1768. Merge Strings Alternately

You are given two strings `word1` and `word2`. Merge the strings by adding letters in alternating order, starting with `word1`. If a string is longer than the other, append the additional letters onto the end of the merged string.

Return *the merged string.*

Example 1:

```
Input: word1 = "abc", word2 = "pqr"
Output: "apbqcr"
Explanation: The merged string will be merged as so:
word1:  a   b   c
word2:    p   q   r
merged: a p b q c r
```

Example 2:

```
Input: word1 = "ab", word2 = "pqrs"
Output: "apbqrs"
Explanation: Notice that as word2 is longer, "rs" is appended
to the end.
word1:  a   b
word2:    p   q   r   s
merged: a p b q   r   s
```

Using two pointer

★ Alternatively append the character from coord1 and coord2 to res.

$$T.C \Rightarrow O(m+n)$$

$$S.C \Rightarrow O(n+n)$$

```cpp
// Two Pointer
class Solution {
public:
    string mergeAlternately(string word1, string word2) {
        int n = word1.size(), m = word2.size();
        int i = 0, j = 0;

        string res = "";
        while(i < n || j < m){
            if(i < n)
                res.push_back(word1[i++]);
            if(j < m)
                res.push_back(word2[j++]);
        }
        return res;
    }
};
```

One Pointer :

```cpp
// One Pointer
class Solution {
public:
    string mergeAlternately(string word1, string word2) {
        string res = "";
        for(int i = 0; i < word1.size() || i < word2.size(); i++){
            if(i < word1.size())
                res.push_back(word1[i]);
            if(i < word2.size())
                res.push_back(word2[i]);
        }
        return res;
    }
};
```

Java

One Pointer

```java
// One Pointer
class Solution {
    public String mergeAlternately(String w1, String w2) {
        StringBuilder res = new StringBuilder();
        for (int i = 0; i < w1.length() || i < w2.length(); ++i) {
            if (i < w1.length())
                res.append(w1.charAt(i));
            if (i < w2.length())
                res.append(w2.charAt(i));
        }
        return res.toString();
    }
}
```

Two Pointer

```java
// Two Pointer
class Solution {
    public String mergeAlternately(String w1, String w2) {
        int n = w1.length(), m = w2.length(), i = 0, j = 0;
        StringBuilder res = new StringBuilder();
        while (i < n || j < m) {
            if (i < w1.length())
                res.append(w1.charAt(i++));
            if (j < w2.length())
                res.append(w2.charAt(j++));
        }
        return res.toString();
    }
}
```