AI-LAB -2

IBM18CS122

VARAD VITHAL KJ

```
import re
def cnf(fol):
    statement = fol.replace("<=>", "_")
    while '_' in statement:
        i = statement.index('_')
        new_statement = '[' + statement[:i] + '=>' + statement[i+1:] + ']' + '[' + statement[i+1:] + '=>' + statement[:i] + ']'
    statement = statement.replace("=>", "-")
    expr = '\[([^\]]+)\]'
    statements = re.findall(expr, statement)
    for i, s in enumerate(statements):
        if '[' in s and ']' not in s:
            statements[i] += ']'
```

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for s in statements":

statement = statmt. replace(s, conf(s))

while '_' in statement:

p = statement. index('_')

br = statement. index['['] if '[' in statement else 0

new_statement = '~' + statement[br:p] + '[' + statement[i+1:]

statement = statmt[:br] + new_statmt if br > 0 else new_statement.

while '~∀' in statement:

i = statement. index('~∀')

statement = list(statement)

statement[i], statement[i+1], statement[i+2] = '∃',

~~statement~~ E ' '

statement = ''. join(statement)

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while '~∃' in statement:

```
i = statement.index('~∃')
s = list(statement)
s[i], s[i+1], s[i+2] = '∀', s[i+2], '~'
statement = ''.join(s)
statement = statement.replace('~[∀', '[~∀')
statement = statement.replace('~[∃', '[∃~')
expr = '(~[∀|∃)'
statements = re.findall(expr, statement)
for s in statements:
    statement = statement.replace(s, conf(s))
expr = '~\[[^]]+\]'
statements = re.findall(expr, statement)
for s in statements:
    statement = statement.replace(s, DeMorgan(s))
return statement.
```

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def matchAtt(string):
    expr = '\([^)]+\)'
    matches = re.findall(expr, string)
    return [m for m in str(matches) if m.isalpha()]

def DeMorgan(s1):
    String = ''.join(list(s1).copy())
    string = string.replace('~~', '')
    flag = '[' in string
    string = string.replace('~[', '(')
    String = String.strip(']')
    for predicate in expr-ret(string):
        string = string.replace(predicate, f'~({predicate})')
    S = list(string)
    for i, c in enumerate(string):
        if c == '|':
            S[i] = '&'
        elif c == '&':
            S[i] = '|'
    string = ''.join(S)
    string = string.replace('~~', '')
```

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```
return f'[{string}]' if flag else string

def skl(sl):
    SK_CONST = [f'{chr(c)}' for c in range(ord('A'),
                ord('Z')+1)]
    Statemnt = ''.join(list(sl).copy())
    matchs = re.findall('[A-Z].', statemnt)
    for match in matchs[::-1]:
        Statemnt = statemnt.replace(match, '')
    statements = re.findall('\[\[[^]]+\]]',
                            Statemnt)
    for s in Statmts:
        statemnt = statement.replace(s, s[1:-1])
for predicate in expr_ret(Statement):
    attribus = matchATt(predicate)
    if '' .join(attribus).islower():
        statement = statement.replace(match[1],
                    SK_CONST.pop(0))
return statemnt
```

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print (SKI[cnf("∀x(likes(Ram,x)=> likes(Sita, x))")])

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