```python
# -*- coding: utf-8 -*-
"""
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"""

from pulp import *
from amply import *

def diet_lp(dat_file_name):
    diet_lp_model = LpProblem(name='Diet LP',sense=LpMinimize)

    # Names within must match names in .dat file
    data = Amply("""
    set food_items;
    set nutrients;
    param objective{food_items};
    param reqs{nutrients};
    param supply{food_items,nutrients};
    param max_for_item{food_items};
    """)

    # dat_file_name = 'wardRoom1.dat'
    data.load_file(open(dat_file_name))

    # diagnostic to see if things loaded and get used to indexing
    for nutr in data.nutrients:
        print('required ',nutr,data.reqs[nutr])
        for food in data.food_items:
            print('supply ',nutr,food,data.supply[food][nutr])

    # Dec vars
    x = LpVariable.dicts('x',data.food_items,0)

    # objective
    diet_lp_model += lpSum(data.objective[i] * x[i] for i in data.food_items)

    # constraints - loop through reqs adding an lpSum for each
    for i in data.nutrients:
        constr_LHS = lpSum(data.supply[j][i] * x[j] for j in data.food_items)
        diet_lp_model += constr_LHS >= data.reqs[i], i

    # upper limits
    for i in data.food_items:
        diet_lp_model += x[i] <= data.max_for_item[i], i
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    # the rest as before...
    # Print formulated model and optionally write it to a file
    print(diet_lp_model)
    diet_lp_model.writeLP('diet_lp_model.txt')

    # Solve
    result = diet_lp_model.solve(GLPK(msg=False))

    # Print results
    print("Status: ",LpStatus[result])
    for variable in diet_lp_model.variables():
        print(str(variable).ljust(12),' = ',value(variable))
    print(f"Objective value = {value(diet_lp_model.objective):8.2f}")

    return diet_lp_model
#%%  wardroom_1.dat
set food_items := Noodles TurkeyDivan PotatoSalad Beets CongoBars;

set nutrients := Protein   Iron      Niacin    Thiamin  VitaminC;

param       objective :=
    Noodles      5000
    TurkeyDivan 5000
    PotatoSalad 7900
    Beets         300
    CongoBars   14300;

param            reqs :=
    Protein       63000
    Iron     10
    Niacin         15
    Thiamin        1
    VitaminC  50;

param    supply  :
                          Protein  Iron     Niacin   Thiamin  VitaminC :=
    Noodles       5000    1.1      1.4      0.18     0.0
    TurkeyDivan   29300   1.8      5.4      0.06     0.0
    PotatoSalad   5300    0.5      0.9      0.06     10.0
    Beets3000     2.2     0.5       0.07    28.0
    CongoBars     4000    1.2      0.6       0.15    3.0;

param       max_for_item :=
    Noodles       3
    TurkeyDivan 3
    PotatoSalad 2
    Beets         1
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    CongoBars  1;
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#%% wardroom_2.dat
set food_items := oats chicken eggs milk cake beans;

set nutrients := calories protein calcium;

param objective :=
    oats 30
    chicken 240
    eggs 130
    milk 90
    cake 200
    beans 60;

param          reqs :=
    calories 2000
    protein 55
    calcium 800;

param     supply   :
                         calories protein calcium :=
    oats 110 4 2
    chicken 205 32 12
    eggs 160 13 54
    milk 160 8 285
    cake 420 4 22
    beans 260 14 80;

param     max_for_item :=
    oats 4
    chicken 3
    eggs 2
    milk 8
    cake 2
    beans 2;
#%% Solns
"""
Diet_LP:
MINIMIZE
60.0*x_beans + 200.0*x_cake + 240.0*x_chicken + 130.0*x_eggs + 90.0*x_milk +
30.0*x_oats + 0.0
SUBJECT TO
calories: 260 x_beans + 420 x_cake + 205 x_chicken + 160 x_eggs + 160 x_milk
 + 110 x_oats >= 2000

protein: 14 x_beans + 4 x_cake + 32 x_chicken + 13 x_eggs + 8 x_milk
 + 4 x_oats >= 55
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calcium: 80 x_beans + 22 x_cake + 12 x_chicken + 54 x_eggs + 285 x_milk
 + 2 x_oats >= 800

oats: x_oats <= 4

chicken: x_chicken <= 3

eggs: x_eggs <= 2

milk: x_milk <= 8

cake: x_cake <= 2

beans: x_beans <= 2

VARIABLES
x_beans Continuous
x_cake Continuous
x_chicken Continuous
x_eggs Continuous
x_milk Continuous
x_oats Continuous

Status:  Optimal
x_beans       =  2.0
x_cake        =  1.68084
x_chicken     =  0.0
x_eggs        =  0.0
x_milk        =  2.08779
x_oats        =  4.0
Objective value =   764.07
"""
```