1. Longest Word

Have the function `LongestWord(sen)` take the **`sen`** parameter being passed and return the longest word in the string. If there are two or more words that are the same length, return the first word from the string with that length. Ignore punctuation and assume **`sen`** will not be empty. Words may also contain numbers, for example "Hello world123 567"

Input: "fun&!! time"
Output: time

2. Given an array arr[] of positive integers of size N. Reverse every sub-array group of size K.

Input:
N = 5, K = 3
arr[] = {1,2,3,4,5}
Output: 3 2 1 5 4
Explanation: First group consists of elements
1, 2, 3. Second group consists of 4,5.

3. Given an array **arr[]** and an integer **K** where K is smaller than size of array, the task is to find the **K^{th} smallest** element in the given array. It is given that all array elements are distinct.

Input:
N = 6
arr[] = 7 10 4 3 20 15
K = 3
Output : 7
Explanation :
3rd smallest element in the given
array is 7.

4. Given a sorted and rotated array A of N distinct elements which is rotated at some point, and given an element key. The task is to find the index of the given element key in the array A.

Input:
N = 9
A[] = {5, 6, 7, 8, 9, 10, 1, 2, 3}
key = 10
Output:
5
Explanation: 10 is found at index 5.

5. Given two arrays **X** and **Y** of positive integers, find the number of pairs such that $\mathbf{x^y > y^x}$ **(raised to power of)** where x is an element from X and y is an element from Y

Input:
M = 3, X[] = [2 1 6]
N = 2, Y[] = [1 5]
Output: 3
Explanation:
The pairs which follow $x^y > y^x$ are
as such: $2^1 > 1^2$, $2^5 > 5^2$ and $6^1 > 1^6$.

6. Given an input stream of **A** of **n** characters consisting only of lower case alphabets. The task is to find the first non repeating character, each time a character is inserted to the stream. If there is no such character then append '#' to the answer.

Input: A = "aabc"
Output: "a#bb"
Explanation: For every character first non
repeating character is as follow-
"a" - first non-repeating character is 'a'
"aa" - no non-repeating character so '#'
"aab" - first non-repeating character is 'b'
"aabc" - first non-repeating character is 'b'

7. Given a grid of size n*n filled with 0, 1, 2, 3. Check whether there is a path possible from the source to destination. You can traverse up, down, right and left.
The description of cells is as follows:

- A value of cell **1** means Source.
- A value of cell **2** means Destination.
- A value of cell **3** means Blank cell.
- A value of cell **0** means Wall.

Input: grid = {{3,0,3,0,0},{3,0,0,0,3}
,{3,3,3,3,3},{0,2,3,0,0},{3,0,0,1,3}}
Output: 0
Explanation: The grid is-
3 0 3 0 0
3 0 0 0 3
3 3 3 3 3
0 2 3 0 0
3 0 0 1 3
There is no path to reach at (3,1) i,e at
destination from (4,3) i,e source.

8. Given an expression string **x**. Examine whether the pairs and the orders of “{“,”}”,”(“,”)”,”[“,”]” are correct in exp.
For example, the function should return 'true' for exp = “[()]{}{[()()]()}” and 'false' for exp = “[(])”.

Input:
{([])}
Output:
true
Explanation:

{ ([ ]) }. Same colored brackets can form balaced pairs, with 0 number of unbalanced bracket.

8. Given a string, find the minimum number of characters to be inserted to convert it to palindrome.
For Example:
ab: Number of insertions required is 1. **b**ab or aba
aa: Number of insertions required is 0. aa
abcd: Number of insertions required is 3. **dcb**abcd

Input: str = "abcd"
Output: 3
Explanation: Inserted character marked with bold characters in **dcb**abcd

9. Have the function `TreeConstructor(strArr)` take the array of strings stored in **`strArr`**, which will contain pairs of integers in the following format: **(i1,i2)**, where **i1** represents a child node in a tree and the second integer **i2** signifies that it is the parent of **i1**. For example: if **`strArr`** is ["(1,2)", "(2,4)", "(7,2)"], then this forms the following tree:

which you can see forms a proper binary tree. Your program should, in this case, return the string **true** because a valid binary tree can be formed. If a proper binary tree cannot be formed with the integer pairs, then return the string **false**. All of the integers within the tree will be unique, which means there can only be one node in the tree with the given integer value.

Input: ["(1,2)", "(2,4)", "(5,7)", "(7,2)", "(9,5)"]
Output: true

10. Bracket Matcher

Have the function `BracketMatcher(str)` take the **`str`** parameter being passed and return **1** if the brackets are correctly matched and each one is accounted for. Otherwise return **0**. For example: if **`str`** is "(hello (world))", then the output should be **1**, but if **`str`** is "((hello (world))" the the output should be **0** because the brackets do not correctly match up. Only "(" and ")" will be used as brackets. If **`str`** contains no brackets return **1**.

Input: "(coder)(byte))"

Output: 0