

Artificial Intelligence (18CSC305J)

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Ex- 8 : Team Tesla 2.0

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Experiment 8 - Implementation of unification for real world problems.

Problem Statement:

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To implement unification for real world problems and then verify it by doing manual calculation.

Unification:

Step 1: Initialize the substitution set to be empty.

Step 2: Recursively unify atomic sentences:

a. Check for Identical expression matches.

b. If one expression is a variable v_i , and the other is a term to which does not contain variable v_i , then:

- Substitute t_i / v_i in the existing substitutions
 - Add t_i / v_i to the substitution setlist.
 - If both the expressions are functions, then the function name must be similar, and the number of arguments must be the same in both the expressions.
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Code:

```
▶ from unification import *
@unifiable
class Account(object):
    def __init__(self, id, name, balance):
        self.id = id
        self.name = name
        self.balance = balance

data = [Account(1, 'Alice', 100),
        Account(2, 'Bob', 0),
        Account(2, 'Charlie', 0),
        Account(2, 'Denis', 400),
        Account(2, 'Edith', 500)]

id, name, balance = var('id'), var('name'), var('balance')
[unify(Account(id, name, balance), acct) for acct in data]

[?] [{~balance: 100, ~id: 1, ~name: 'Alice'},
     {~balance: 0, ~id: 2, ~name: 'Bob'},
     {~balance: 0, ~id: 2, ~name: 'Charlie'},
     {~balance: 400, ~id: 2, ~name: 'Denis'},
     {~balance: 500, ~id: 2, ~name: 'Edith'}]

[4] [unify(Account(id, name, 0), acct) for acct in data]

[False, {~id: 2, ~name: 'Bob'}, {~id: 2, ~name: 'Charlie'}, False, False]
```

Real World Solution:

- Used in DBMS
- Banking

Result: Unification is successfully implemented.
