

## KnowLedge representation (predicate Logic)

### Example 1

```
class PredicateLogic:
    def __init__(self):
        # Store facts as sets of tuples
        self.facts = {
            'likes': set(),
            'friend': set(),
            'student': set(),
            'teacher': set()
        }

    def add_fact(self, predicate, *args):
        """Add a fact to the knowledge base"""
        self.facts[predicate].add(args)

    def get_all(self, predicate):
        """Get all facts for a predicate"""
        return self.facts[predicate]

# Create knowledge base
kb = PredicateLogic()

# Add facts about likes foods
kb.add_fact('likes', 'Ali', 'Pasta')
kb.add_fact('likes', 'Fatma', 'pizza')
kb.add_fact('likes', 'Ali', 'pizza')
kb.add_fact('likes', 'Hayder', 'icecream')
kb.add_fact('likes', 'Teba', 'Pasta')

# Add facts about friendships
kb.add_fact('friend', 'Ali', 'Hayder')
kb.add_fact('friend', 'Fatma', 'Teba')
kb.add_fact('friend', 'Hayder', 'Teba')

# Add facts about students
kb.add_fact('student', 'Ali')
kb.add_fact('student', 'Hayder')
kb.add_fact('student', 'Fatma')

# Add facts about teachers
kb.add_fact('teacher', 'dr_Mohammed')

print("\nAll 'likes' ")
for person1, food in kb.get_all('likes'):
    print(f" likes({person1}, {food})")

print("\nAll 'friend' relationships:")
for person1, person2 in kb.get_all('friend'):
    print(f" friend({person1}, {person2})")
print("\nAll students:")
```

```
for student in kb.get_all('student'):
    print(f" student({student[0]})")
# Find everyone George likes
print("\nWho does Ali like?")
Ali_likes = [food for person1, food in kb.get_all('likes') if person1 ==
'Ali']
print(f" Ali likes: {Ali_likes}")

# Find everyone who likes pizza
print("\nWho likes pizza?")
pizza_lovers = [person for person, thing in kb.get_all('likes') if thing ==
'pizza']
print(f" Pizza lovers: {pizza_lovers}")
```