DIETAI

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Objective:

To design a software that would suggest the user which diet to follow, what to eat, what not to eat, when to eat etc. taking the BMI, body fat, gender and some other factors as constraints. It will provide targeted nutrition plan according the user's preference. The diet will be based on Bengali cuisine and easily available food items.

Motivation:

Obesity is a huge problem now a day. 39 out of 100 adults aged 18+ are obese. This is alarming since obesity creates a lot of other health problems. Maintaining a balanced diet is the key to good health. But there isn't any real solution for the Bangladeshi people on Bangladeshi cuisine which can suggest the solution intelligently. Our solution suggests the user diet for 3 major meals at the minimum expense along with the cost of each meal.

Description of the code:

There are 2 mzn files with their data files and a python script that binds them. The dietAI.mzn file calculates the BMI, BMR and also the calorie intake of the user. The user needs to give their input in the dietAI.dzn file.
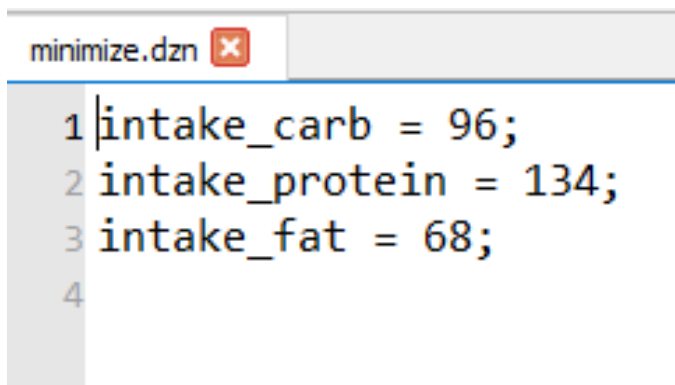
```
dietAI.dzn ⊠

1 % Your age in years
2 AgeYR = 23;
3 % Your gender (Boy = 1, Girl = 2)
4 GenderBoy1Girl2 = 1;
5 % Your height in cm
6 HeightCM =167;
7 % Rate your daily activity from 1 to 5
8 RateActivity1to5 = 1;
9 % Your weight in KG
10 WeightKG = 78;
```

The python script takes value from the DietAI.mzn and writes the values in Minimize.dzn.

```python
import pymzn
solns = pymzn.minizinc('DietAI.mzn','DietAI.dzn' ,output_mode='item')
solList = solns[0].split('\n')
for i in range(len(solList)) :
    solList[i] = int(float(solList[i]))


fp = open("minimize.dzn","w")
titleList = ["intake_carb","intake_protein","intake_fat"]
j = 0
for i in range(len(solList)):
    str1 = titleList[j] + " = "+  str( int(solList[i]) ) + ";\n"
    # print(str1)
    j +=1
    fp.write(str1)
    # fp.write(str2)
fp.close()
print("Your Diet is:")

solns = pymzn.minizinc('minimize.mzn','minimize.dzn' ,output_mode='item')
print(solns)
```

```
minimize.dzn ✕

1 intake_carb = 96;
2 intake_protein = 134;
3 intake_fat = 68;
4
```

Then the script runs the Minimize.mzn with the values from Minimize.dzn. And then outputs the meals from minimize.dzn along with cost of the meals. The project is designed to output the meal with the least cost.

```
H:\3-2 Course Materials\AI Lab\FINAL\Project>python project.py
Your Diet is:
['breakfast_main = Bread,    breakfast_side = EggPoach, breakfast_dessert = Banana, cost = 32\nlunch_main =
Ruti,    lunch_side = GreenVegetableAndLentil, lunch_dessert = Lemonade, cost = 50\ndinner_main = Bread,
dinner_side = Mutton, dinner_dessert = Tangerine, cost = 75']
```

Running the code:

Requirements – Minizinc, Python, Pymzn (the "pip install pymzn" command in the command prompt should automatically install pymzn in the machine provided python is already installed)

Steps:

1. The user needs to edit the dietAI.dzn file and give the input accordingly.

2. In the command prompt, running the python script project.py with the command "python project.py" will give the diet of the user along with the cost as output.