```python
f = open("3jr_testdata.txt", 'r')
for line in f.readlines():
    try:
        binNum = bin(int('0x'+line, 16))[2:]
        binNum = "0"*max(8-len(binNum),0)+binNum
        grid = [list(binNum[:4]),list(binNum[4:])]
        #4 adjacent boxes - all
groups = ["grid[0]", "grid[1]", "[grid[0][0],grid[1][0],grid[0][1],grid[1][1]]", "[grid[0][1],grid[1][1],grid[0][2],grid[1][2]]", "[grid[0][2],grid[1][2],grid[0][3],grid[1][3]]"]
groups += ["grid[0][2]", "grid[0][1:3]", "grid[1][2]", "grid[1][1:3]", "grid[1][2:]"]
#2 adjacent boxes - columns, exceptions
groups += ["[grid[0][0],grid[1][0]]", "[grid[0][1],grid[1][1]]", "[grid[0][2],grid[1][2]]", "[grid[0][3],grid[1][3]]", "[grid[0][0],grid[0][3]]"]
terms += ["A~C", "AC", "~AC", "~A-C", "B-C", "~A-B-C"]
#single boxes - all
groups += ["grid[0][0]", "grid[1][0]", "grid[0][1]", "grid[1][1]", "grid[0][2]", "grid[1][2]", "grid[0][3]", "grid[1][3]]
answer = ""
for i in range(len(groups)):
    #check if the group has all ones
    x = "x="+groups[i]
    exec(x)
    if len(x) == 1:
        x = list(x)
    if x == list("1"*len(x)):
        #add the term to the answer
        answer = answer + terms[i] + " + ">
#Each box can only be used once, so discard boxes after using them
    x = groups[i] + "=" + str(list("2"*len(x)))
    exec(x)
print(answer[:-3])
except:
    print(error)
f.close()
```

Aquino_Corbin_Round3.py

193 lines of code