

```
1 import random
2
3 class Variable:
4     def __init__(self,value):
5         self.value = value
6     def __eq__(self, other):
7         return self.value == other.value
8
9 class Constant:
10     def __init__(self,value):
11         self.value = value
12     def __eq__(self, other):
13         return self.value == other.value
14
15 class Rel:
16     def __init__(self,name,args):
17         #This is a list
18         self.name = name
19         self.value = str(self.name)+str([i.value for i in args])
20         self.args = args
21
22 def Unify(L1,L2,testset):
23     '''
24     L1 and L2 are Rel types, variables or constants
25     '''
26     #If both are variable or constants
27     if(isinstance(L1,Variable) or isinstance(L2,Variable) or isinstance(L1,Constant)
28 or isinstance(L2,Constant)):
29         if L1 == L2:
30             return None
31         elif isinstance(L1,Variable):
32             if isinstance(L2,Variable):
33                 print("Both mismatching variables")
34                 return False
35             else:
36                 if L1.value not in testset.values():
37                     return [L2,L1]
38                 else:
39                     print("Ambigious Variable")
40                     return False
41         elif isinstance(L2,Variable):
42             if isinstance(L1,Variable):
43                 print("Both mismatching variables")
44                 return False
45             else:
46                 if L2.value not in testset.values():
47                     return [L1,L2]
48                 else:
49                     print("Ambigious Variable")
50                     return False
51         else:
52             print("Mismatch")
53             return False
54     elif L1.name != L2.name:
55         print("Relation Mismatch")
56         return False
57     #Ensuring the functions have the same number of arguments
58     elif len(L1.args) != len(L2.args):
59         print("length does not match")
```

```
60         return False
61
62     SUBSET = {}
63     for i in range(len(L1.args)):
64         S = Unify(L1.args[i], L2.args[i], SUBSET)
65         if S==False:
66             return False
67         if S != None:
68             SUBSET[S[0].value] = S[1].value
69
70     return SUBSET
71
72 if __name__ == "__main__":
73     print(Unify(Rel("Knows",
74 [Constant("Raj"), Variable("X")]), Rel("Knows",
75 [Variable("Y"), Rel("Sister", [Variable("Y")])]), {}))
76     print()
77     print(Unify(Rel("Knows",
78 [Constant("Raj"), Variable("X")]), Rel("Knows",
79 [Variable("Y"), Constant("Seeta")]), {}))
80     print()
81     print(Unify(Rel("Knows",
82 [Constant("Raj"), Variable("X")]), Rel("Knows",
83 [Variable("X"), Constant("Seeta")]), {}))
```