Job No: 07

Job Name: **Write a program for River Crossing Puzzle.**

Theory: River-crossing puzzles involve moving a set of pieces (objects, animals, or people) from one bank of a river to the opposite bank, using a boat.Rules typically include limits on the number of pieces in the boat, restrictions on certain combinations, and the goal of safely transferring all pieces to the other side.

Code:

```
left_side = ["M", "L", "G", "C"]
right_side = []

print("Before Process")
print("Elements in the Left Side Bank:", left_side)
print("Elements in the Right Side Bank:", right_side)

while True:
    print(left_side[1], left_side[2], left_side[3], "Select any one")
    item = input("Enter item:").upper()
if left_side[1] == item and left_side[2] == "G" and left_side[3] == "C":
        print("Goat will eat cabbage.")
if left_side[2] == item and "C" in left_side and "L" in left_side:
        right_side.append(item)
        left_side[2] = " "
        print(left_side,right_side)
if "G" in right_side and "L" in left_side and left_side[3] == item:
        print("goat will be returned to left_side")
        left_side[2] = right_side[0]
        right_side[0] = item
        left_side[3] = " "
        print(left_side,right_side)
if "G" in right_side and "C" in left_side and left_side[1] == item:
        print("goat will be returned to left_side")
        left_side[2] = right_side[0]
        right_side[0] = item
        left_side[1] = " "
        print(left_side,right_side)
if "C" in right_side and "L" in left_side and left_side[2] == item:
        print("cabbage will be returned to left_side")
        left_side[3] = right_side[0]
        right_side[0] = item
        left_side[2] = " "
        print(left_side,right_side)
if "C" in right_side and "G" in left_side and left_side[1] == item:
```

```
        right_side.append(item)
        left_side[1] = " "
        print(left_side,right_side)
if "L" in right_side and "G" in left_side and left_side[3] == item:
        right_side.append(item)
        left_side[3] = " "
        print(left_side,right_side)
if "L" in right_side and "C" in left_side and left_side[2] == item:
        print("Lion will be returned to left_side")
        left_side[1] = right_side[0]
        right_side[0] = left_side[2]
        left_side[2] = " "
        print(left_side,right_side)
if left_side[2] == item and left_side[3] != "C" and left_side[1] != "L":
        right_side.append(left_side[2])
        right_side.append("M")
        left_side[2] = " "
        left_side = []
        print("Goal is reached")
        break
if left_side[3] == item:
        print("Lion eats goat")
        print("After Process")
print("Elements in the Left Side Bank:", left_side)
print("Elements in the Right Side Bank:", right_side)
```

Input/Output:

```
Before Process
Elements in the Left Side Bank: ['M', 'L', 'G', 'C']
Elements in the Right Side Bank: []
L G C Select any one
Enter item:g
['M', 'L', ' ', 'C'] ['G']
L   C Select any one
Enter item:c
goat will be returned to left_side
['M', 'L', 'G', ' '] ['C']
L G   Select any one
Enter item:l
['M', ' ', 'G', ' '] ['C', 'L']
  G   Select any one
Enter item:g
Goal is reached
After Process
Elements in the Left Side Bank: []
Elements in the Right Side Bank: ['C', 'L', 'G', 'M']
```