Solution

Approach 1: Brute Force

In the brute force solution, we consider every possible subsequence that contains consecutive elements of the given array. We then sort the subsequence and check if the sum of the output is the subsequence. If the difference between the maximum and the minimum element of the subsequence is equal to the consecutive elements in the sorted subsequence. Thus, we consider the number of elements in this subsequence to be the maximum length of the longest harmonious subsequence.

In order to obtain all the subsequences possible, we make use of the concept of bitmasks. Bitmasks are used to represent the number of ones, or bits of 1, which are contained in the subsequence generated. We generate all these binary numbers from 0th to $2^{n}-1^{th}$ and for each binary number, we generate the subsequence this corresponds to. For this number, if the ith bit is ones, we include the corresponding position in the current subsequence. For example, for the input array, the binary representation of the decimal numbers of values are considered in the current subsequence.

Input: [1, 3, 2]

Decimal Number	Binary Representation	Subsequence Formed
0	000	[]
1	001	[1]
2	010	[3]
3	011	[1, 3]
4	100	[2]
5	101	[1, 2]
6	110	[3, 2]
7	111	[1, 3, 2]

```
class Solution {
    public int findLHS(int[] nums) {
        int maxLen = 0;
        int n = nums.length;
        int[] temp, newTemp, tempCopy, newCopy;
        int[] sortedTemp, sortedNewTemp;
        int mask, newMask, i, j, k, l, p, q, r, s, t, u, v, w, x, y, z;
        for (int i = 1; i < (1 << n); i++) {
            temp = new int[Integer.bitCount(i)];
            tempCopy = new int[Integer.bitCount(i)];
            p = 0;
            for (int j = 0; j < n; j++) {
                if ((i & (1 << j)) != 0) {
                    temp[p] = nums[j];
                    tempCopy[p++] = nums[j];
                }
            }
            sortedTemp = temp.clone();
            Arrays.sort(sortedTemp);
            if (temp[0] == sortedTemp[0] && temp[temp.length - 1] == sortedTemp[temp.length - 1]) {
                mask = i;
                for (int k = 1; k < (1 << n); k++) {
                    newTemp = new int[Integer.bitCount(k)];
                    newCopy = new int[Integer.bitCount(k)];
                    q = 0;
                    for (int l = 0; l < n; l++) {
                        if ((k & (1 << l)) != 0) {
                            newTemp[q] = nums[l];
                            newCopy[q++] = nums[l];
                        }
                    }
                    sortedNewTemp = newTemp.clone();
                    Arrays.sort(sortedNewTemp);
                    if (temp[0] == sortedNewTemp[0] && temp[temp.length - 1] == sortedNewTemp[newTemp.length - 1]) {
                        newMask = k;
                        for (int m = 0; m < n; m++) {
                            if ((mask & (1 << m)) != 0 && (newMask & (1 << m)) != 0) {
                                r = 0;
                                s = 0;
                                while (r < temp.length && s < newTemp.length) {
                                    if (temp[r] == newTemp[s]) {
                                        r++;
                                        s++;
                                    } else {
                                        break;
                                    }
                                }
                                if (r == temp.length && s == newTemp.length) {
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                                                                                                                                                                                                                                        s++;
                                                                                                                                                                                                                                    } else {
                                                                                                                                                                                                                                    break;
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                                                                                                                                                                                                                                if (r == temp.length && s == newTemp.length) {
                                                                                                                                                                                                                                    t = 0;
                                                                                                                                                                                                                                    u = 0;
                                                                                                                                                                                                                                    while (t < temp.length && u < newTemp.length) {
                                                                                                                                                                                                                                        if (temp[t] == newTemp[u]) {
                                                                                                                                                                                                                                            t++;
                                                                                                                                                                                                                                            u++;
                                                                                                                                                                                                                                        } else {
                                                                                                                                                                                                                                            break;
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                                                                                                                                                                                                                                    if (t == temp.length && u == newTemp.length) {
                                                                                                                                                                                                                                        v = 0;
                                                                                                                                                                                                                                        w = 0;
                                                                                                                                                                                                                                        while (v < temp.length && w < newTemp.length) {
                                                                                                                                                                                                                                            if (temp[v] == newTemp[w]) {
                                                                                                                                                                                                                                                v++;
                                                                                                                                                                                                                                                w++;
                                                                                                                                                                                                                                            } else {
                                                                                                                                                                                                                                            break;
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                                                                                                                                                                                                                                        if (v == temp.length && w == newTemp.length) {
                                                                                                                                                                                                                                            x = 0;
                                                                                                                                                                                                                                            y = 0;
                                                                                                                                                                                                                                            while (x < temp.length && y < newTemp.length) {
                                                                                                                                                                                                                                                if (temp[x] == newTemp[y]) {
                                                                                                                                                                                                                                                    x++;
                                                                                                                                                                                                                                                    y++;
                                                                                                                                                                                                                                                } else {
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                                                                                                                                                                                                                                                l = 0;
                                                                                                                                                                                                                                                while (z < temp.length && l < newTemp.length) {
                                                                                                                                                                                                                                                    if (temp[z] == newTemp[l]) {
                                                                                                                                                                                                                                                        z++;
                                                                                                                                                                                                                                                        l++;
                                                                                                                                                                                                                                                    } else {
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                                                                                                                                                                                                                                                    q = 0;
                                                                                                                                                                                                                                                    while (p < temp.length && q < newTemp.length) {
                                                                                                                                                                                                                                                        if (temp[p] == newTemp[q]) {
                                                                                                                                                                                                                                                            p++;
                                                                                                                                                                                                                                                            q++;
                                                                                                                                                                                                                                                        } else {
                                                                                                                                                                                                                                                            break;
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                                                                                                                                                                                                                                                    if (p == temp.length && q == newTemp.length) {
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                                                                                                                                                                                                                                                        while (r < temp.length && s < newTemp.length) {
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                                                                                                                                                                                                                                                                                                                    y = 0;
                                                                                                                                                                                                                                                                                                                    while (x < temp.length && y < newTemp.length) {
                                                                                                                                                                                                                                                                                                                        if (temp[x] == newTemp[y]
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