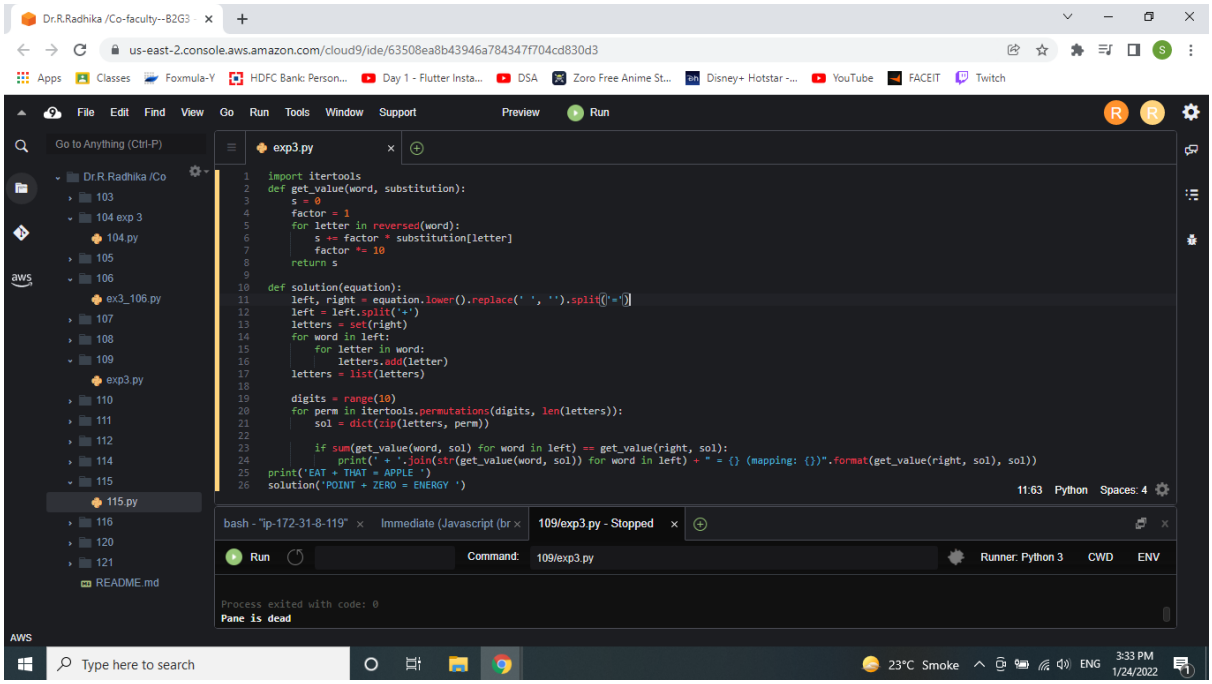
Name: Richard Nadar
Reg no: RA1911030010109
Date: 24-1-22

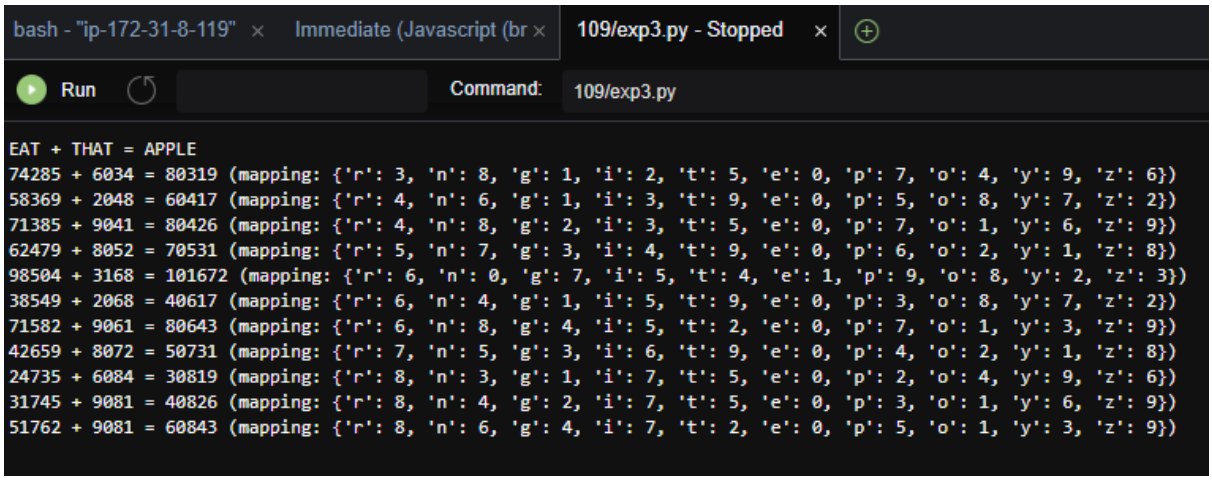
EXP 3: Constraint Satisfaction Problem

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 solution(equation):
  left, right = equation.lower().replace(' ', '').split('=') 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))

print('EAT + THAT = APPLE ')
solution('POINT + ZERO = ENERGY ')
```

OUTPUT:


Dr.R.Radhika /Co-faculty--B2G3
us-east-2.console.aws.amazon.com/cloud9/ide/63508ea8b43946a784347f704cd830d3
File Edit Find View Go Run Tools Window Support
Preview
Run
Go to Anything (Ctrl-P)
exp3.py
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 solution(equation):
left, right = equation.lower().replace(' ', '').split('=')
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))
print('EAT + THAT = APPLE ')
solution('POINT + ZERO = ENERGY ')
11:63 Python Spaces: 4
bash - "ip-172-31-8-119"
Immediate (Javascript (br
109/exp3.py - Stopped
Run
Command: 109/exp3.py
Runner: Python 3 CWD ENV
Process exited with code: 0
Pane is dead
Type here to search
23°C Smoke
ENG
3:33 PM
1/24/2022


bash - "ip-172-31-8-119"
Immediate (Javascript (br
109/exp3.py - Stopped
Run
Command: 109/exp3.py
EAT + THAT = APPLE
74285 + 6034 = 80319 (mapping: {'r': 3, 'n': 8, 'g': 1, 'i': 2, 't': 5, 'e': 0, 'p': 7, 'o': 4, 'y': 9, 'z': 6})
58369 + 2048 = 60417 (mapping: {'r': 4, 'n': 6, 'g': 1, 'i': 3, 't': 9, 'e': 0, 'p': 5, 'o': 8, 'y': 7, 'z': 2})
71385 + 9041 = 80426 (mapping: {'r': 4, 'n': 8, 'g': 2, 'i': 3, 't': 5, 'e': 0, 'p': 7, 'o': 1, 'y': 6, 'z': 9})
62479 + 8052 = 70531 (mapping: {'r': 5, 'n': 7, 'g': 3, 'i': 4, 't': 9, 'e': 0, 'p': 6, 'o': 2, 'y': 1, 'z': 8})
98504 + 3168 = 101672 (mapping: {'r': 6, 'n': 0, 'g': 7, 'i': 5, 't': 4, 'e': 1, 'p': 9, 'o': 8, 'y': 2, 'z': 3})
38549 + 2068 = 40617 (mapping: {'r': 6, 'n': 4, 'g': 1, 'i': 5, 't': 9, 'e': 0, 'p': 3, 'o': 8, 'y': 7, 'z': 2})
71582 + 9061 = 80643 (mapping: {'r': 6, 'n': 8, 'g': 4, 'i': 5, 't': 2, 'e': 0, 'p': 7, 'o': 1, 'y': 3, 'z': 9})
42659 + 8072 = 50731 (mapping: {'r': 7, 'n': 5, 'g': 3, 'i': 6, 't': 9, 'e': 0, 'p': 4, 'o': 2, 'y': 1, 'z': 8})
24735 + 6084 = 30819 (mapping: {'r': 8, 'n': 3, 'g': 1, 'i': 7, 't': 5, 'e': 0, 'p': 2, 'o': 4, 'y': 9, 'z': 6})
31745 + 9081 = 40826 (mapping: {'r': 8, 'n': 4, 'g': 2, 'i': 7, 't': 5, 'e': 0, 'p': 3, 'o': 1, 'y': 6, 'z': 9})
51762 + 9081 = 60843 (mapping: {'r': 8, 'n': 6, 'g': 4, 'i': 7, 't': 2, 'e': 0, 'p': 5, 'o': 1, 'y': 3, 'z': 9})