1. Python function that takes a list of words and return the longest word and the length of the longest one.

```python
def longest_word_length (string):
    length = 0
    word = ''
    for word in string.split():
        if( len(word) > length):
            length = len(word)
            w = word
    return (length, w)

string = input("Enter the list of words : ")
l,w = longest_word_length (string)
print ("longest word : ", w , "length is : ", l)
```

2. Python function to remove the n<sup>th</sup> index character from a nonempty string.

```python
def remove (string, n):
    first = string [:n]
    last = string [n+1:]
    return first + last

string = input("Enter the string: ")
n = int(input("Enter the index of the character to remove : "))
print("New string: ")
print (remove (string,n))
```

3. Python function to get the last part of a string before a specified character.

```python
def function (s, c):
    res = " "
    for i in s:
        if (i != c):
            res += i
    return res
```

4. Python function to sort a string lexicographically.

```python
def sort (s):
    s = sorted (s, key = str.lower)
    return s
print (sort("haha3ha bc"))
```

5. Python function to remove spaces from a given string.

```python
def remove_spaces (s):
    s = s.replace (" ","")
    return s
print (remove_spaces ("hello world"))
```