

Write the python program for Cript-Arithmetic problem

AIM

To implement a Python program that solves the **Cryptarithmic puzzle** $\text{SEND} + \text{MORE} = \text{MONEY}$ by assigning unique digits to letters such that the arithmetic sum is valid.

ALGORITHM

1. Identify all letters in the puzzle: S, E, N, D, M, O, R, Y.
2. Generate all **permutations of digits 0–9** for these 8 letters.
3. For each permutation:
 - a. Map letters to digits.
 - b. Skip permutations where S or M is 0 (leading digits cannot be 0).
 - c. Convert SEND, MORE, MONEY to numbers using the mapping.
 - d. Check if $\text{SEND} + \text{MORE} = \text{MONEY}$.
4. If the equation is satisfied, print the solution and terminate.

```
import itertools

def solve():
    letters = "SENDMORY"
    digits = "0123456789"
    for perm in itertools.permutations(digits, len(letters)):
        s = dict(zip(letters, perm))
        if s['S']=='0' or s['M']=='0': continue
        send = int(s['S']+s['E']+s['N']+s['D'])
        more = int(s['M']+s['O']+s['R']+s['E'])
        money = int(s['M']+s['O']+s['N']+s['E']+s['Y'])
        if send + more == money:
            print(send, "+", more, "=", money)
            return

solve()
|
```

```
=====
9567 + 1085 = 10652
```

```
>>> |
```

RESULT

The program successfully solved the puzzle and found the digit assignment: