Mini Project

GROUP MEMBERS

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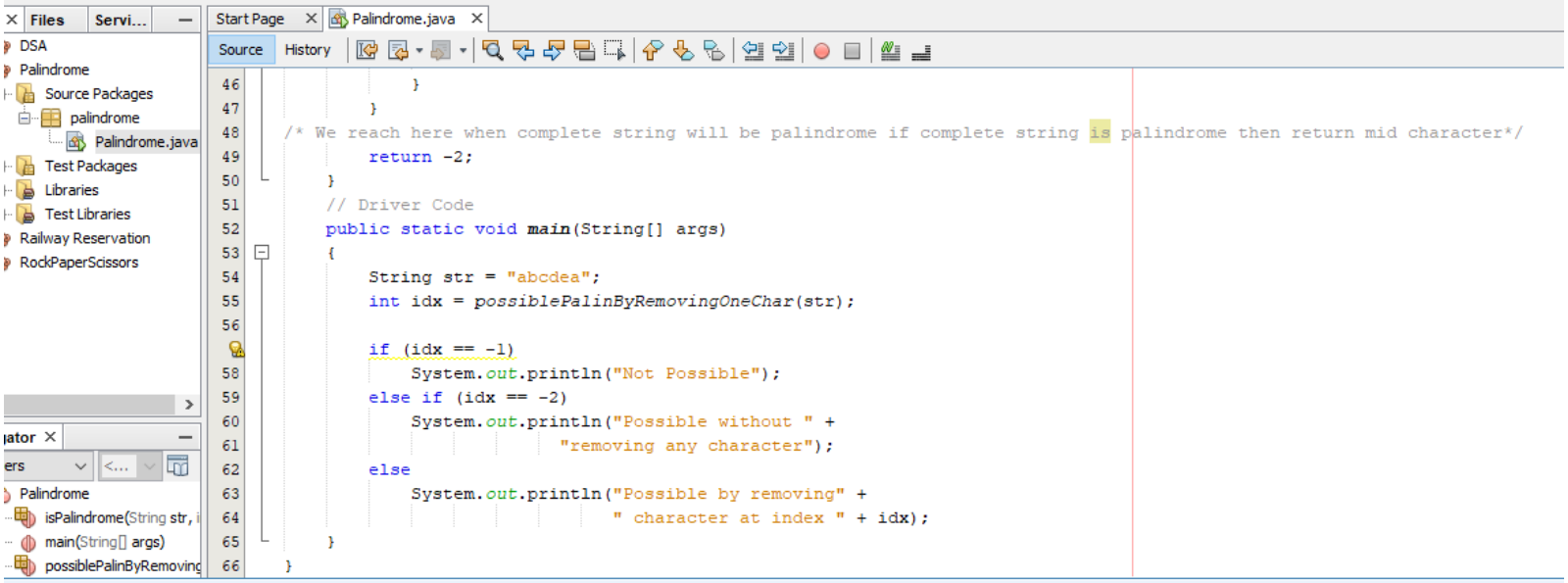
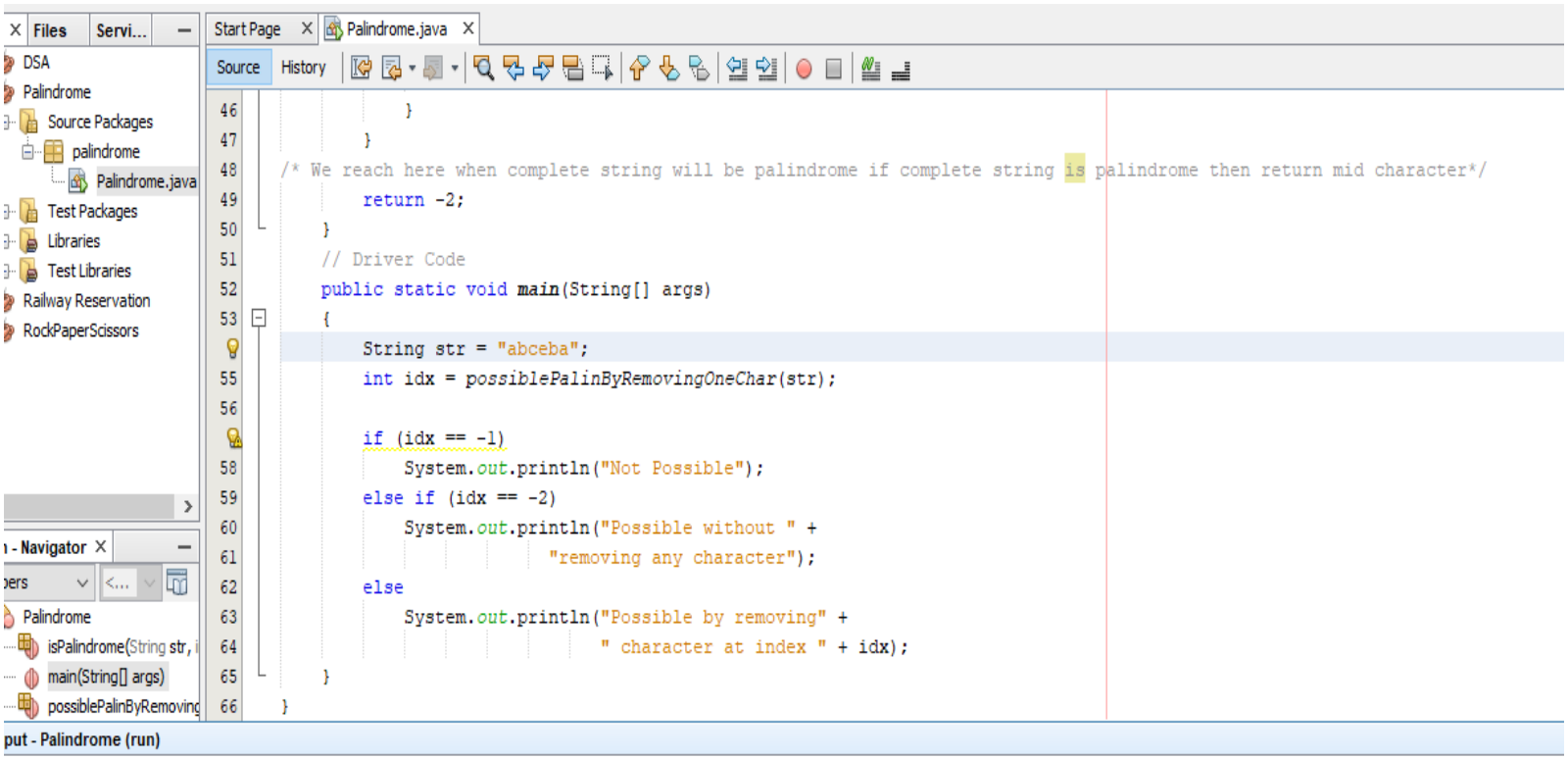
Question One: Develop and implement an algorithm which checks if a string given by a user can be converted into a palindrome by removing a defined number of characters.

1. Utility to check if string is palindrome or not
2. returns -1 if it is not possible to make string a palindrome.
3. returns -2 if string is already a palindrome. Otherwise it returns index of character whose removal can make the whole string palindrome.
4. loop untill low and high cross each other
5. If both characters are equal then move both pointer towards end
6. If removing str[low] makes the whole string palindrome. We basically is palindrome or not.check if substring str[low+1..high]
7. If removing str[high] makes the whole string palindrome. We basically check if substring str[low+1..high] is palindrome or not.
8. if complete string is palindrome then return mid character return -2;


Files
Servi...
DSA
Palindrome
Source Packages
palindrome
Palindrome.java
Test Packages
Libraries
Test Libraries
Railway Reservation
RockPaperScissors
Start Page
Palindrome.java
Source
History
46 }
47 }
48 /* We reach here when complete string will be palindrome if complete string is palindrome then return mid character*/
49 return -2;
50 }
51 // Driver Code
52 public static void main(String[] args)
53 {
54 String str = "abcdea";
55 int idx = possiblePalinByRemovingOneChar(str);
56
58 if (idx == -1)
58 System.out.println("Not Possible");
59 else if (idx == -2)
60 System.out.println("Possible without " +
61 "removing any character");
62 else
63 System.out.println("Possible by removing" +
64 " character at index " + idx);
65 }
66 }
Palindrome
isPalindrome(String str, i
main(String[] args)
possiblePalinByRemoving
put - Palindrome (run)
run:
Not Possible
BUILD SUCCESSFUL (total time: 2 seconds)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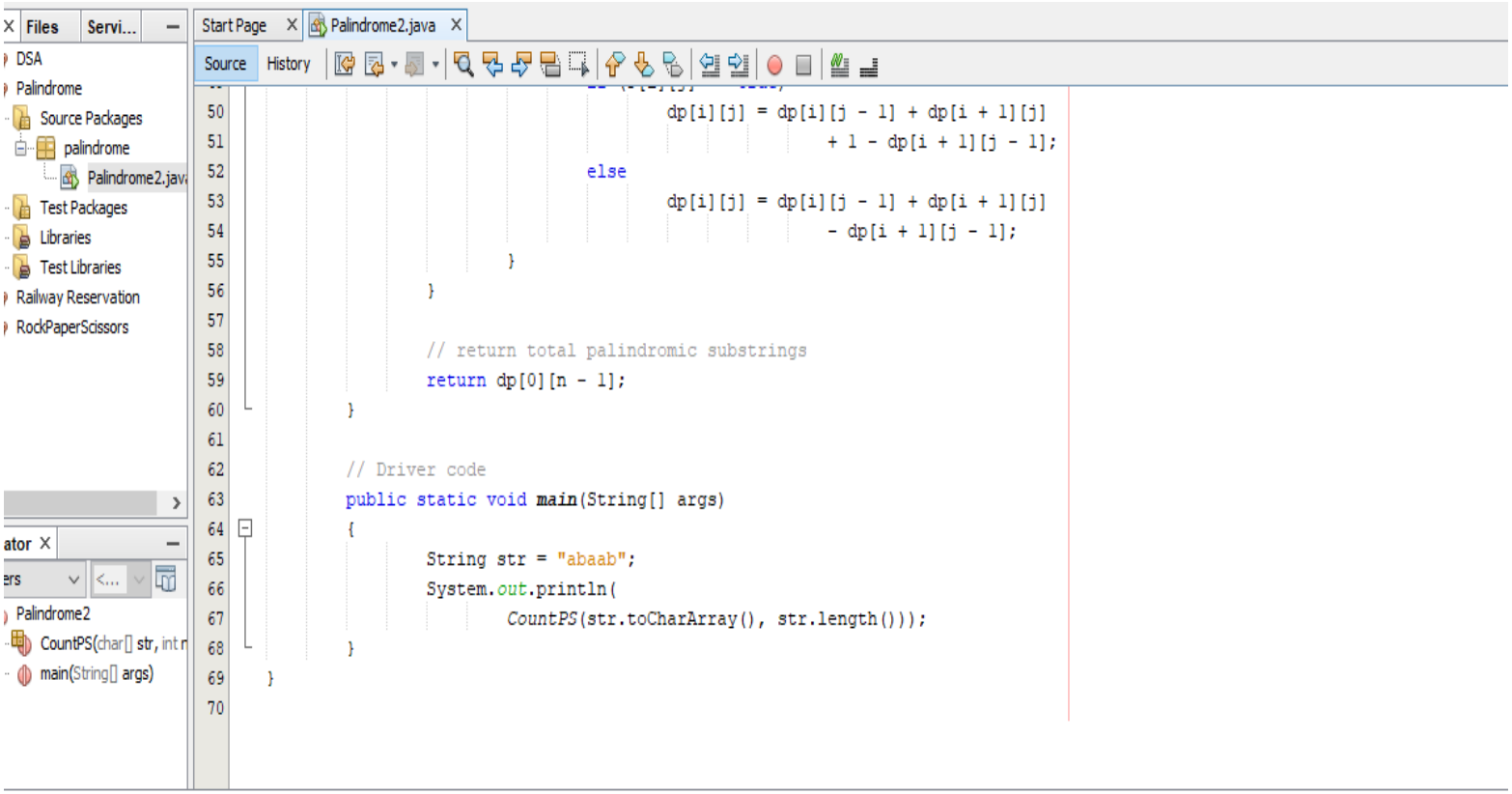
48 /* We reach here when complete string will be palindrome if complete string is palindrome then return mid character*/
49 return -2;
50 }
51 // Driver Code
52 public static void main(String[] args)
53 {
54 String str = "abceba";
55 int idx = possiblePalinByRemovingOneChar(str);
56
58 if (idx == -1)
58 System.out.println("Not Possible");
59 else if (idx == -2)
60 System.out.println("Possible without " +
61 "removing any character");
62 else
63 System.out.println("Possible by removing" +
64 " character at index " + idx);
65 }
66 }
Navigator
Palindrome
isPalindrome(String str, i
main(String[] args)
possiblePalinByRemoving
put - Palindrome (run)
run:
Possible by removing character at index 2
BUILD SUCCESSFUL (total time: 1 second)

Question Two: Develop an algorithm that aids in the creation of non-empty palindromes

i.e. an algorithm that takes a user input string and produces a pre-set number of palindromes e.g. Given a string "annabelle" your algorithm should form 3 (or more) palindromes such as 'anna', 'elle' & 'b'.

1. Initial Values : i = 0, j = n-1;
2. Given string 'str'
3. CountPS(i, j)
4. If length of string is 2 then we check both character are same or not
5. If (j == i+1) return str[i] == str[j] this condition shows that in recursion if i crosses j then it will be a invalid substring or if i==j that means only one character is remaining and we require substring of length 2 in both the conditions we need to return 0
6. Else if(i == j || i > j) return 0;
7. Else If str[i..j] is PALINDROME
8. increment count by 1 and check for rest palindromic substring (i, j-1), (i+1, j) remove common palindrome substring (i+1, j-1)
9. return countPS(i+1, j) + countPS(i, j-1) + 1 - countPS(i+1, j-1)
10. Else if NOT PALINDROME We check for rest palindromic substrings (i, j-1) and (i+1, j) remove common palindrome substring (i+1 , j-1)
11. return countPS(i+1, j) + countPS(i, j-1) - `countPS(i+1 , j-1);`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History
dp[i][j] = dp[i][j - 1] + dp[i + 1][j]
+ 1 - dp[i + 1][j - 1];
else
dp[i][j] = dp[i][j - 1] + dp[i + 1][j]
- dp[i + 1][j - 1];
}
}
// return total palindromic substrings
return dp[0][n - 1];
}
// Driver code
public static void main(String[] args)
{
String str = "abaab";
System.out.println(
CountPS(str.toCharArray(), str.length()));
}
}
Palindrome2
CountPS(char[] str, int
main(String[] args)
ut - Palindrome (run)
run:
3
BUILD SUCCESSFUL (total time: 0 seconds)