

Roll No. : CSB17017

Sessional II : CO401 : Artificial Intelligence

Output of the Test Run

The program outputs the input strings at the beginning, the distinct variables (extracted from the input strings) and the domain for each variable :

```
[Running] cd "c:\Users\BijitAcharyya\Desktop\AI\" && g++ CSB17017_Q10.cpp -o CSB17017_Q10 && "c:\Users\BijitAcharyya\Desktop\AI\CSB17017_Q10

PART 1 : Modeling into a CSP
string 1 : SEND
string 2 : MORE
string 3 : MONEY

The (distinct) variables: SENDMORY

constraint :
1.SEND+MORE=MONEY
2. All the variables must have distinct values.

The domain :
0 1 2 3 4 5 6 7 8 9

PART 2 : Searching for the solution
NODE: 1 [ D=3 E=1 M=4 N=2 O=5 R=6 S=0 Y=7]
NODE: 2 [ D=3 E=1 M=4 N=2 O=5 R=6 S=0 Y=8]
NODE: 3 [ D=3 E=1 M=4 N=2 O=5 R=6 S=0 Y=9]
NODE: 4 [ D=3 E=1 M=4 N=2 O=5 R=7 S=0 Y=6]
NODE: 5 [ D=3 E=1 M=4 N=2 O=5 R=7 S=0 Y=8]
NODE: 6 [ D=3 E=1 M=4 N=2 O=5 R=7 S=0 Y=9]
NODE: 7 [ D=3 E=1 M=4 N=2 O=5 R=8 S=0 Y=6]
```

In part 2, the program starts searching for the solution. It provides output in the following format:

NODE : <node_number> [values of different variables]

Here the node_number represents the number of nodes visited. When it reaches a solution, the program outputs in the following format:

```
NODE: 508323 [ D=7 E=8 M=0 N=1 O=3 R=4 S=2 Y=9]
NODE: 508324 [ D=7 E=8 M=0 N=1 O=3 R=5 S=2 Y=4]
NODE: 508325 [ D=7 E=8 M=0 N=1 O=3 R=5 S=2 Y=6]
NODE: 508326 [ D=7 E=8 M=0 N=1 O=3 R=5 S=2 Y=9]
NODE: 508327 [ D=7 E=8 M=0 N=1 O=3 R=6 S=2 Y=4]
NODE: 508328 [ D=7 E=8 M=0 N=1 O=3 R=6 S=2 Y=5] SEND=2817 MORE=368 TOTAL=3185 MONEY=3185----SOLUTION FOUND
[Done] exited with code=0 in 78.368 seconds
```

Here the last line represents the goal state/solution state. It also displays the numeric representation of "SEND","MORE" and "MONEY".
TOTAL = SEND + MORE

In case, the solution state is not found, the following message is displayed:

```
NODE: 5039 [ A=9 B=8 C=7 D=5]
NODE: 5040 [ A=9 B=8 C=7 D=6]
SOLUTION NOT FOUND!!!

[Done] exited with code=0 in 1.509 seconds
```