Encode - Decode (Optimal)

```
class Solution:
    def encode(self, strs: List[str]) -> str:
        result = ""
        for s in strs:
            result += str(len(s)) + '#' + s
        return result

print(Solution().encode(strs = ["george", "code"]))
```

Step 1:

self -> solution instance

strs -> ["george", "code"]

result -> "" - empty string

Step 2:
```
for s in strs:
    result += str(len(s)) + "#" + s
```

1st iteration:

s -> "george"

result -> "" + "6" + "#" + "george" => "6#george"

2nd iteration:

s -> "code"

result -> "4" + "#" + "code" => "6#george4#code" ✓

```
class Solution:
    def decode(self, s: str) -> List[str]:
        result = []
        i = 0

        while i < len(s):
            j = i
            while s[j] != '#':
                j += 1
            length = int(s[i:j])
            i = j + 1
            j = i + length
            result.append(s[i:j])
            i = j

        return result

print(Solution().decode("6#george4#code"))
```

Step 1:

self → solution instance

s → "6#georg 4#code"

i → 0

Step 2: { while i < len(s):
j = i

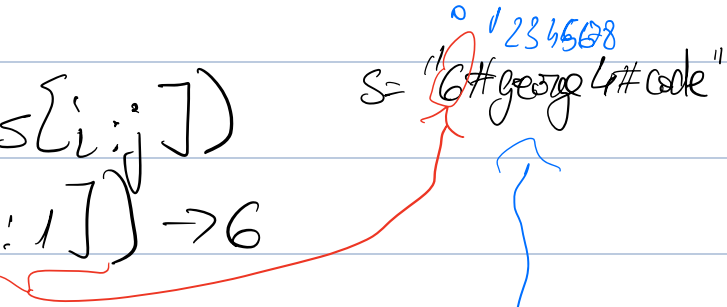
j → 0

Step 3: { while s[j] != "#":
j += 1

j → 1 , next iteration it will skip

Step 4: length = int(s[i:j])

length → int(s[0:1]) → 6



Step 5: { i = j + 1
j = i + length
result.append(s[i:j])
i = j

i → 1+1 → 2

j -> 2+6 -> 8

result -> s[2:8] -> ["george"]

i -> 8

then we iterate again from the first while loop until j becomes 9 <=> "#", after that the variable "length becomes 4 <=> (s[8:9]). Next, i -> 10 and j -> 14 and the result will be ["george", "code"].