LAB 3 – IMPLEMENTATION OD CSP

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AI LAB
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ALGORITHM:
Step 1: Start
Step 2: Accept a expression 'SEND+MORE=MONEY'.
Step 3: Extract the words SEND, MORE and MONEY.
Step 4: Permute for different combination of values for S,E,N,D,M,O,R,Y.
Step5: And check if the sum of left value i.e, SEND+MORE is equal to right sum i.e, MONEY
or not. If the sum value matches print the mapping.
Step 6: Continue for other permutations as well.
Step 7: Stop.
CODE:
import itertools
def get_value(word, substitution):
s = 0
factor = 1
for letter in reversed(word):
s += factor * substitution[letter]
factor *= 10
return s
def solve2(equation):
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left, right = equation.lower().replace(' ', ").split('=')

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left = left.split('+')

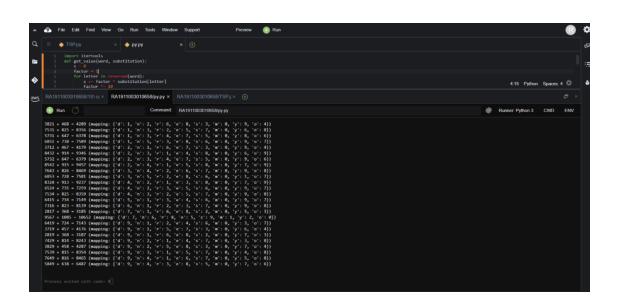
letters = set(right)
for word in left:
for letter in word:
letters.add(letter)
letters = list(letters)

digits = range(10)
for perm in itertools.permutations(digits, len(letters)):
sol = dict(zip(letters, perm))

if sum(get_value(word, sol) for word in left) == get_value(right, sol):
print(' + '.join(str(get_value(word, sol))) for word in left) + " = {} (mapping:
{})".format(get_value(right, sol), sol))

if __name__ == '__main__':
solve2('SEND + MORE = MONEY')
```

OUTPUT:



 $\label{eq:RESULT: Hence, the implementation of CSP is done successfully. \\$

	Shubham Shanna Lab-3 PAGE NO PAGE NO
	Ain: - To amplement CSP, je Cryptarithmetic problem SEND + MORE = MONIEY.
	Problem Formulation:
	løven an expression where two words add to
	give a third word, assign some dinque digit (0-9) ito each blitter such That the addition
	a the trin i and i mock. Is
	Dieplay the possible mappings for the same.
	Initial Hate:
•	S = ?, $E = ?$, $N = ?$, N
	Goal Stati-
	In the goal state the number assigned to
	eg! Should satisfy the Run.
•	DZ7, E=5, Y=2, N=6, R28, O=0, S=9, M21
6	$C_1 = 1$, $C_2 = 1$, $C_3 = 0$

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