MP-2 Tutorial - 6

Problem 2

In [1]:
```
!pip install python-constraint
```

```
Requirement already satisfied: python-constraint in /srv/conda/envs/notebook/lib/python3.7/site-pac
kages (1.4.0)
```

In [2]:
```
import constraint
```

In [3]:
```
problem = constraint.Problem()

# (coin_value*num_of_coints) <= 60

problem.addVariable("1 rupee", range(61))
problem.addVariable("2 rupee", range(31))
problem.addVariable("5 rupee", range(13))
problem.addVariable("10 rupee", range(7))
problem.addVariable("20 rupee", range(4))

problem.addConstraint(
    constraint.ExactSumConstraint(60,[1,2,5,10,20]),["1 rupee", "2 rupee", "5 rupee","10 rupee", "2
0 rupee"])
```

In [4]:
```
def custom_constraint(a, b, c, d, e):
    if a + 2*b + 5*c + 10*d + 20*e == 60:
        return True
    problem.addConstraint(o, ["1 rupee", "2 rupee", "5 rupee","10 rupee", "20 rupee"])
```

In [5]:
```
def print_solutions(solutions):
    for s in solutions:
        print("---")
        print("""
        1 rupee: {0:d}
        2 rupee: {1:d}
        5 rupee: {2:d}
        10 rupee: {3:d}
        20 rupee: {4:d}""".format(s["1 rupee"], s["2 rupee"], s["5 rupee"], s["10 rupee"], s["20 ru
pee"]))
        print("Total:", s["1 rupee"] + s["2 rupee"]*2 + s["5 rupee"]*5 + s["10 rupee"]*10 + s["20 r
upee"]*20)
        print("---")
```

In [ ]:
```
solutions = problem.getSolutions()
print_solutions(solutions)
print("Total number of ways: {}".format(len(solutions)))
```