

Write the Python Program for Crypt-Arithmetic Problem.

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from itertools import permutations
def solve_cryptarithmic(puzzle: str):
    left, right = puzzle.replace(" ", "").split("=")
    words = left.split("+")
    letters = set("".join(words) + right)
    if len(letters) > 10:
        return None
    letters = list(letters)
    for perm in permutations(range(10), len(letters)):
        mapping = dict(zip(letters, perm))
        if any(mapping[word[0]] == 0 for word in words + [right]):
            continue
        left_sum = sum(int("".join(str(mapping[c]) for c in word)) for word in words)
        right_val = int("".join(str(mapping[c]) for c in right))
        if left_sum == right_val:
            return mapping
    return None

puzzle = "SEND + MORE = MONEY"
mapping = solve_cryptarithmic(puzzle)
if mapping:
    print("Solution found:", mapping)
    translated = puzzle
    for letter, digit in mapping.items():
        translated = translated.replace(letter, str(digit))
    print("Puzzle:", translated)
else:
    print("No solution found.")

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Python 3.13.3 (tags/v3.13.3:6280bb5, Apr 8 2025, 14:47:33) [MSC v.1943
64 bit (AMD64)] on win32
Enter "help" below or click "Help" above for more information.
>>>
= RESTART: C:\Users\ROJAYADAV\AppData\Local\Programs\Python\Python313\cr
iptarithmic.py
Solution found: {'Y': 2, 'N': 6, 'D': 7, 'M': 1, 'S': 9, 'R': 8, 'O': 0,
'E': 5}
Puzzle: 9567 + 1085 = 10652
>>>
```