PROGRAM : 4

papergrid
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AI Lab test: 2

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AIM - Convert FOL to CNF

Algorithm -

```
def getAttributes(String):
    expr = '\([^]]+\)'
    matches = re.findall(comp, string)

def DeMorgan(Sentence):
    string = ''.join(list(sentence).copy())
    string = string.replace('~~', '')
    flag = '[' in string
    string = string.replace('~[', '')
    string = string.strip(']')
    for predicate in getPredicates(string):
        string = string.replace(predicate, '~{predicate}')
    s = list(string)
    for i, c in enumerate(string):
        if c == '|':
            s[i] = '&'
        elif c == '&':
            s[i] = '|'
    string = ''.join(s)
    string = string.replace('~~', '')
    return f'[{string}]' if flag else string
```

```
def Skolemization(sentence):
    SKOLEM_CONSTANTS = [f'{chr(c)}' for c in
    range(ord('A'), ord('Z')+1)]
    statement = ''.join(list(sentence).copy())
    matches = re.findall('[∀∃].', statement)
    for match in matches[::-1]:
        statement = statements.replace(match, '')
        statements = re.findall('\[\[^]]+\]', statement)

def fol_to_cnf(fol):
    statement = fol.replace("<=>", "=")
    while '=' in statement:
        i = statement.index('=')
        new_statement = '[' + statement[:i] + '=>' + statement
        statement = new_statement
    statement = statement.replace("=>", "-")
    expr = '\[([^]]+)\]'
    statements = re.findall(expr, statement)

print(Skolemization(fol_to_cnf("∀x [likes(Ram, x) => likes(Sita, x)]")))
```