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import itertools

def pl_true(sentence, model):
    A = model.get('A', False)
    B = model.get('B', False)
    C = model.get('C', False)

    if sentence == "A or B":
        return A or B
    elif sentence == "(A or C) and (B or not C)":
        return (A or C) and (B or not C)
    return False

def tt_entails(kb, alpha):
    symbols = ['A', 'B', 'C']
    return tt_check_all(kb, alpha, symbols, [])

def tt_check_all(kb, alpha, symbols, model):
    if not symbols:
        if pl_true(kb, model):
            return pl_true(alpha, model)
        else:
            return True
    else:
        p = symbols[0]
        rest = symbols[1:]

        model_true = model.copy()
        model_false = model.copy()
        model_true[p] = True
        model_false[p] = False

        return (tt_check_all(kb, alpha, rest, model_true) and
                tt_check_all(kb, alpha, rest, model_false))

kb = "(A or C) and (B or not C)"
alpha = "A or B"

result = tt_entails(kb, alpha)
print("KB entails  $\alpha$ : %s" % result)

def generate_truth_table():
    print("{'A':<A>{'B':<B>{'C':<C>{'A or C':<AorC>{'B or not C':<BorNotC>{'A or B':<AorB>"}
    print("\n" * 20)

    for A, B, C in itertools.product([False, True], repeat=3):
        A_or_C = A or C
        B_or_not_C = B or not C
        KB = (A or C) and (B or not C)
        AB = A or B

        row = '({str(A):<A>{str(B):<B>{str(C):<C>{str(A or C):<AorC>{str(B or not C):<BorNotC>{str(KB):<KB>{str(alpha):<AB>')

        if KB and alpha:
            print(row)
        else:
            print(row)

generate_truth_table()

```



KB entails α : True

A	B	C	$A \vee C$	$B \vee \neg C$	KB	$\alpha \ (A \vee B)$
False	False	False	False	True	False	False
False	False	True	True	False	False	False
False	True	False	False	True	False	True
False	True	True	True	True	True	True
True	False	False	True	True	True	True
True	False	True	True	False	False	True
True	True	False	True	True	True	True
True	True	True	True	True	True	True

```

import itertools

def pl_true(sentence, model):
    A = model.get('A', False)
    B = model.get('B', False)
    C = model.get('C', False)

    if sentence == "A or B":
        return A or B
    elif sentence == "(A or C) and (B or not C)":
        return (A or C) and (B or not C)
    return False

def tt_entails(kb, alpha):
    symbols = ['A', 'B', 'C']
    return tt_check_all(kb, alpha, symbols, {})

def tt_check_all(kb, alpha, symbols, model):
    if not symbols:
        if pl_true(kb, model):
            return pl_true(alpha, model)
        else:
            return True
    else:
        p = symbols[0]
        rest = symbols[1:]

        model_true = model.copy()
        model_false = model.copy()
        model_true[p] = True
        model_false[p] = False

        return (tt_check_all(kb, alpha, rest, model_true) and
                tt_check_all(kb, alpha, rest, model_false))

kb = "(A or C) and (B or not C)"
alpha = "A or B"

result = tt_entails(kb, alpha)
print(f"KB entails α: {result}")

def generate_truth_table():
    print(f"{'A':<10}{'B':<10}{'C':<10}{'AVC':<10}{'BV-C':<10}{'KB':<10}{'α (AVB)':<10}")
    print("-" * 70)


    for A, B, C in itertools.product([False, True], repeat=3):
        A_or_C = A or C
        B_or_not_C = B or not C
        KB = (A or C) and (B or not C)
        alpha = A or B

        row = f"{str(A):<10}{str(B):<10}{str(C):<10}{str(A_or_C):<10}{str(B_or_not_C):<10}{str(KB):<10}{str(alpha):<10}"

        if KB and alpha:
            print(row)
            print("-" * len(row))
        else:
            print(row)

generate_truth_table()

```

 KB entails α: True

A	B	C	AVC	BV-C	KB	α (AVB)
False	False	False	False	True	False	False
False	False	True	True	False	False	False
False	True	False	False	True	False	True
False	True	True	True	True	True	True

True	False	False	True	True	True	True

True	False	True	True	False	False	True
True	True	False	True	True	True	True

True	True	True	True	True	True	True
