

NAMES: _____

Optional Worksheet: Work with your group members to complete this worksheet. Only include the names of your group members who work to complete this worksheet. If your group members are unavailable, you may work with up to 2 other students who are present. Be sure to include everyone's name, and coordinate who will be submitting the finished worksheet.

For this worksheet, we will focus on the problem of determining the longest **contiguous** subsequence of a given sequence A whose elements **alternate in parity**. In this context, parity refers to whether an integer is even or odd: an even integer has even parity, and an odd integer has odd parity. The sequence $[1, 4, 7, 8]$ is an example of a representation of a sequence whose elements have alternating parity (AP). Such a sequence can start with either an even or an odd integer. Based on your understanding of the described problem, find the longest contiguous subsequence of

$$A = [-5, 3, 4, 7, -11, 15, 22, 95, 16, 20]$$

whose elements alternate in parity. Also determine its length. (1 point)

LONGEST AP CONTIGUOUS SUBSEQUENCE: _____ LENGTH: _____

Develop an efficient algorithm to determine if an array, A , has the desired AP property. (2 points)

KEY IDEA:

Algorithm AlternatingParity(A):

Input: A sequence of n integers, A

Output: A Boolean: True if A has alternating parity, False if it does not

PROCESS:

Finally, develop an **efficient** algorithm to determine the LENGTH of the longest contiguous subsequence of a sequence A that has alternating parity. Note: your algorithm does NOT need to include the previously developed algorithm. (3 points)

KEY IDEA:

Algorithm: LCSAP(A):

Input: An array of n integers, A

Output: The length of the longest contiguous subsequence of A having alternating parity

PROCESS: