen) {
                maxLen = dp[i];
                centerIndex = i;
                }
        }

        System.out.println(s.substring((centerIndex - 1 - maxLen) / 2,
                        (centerIndex - 1 + maxLen) / 2));






}       }
```

4. Output



```java
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public class Main {
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        sb.append('#');
        sb.append('@');

        int[] dp = new int[sb.length()];
        int n = sb.length();
        int C = 0, R = 0;
        for (int i = 1; i < sb.length() - 1; i++) {
            int mirror_index = 2 * C - i;
```

```
java -cp /tmp/HAEekOCpI1 Main
hackerrekcahba
hackerrekcah
```

5. Learning Outcome

string is called a palindrome string if the reverse of that string is the same as the original string. For example, radar, level, etc.

Similarly, a number that is equal to the reverse of that same number is called a palindrome number. For example, **3553**, **12321**, etc.