**Practical 3**

**Aim:** Write a program to solve a given cryptarithmetic problem.

**Code:**

import itertools

def solve\_cryptarithmetic(equation):

parts = equation.split("=")

left\_side = parts[0].strip()

right\_side = parts[1].strip()

left\_terms = left\_side.replace(" ", "").replace("-", "+-").split("+")

unique\_chars = "".join(dict.fromkeys("".join(left\_terms + [right\_side])))

first\_letters = set(term[0] for term in left\_terms + [right\_side])

for perm in itertools.permutations("0123456789", len(unique\_chars)):

mapping = dict(zip(unique\_chars, perm))

if any(mapping[ch] == '0' for ch in first\_letters):

continue

def calculate(term):

num\_str = "".join(mapping[char] for char in term)

return int(num\_str)

left\_sum = sum(calculate(term) for term in left\_terms)

right\_value = calculate(right\_side)

if left\_sum == right\_value:

return mapping

return None

equation = "SEND + MORE == MONEY"

solution = solve\_cryptarithmetic(equation)

if solution:

print("Solution:")

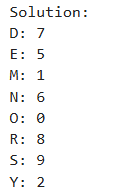
for char, digit in sorted(solution.items()):

print(f"{char}: {digit}")

else:

print("No solution found.")

**Output:**

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