AI LAB 3: Contraint satisfaction problem.

```
import time
import itertools

def solution1():
    letters = ('s', 'e', 'n', 'd', 'm', 'o', 'r', 'y')
    digits = range(10)
    for perm in itertools.permutations(digits, len(letters)):
        sol = dict(zip(letters, perm))
        if sol['s'] == 0 or sol['m'] == 0:
            continue
        send = 1000 * sol['s'] + 100 * sol['e'] + 10 * sol['n'] + sol['d']
        more = 1000 * sol['m'] + 100 * sol['o'] + 10 * sol['r'] + sol['e']
        money = 10000 * sol['m'] + 1000 * sol['o'] + 100 * sol['n'] + 10 * sol['e'] + sol['y']
        if send + more == money:
            print("SEND + MORE = MONEY")
            return send, more, money

def solution2():
    letters = ('c', 'r', 'o', 's', 'a', 'd', 'n', 'g', 'e')
    digits = range(10)
    for perm in itertools.permutations(digits, len(letters)):
        sol = dict(zip(letters, perm))
        if sol['c'] == 0 or sol['r'] == 0:
            continue
        cross = 10000 * sol['c'] + 1000 * sol['r'] + 100 * sol['o'] + 10 * sol['s'] + sol['s']
        roads = 10000 * sol['r'] + 1000 * sol['o'] + 100 * sol['a'] + 10 * sol['d'] + sol['s']
```

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    danger = 100000 * sol['d'] + 10000 * sol['a'] + 1000 * sol['n'] + 100 * sol['g'] + 10 * sol['e'] +
sol['r']
    if cross + roads == danger:
        print("CROSS + ROADS = DANGER")
        return cross, roads, danger


print(solution1())
print(solution2())
```

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OUTPUT:

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C:\Users\admijn\Downloads>python csp.py
SEND + MORE = MONEY
(9567, 1085, 10652)
CROSS + ROADS = DANGER
(96233, 62513, 158746)
```