Chapter 02 Assignments (Tough difficulty)

Here are some easy Java 17 programming assignments that focus on structural programming:

1. Write a program to swap two integers without using a temporary variable, but only bitwise operators.
2. Write a program that prompts the user to enter two strings and then prints out the length of the shortest common supersequence of the strings. The length of the shortest common supersequence of two strings is the length of the shortest string that contains both strings as subsequences. Therefore:

   Length of shortest common supersequence = (Length of first string + Length of second string) - Length of longest common subsequence

   For example, the length of the shortest common supersequence of the strings "AGGTAB" and "GXTXAYB" is 9.
3. Write a program that reads in a list of integers from the user and then prints out the length of the longest increasing subsequence in the list.
4. Write a program that prompts the user to enter a string and then prints out the length of the longest palindromic subsequence of the string. The longest palindromic subsequence of a string is the longest subsequence of characters in the string that reads the same forward and backward.
5. Write a program that reads in a list of integers from the user and then prints out the maximum sum of a contiguous subarray of the list.
6. Write a program that prompts the user to enter a string and then prints out the length of the longest common subsequence of the string and its reverse. A common subsequence of two or more strings is a sequence of characters that appears in the same order in each of the strings, but not necessarily consecutively.
7. Write a program that reads in a list of integers from the user and then prints out the number of ways to partition the list into two sublists with equal sums.
8. Write a program that prompts the user to enter a string and then prints out the length of the longest substring with no repeating characters.
9. Write a program that reads in a list of integers from the user and then prints out the length of the longest wiggle subsequence in the list (i.e., a subsequence where the differences between adjacent values alternate between positive and negative).
10. Write a program that prompts the user to enter two strings and then prints out the length of the longest common substring of the two strings.