Факультет інформатики та обчислювальної техніки

Кафедра інформатики та програмної інженерії

“ЗАТВЕРДЖЕНО”

Завідувач кафедри

\_\_\_\_\_\_\_\_\_\_\_ Едуард ЖАРІКОВ

“\_\_\_” \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 2022 р.

**ДОДАТОК ДЛЯ СКЛАДАННЯ ЗБАЛАНСОВАНОГО МЕНЮ**

**Опис програми**

КПІ.ІТ-7304.045440.03.13

“ПОГОДЖЕНО”

Керівник проєкту:

\_\_\_\_\_\_\_\_\_\_\_\_ Тетяна ЛІХОУЗОВА

|  |  |
| --- | --- |
| Нормоконтроль: | Виконавець: |
| \_\_\_\_\_\_\_\_\_\_\_ Катерина ЛІЩУК | \_\_\_\_\_\_\_\_\_\_ Ілля БЄКІШЄВ |

Київ – 2022

ТЕКСТ ПРОГРАМНОГО КОДУ

***Тексти програмного коду***

|  |
| --- |
| **Додаток для складання збалансованого меню** |
| (Найменування програми (документа)) |

|  |
| --- |
| CD-R |
| (Вид носія даних) |

|  |
| --- |
| 179 арк, 77700 Кб |
| (Обсяг програми, арк., Кб) |

Київ – 2022

Файл «citmmtf.py»

from .cdn import calculate\_nutrition\_for\_menu\_for\_one\_day  
from datetime import datetime  
  
  
def check\_if\_the\_menu\_matches\_the\_formula(menu\_for\_one\_day, bnf, user\_data):  
 nutrition\_data = calculate\_nutrition\_for\_menu\_for\_one\_day(menu\_for\_one\_day)  
 age = [datetime.now().year - user\_data.date\_of\_birth.year] if (datetime.now().year - user\_data.date\_of\_birth.year) > 1 else [datetime.datetime.now().month - user\_data.date\_of\_birth.mount, 'm']  
 is\_correct = False  
 for human\_attributes in bnf.humans\_attributes.all():  
  
 age\_choices = human\_attributes.age[:-1].split('-').append('m') if 'm' in human\_attributes.age else human\_attributes.age.split('-')  
 if 'm' in age\_choices:  
 if 'm' in age:  
 if age[0] in range(int(age\_choices[0]), int(age\_choices[1])):  
 if (  
 human\_attributes.proteins - 10 < nutrition\_data.proteins < human\_attributes.proteins +10000) and (  
 human\_attributes.proteins\_including\_animals - 10 < nutrition\_data.proteins\_including\_animals < human\_attributes.proteins\_including\_animals +10000) and (  
 human\_attributes.fat - 10 < nutrition\_data.fat < human\_attributes.fat +10000) and (  
 human\_attributes.fat\_including\_animals - 10 < nutrition\_data.fat\_including\_animals < human\_attributes.fat\_including\_animals +10000) and (  
 human\_attributes.digestible\_carbohydrates - 30 < nutrition\_data.digestible\_carbohydrates < human\_attributes.digestible\_carbohydrates +10000) and (  
 human\_attributes.digestible\_carbohydrates\_incl\_m\_and\_d - 30 < nutrition\_data.digestible\_carbohydrates\_incl\_m\_and\_d < human\_attributes.digestible\_carbohydrates\_incl\_m\_and\_d +10000) and (  
 human\_attributes.dietary\_fiber - 4 < nutrition\_data.dietary\_fiber < human\_attributes.dietary\_fiber +10000) and (  
 human\_attributes.dietary\_fiber\_including\_fiber\_and\_pectin - 4 < nutrition\_data.dietary\_fiber\_including\_fiber\_and\_pectin < human\_attributes.dietary\_fiber\_including\_fiber\_and\_pectin +10000) and (  
 human\_attributes.polyunsaturated\_acid - 3 < nutrition\_data.polyunsaturated\_acid < human\_attributes.polyunsaturated\_acid +10000) and (  
 human\_attributes.saturated\_acid - 5 < nutrition\_data.saturated\_acid < human\_attributes.saturated\_acid +10000) and (  
 human\_attributes.monounsaturated\_acid - 6 < nutrition\_data.monounsaturated\_acid < human\_attributes.monounsaturated\_acid +10000) and (  
 human\_attributes.calcium\_in\_mg - 90 < nutrition\_data.calcium\_in\_mg < human\_attributes.calcium\_in\_mg +10000) and (  
 human\_attributes.phosphorus\_in\_mg - 100 < nutrition\_data.phosphorus\_in\_mg < human\_attributes.phosphorus\_in\_mg +10000) and (  
 human\_attributes.magnesium\_in\_mg - 60 < nutrition\_data.magnesium\_in\_mg < human\_attributes.magnesium\_in\_mg +10000) and (  
 human\_attributes.potassium\_in\_mg - 1000 < nutrition\_data.potassium\_in\_mg < human\_attributes.potassium\_in\_mg +10000) and (  
 human\_attributes.sodium\_in\_mg - 900 < nutrition\_data.sodium\_in\_mg < human\_attributes.sodium\_in\_mg +10000) and (  
 human\_attributes.chlorine\_in\_mg - 100 < nutrition\_data.chlorine\_in\_mg < human\_attributes.chlorine\_in\_mg +10000) and (  
 human\_attributes.sulfur\_in\_mg - 200 < nutrition\_data.sulfur\_in\_mg < human\_attributes.sulfur\_in\_mg +10000) and (  
 human\_attributes.iron\_in\_mg - 4 < nutrition\_data.iron\_in\_mg < human\_attributes.iron\_in\_mg +10000) and (  
 human\_attributes.zinc\_in\_mg - 3 < nutrition\_data.zinc\_in\_mg < human\_attributes.zinc\_in\_mg +10000) and (  
 human\_attributes.iodine\_in\_mg - 0.4 < nutrition\_data.iodine\_in\_mg < human\_attributes.iodine\_in\_mg +10000.4) and (  
 human\_attributes.fluorine\_in\_mg - 2 < nutrition\_data.fluorine\_in\_mg < human\_attributes.fluorine\_in\_mg +10000) and (  
 human\_attributes.thiamine\_vitamin\_B1\_in\_mg - 0.6 < nutrition\_data.thiamine\_vitamin\_B1\_in\_mg < human\_attributes.thiamine\_vitamin\_B1\_in\_mg +10000.6) and (  
 human\_attributes.riboflavin\_vitamin\_B2\_in\_mg - 0.7 < nutrition\_data.riboflavin\_vitamin\_B2\_in\_mg < human\_attributes.riboflavin\_vitamin\_B2\_in\_mg +10000.7) and (  
 human\_attributes.pyridoxine\_vitamin\_B6\_in\_mg - 0.4 < nutrition\_data.pyridoxine\_vitamin\_B6\_in\_mg < human\_attributes.pyridoxine\_vitamin\_B6\_in\_mg +10000.4) and (  
 human\_attributes.pantothenic\_acid\_vitamin\_B3\_in\_mg - 2.5 < nutrition\_data.pantothenic\_acid\_vitamin\_B3\_in\_mg < human\_attributes.pantothenic\_acid\_vitamin\_B3\_in\_mg +10000.5) and (  
 human\_attributes.folacin\_acid\_vitamin\_B9\_in\_mcg - 30 < nutrition\_data.folacin\_acid\_vitamin\_B9\_in\_mcg < human\_attributes.folacin\_acid\_vitamin\_B9\_in\_mcg +10000) and (  
 human\_attributes.cobalamin\_acid\_vitamin\_B12\_in\_mcg - 2 < nutrition\_data.cobalamin\_acid\_vitamin\_B12\_in\_mcg < human\_attributes.cobalamin\_acid\_vitamin\_B12\_in\_mcg +10000) and (  
 human\_attributes.niacin\_vitamin\_PP\_in\_mg - 6 < nutrition\_data.niacin\_vitamin\_PP\_in\_mg < human\_attributes.niacin\_vitamin\_PP\_in\_mg +10000) and (  
 human\_attributes.ascorbic\_acid\_vitamin\_C\_in\_mg - 15 < nutrition\_data.ascorbic\_acid\_vitamin\_C\_in\_mg < human\_attributes.ascorbic\_acid\_vitamin\_C\_in\_mg +10000) and (  
 human\_attributes.retinol\_vitamin\_A\_in\_mcg - 100 < nutrition\_data.retinol\_vitamin\_A\_in\_mcg < human\_attributes.retinol\_vitamin\_A\_in\_mcg +10000) and (  
 human\_attributes.tocopherol\_vitamin\_E\_in\_mg - 1 < nutrition\_data.tocopherol\_vitamin\_E\_in\_mg < human\_attributes.tocopherol\_vitamin\_E\_in\_mg +10000) and (  
 human\_attributes.cholecalciferol\_vitamin\_D\_in\_mcg - 1.1 < nutrition\_data.cholecalciferol\_vitamin\_D\_in\_mcg < human\_attributes.cholecalciferol\_vitamin\_D\_in\_mcg +10000.1) and (  
 human\_attributes.energy\_value\_in\_kcal - 350 < nutrition\_data.energy\_value\_in\_kcal < human\_attributes.energy\_value\_in\_kcal +10000):  
 is\_correct = True  
 else:  
 if int(age\_choices[0])<age[0]<int(age\_choices[1]):  
 print('calculating')  
 print( human\_attributes.proteins - 10000 < nutrition\_data.proteins < human\_attributes.proteins + 10000)  
 print(human\_attributes.proteins)  
 print(nutrition\_data.proteins)  
 if (  
 human\_attributes.proteins - 10000 < nutrition\_data.proteins < human\_attributes.proteins + 10000) and (  
 human\_attributes.proteins\_including\_animals - 10000 < nutrition\_data.proteins\_including\_animals < human\_attributes.proteins\_including\_animals + 10000) and (  
 human\_attributes.fat - 10000 < nutrition\_data.fat < human\_attributes.fat + 10000) and (  
 human\_attributes.fat\_including\_animals - 10000 < nutrition\_data.fat\_including\_animals < human\_attributes.fat\_including\_animals + 10000) and (  
 human\_attributes.digestible\_carbohydrates - 10000<nutrition\_data.digestible\_carbohydrates < human\_attributes.digestible\_carbohydrates +10000) and (human\_attributes.digestible\_carbohydrates\_incl\_m\_and\_d -10000 < nutrition\_data.digestible\_carbohydrates\_incl\_m\_and\_d < human\_attributes.digestible\_carbohydrates\_incl\_m\_and\_d +10000) and (  
 human\_attributes.dietary\_fiber - 10000 < nutrition\_data.dietary\_fiber < human\_attributes.dietary\_fiber + 10000) and (  
 human\_attributes.dietary\_fiber\_including\_fiber\_and\_pectin - 10000<nutrition\_data.dietary\_fiber\_including\_fiber\_and\_pectin < human\_attributes.dietary\_fiber\_including\_fiber\_and\_pectin +10000) and (  
 human\_attributes.polyunsaturated\_acid - 10000 < nutrition\_data.polyunsaturated\_acid < human\_attributes.polyunsaturated\_acid + 10000) and (  
 human\_attributes.saturated\_acid - 10000 < nutrition\_data.saturated\_acid < human\_attributes.saturated\_acid + 10000) and (  
 human\_attributes.monounsaturated\_acid - 10000 < nutrition\_data.monounsaturated\_acid < human\_attributes.monounsaturated\_acid + 10000) and (  
 human\_attributes.calcium\_in\_mg - 10000 < nutrition\_data.calcium\_in\_mg < human\_attributes.calcium\_in\_mg + 10000) and (  
 human\_attributes.phosphorus\_in\_mg - 10000 < nutrition\_data.phosphorus\_in\_mg < human\_attributes.phosphorus\_in\_mg + 10000) and (  
 human\_attributes.magnesium\_in\_mg - 10000 < nutrition\_data.magnesium\_in\_mg < human\_attributes.magnesium\_in\_mg + 10000) and (  
 human\_attributes.potassium\_in\_mg - 10000 < nutrition\_data.potassium\_in\_mg < human\_attributes.potassium\_in\_mg + 10000) and (  
 human\_attributes.sodium\_in\_mg - 10000 < nutrition\_data.sodium\_in\_mg < human\_attributes.sodium\_in\_mg + 10000) and (  
 human\_attributes.chlorine\_in\_mg - 10000 < nutrition\_data.chlorine\_in\_mg < human\_attributes.chlorine\_in\_mg + 10000) and (  
 human\_attributes.sulfur\_in\_mg - 10000 < nutrition\_data.sulfur\_in\_mg < human\_attributes.sulfur\_in\_mg + 10000) and (  
 human\_attributes.iron\_in\_mg - 10000 < nutrition\_data.iron\_in\_mg < human\_attributes.iron\_in\_mg + 10000) and (  
 human\_attributes.zinc\_in\_mg - 10000 < nutrition\_data.zinc\_in\_mg < human\_attributes.zinc\_in\_mg + 10000) and (  
 human\_attributes.iodine\_in\_mg - 10000.4 < nutrition\_data.iodine\_in\_mg < human\_attributes.iodine\_in\_mg + 10000.4) and (  
 human\_attributes.fluorine\_in\_mg - 10000 < nutrition\_data.fluorine\_in\_mg < human\_attributes.fluorine\_in\_mg + 10000) and (  
 human\_attributes.thiamine\_vitamin\_B1\_in\_mg - 10000.6 < nutrition\_data.thiamine\_vitamin\_B1\_in\_mg < human\_attributes.thiamine\_vitamin\_B1\_in\_mg + 10000.6) and (  
 human\_attributes.riboflavin\_vitamin\_B2\_in\_mg - 10000.7 < nutrition\_data.riboflavin\_vitamin\_B2\_in\_mg < human\_attributes.riboflavin\_vitamin\_B2\_in\_mg + 10000.7) and (  
 human\_attributes.pyridoxine\_vitamin\_B6\_in\_mg - 10000.4 < nutrition\_data.pyridoxine\_vitamin\_B6\_in\_mg < human\_attributes.pyridoxine\_vitamin\_B6\_in\_mg + 10000.4) and (  
 human\_attributes.pantothenic\_acid\_vitamin\_B3\_in\_mg - 10000.5 < nutrition\_data.pantothenic\_acid\_vitamin\_B3\_in\_mg < human\_attributes.pantothenic\_acid\_vitamin\_B3\_in\_mg + 10000.5) and (  
 human\_attributes.folacin\_acid\_vitamin\_B9\_in\_mcg - 10000 < nutrition\_data.folacin\_acid\_vitamin\_B9\_in\_mcg < human\_attributes.folacin\_acid\_vitamin\_B9\_in\_mcg + 10000) and (  
 human\_attributes.cobalamin\_acid\_vitamin\_B12\_in\_mcg - 10000 < nutrition\_data.cobalamin\_acid\_vitamin\_B12\_in\_mcg < human\_attributes.cobalamin\_acid\_vitamin\_B12\_in\_mcg + 10000) and (  
 human\_attributes.niacin\_vitamin\_PP\_in\_mg - 10000 < nutrition\_data.niacin\_vitamin\_PP\_in\_mg < human\_attributes.niacin\_vitamin\_PP\_in\_mg + 10000) and (  
 human\_attributes.ascorbic\_acid\_vitamin\_C\_in\_mg - 10000 < nutrition\_data.ascorbic\_acid\_vitamin\_C\_in\_mg < human\_attributes.ascorbic\_acid\_vitamin\_C\_in\_mg + 10000) and (  
 human\_attributes.retinol\_vitamin\_A\_in\_mcg - 10000 < nutrition\_data.retinol\_vitamin\_A\_in\_mcg < human\_attributes.retinol\_vitamin\_A\_in\_mcg + 10000) and (  
 human\_attributes.tocopherol\_vitamin\_E\_in\_mg - 10000 < nutrition\_data.tocopherol\_vitamin\_E\_in\_mg < human\_attributes.tocopherol\_vitamin\_E\_in\_mg + 10000) and (  
 human\_attributes.cholecalciferol\_vitamin\_D\_in\_mcg - 10000.1 < nutrition\_data.cholecalciferol\_vitamin\_D\_in\_mcg < human\_attributes.cholecalciferol\_vitamin\_D\_in\_mcg + 10000.1) and (  
 human\_attributes.energy\_value\_in\_kcal - 10000 < nutrition\_data.energy\_value\_in\_kcal < human\_attributes.energy\_value\_in\_kcal + 10000):  
  
 print('SUCCESS') #для более точных параметров соответствия меню сбалансированости следует обратиться к специалисту диетологу  
 is\_correct = True  
 break  
 print('done calculating')  
 print(f'here {is\_correct}')  
 return is\_correct

Файл «cdn.py»

from .models import NutritionData  
  
  
def create\_empty\_nutrition\_data():  
 nutrition\_data = NutritionData()  
 nutrition\_data.proteins = 0  
 nutrition\_data.proteins\_including\_animals = 0  
 nutrition\_data.fat = 0  
 nutrition\_data.fat\_including\_animals = 0  
 nutrition\_data.digestible\_carbohydrates = 0  
 nutrition\_data.digestible\_carbohydrates\_incl\_m\_and\_d = 0  
 nutrition\_data.dietary\_fiber = 0  
 nutrition\_data.dietary\_fiber\_including\_fiber\_and\_pectin = 0  
 nutrition\_data.polyunsaturated\_acid = 0  
 nutrition\_data.saturated\_acid = 0  
 nutrition\_data.monounsaturated\_acid = 0  
 nutrition\_data.calcium\_in\_mg = 0  
 nutrition\_data.phosphorus\_in\_mg = 0  
 nutrition\_data.magnesium\_in\_mg = 0  
 nutrition\_data.potassium\_in\_mg = 0  
 nutrition\_data.sodium\_in\_mg = 0  
 nutrition\_data.chlorine\_in\_mg = 0  
 nutrition\_data.sulfur\_in\_mg = 0  
 nutrition\_data.iron\_in\_mg = 0  
 nutrition\_data.zinc\_in\_mg = 0  
 nutrition\_data.iodine\_in\_mg = 0  
 nutrition\_data.fluorine\_in\_mg = 0  
 nutrition\_data.thiamine\_vitamin\_B1\_in\_mg = 0  
 nutrition\_data.riboflavin\_vitamin\_B2\_in\_mg = 0  
 nutrition\_data.pyridoxine\_vitamin\_B6\_in\_mg = 0  
 nutrition\_data.pantothenic\_acid\_vitamin\_B3\_in\_mg = 0  
 nutrition\_data.folacin\_acid\_vitamin\_B9\_in\_mcg = 0  
 nutrition\_data.cobalamin\_acid\_vitamin\_B12\_in\_mcg = 0  
 nutrition\_data.niacin\_vitamin\_PP\_in\_mg = 0  
 nutrition\_data.ascorbic\_acid\_vitamin\_C\_in\_mg = 0  
 nutrition\_data.retinol\_vitamin\_A\_in\_mcg = 0  
 nutrition\_data.tocopherol\_vitamin\_E\_in\_mg = 0  
 nutrition\_data.cholecalciferol\_vitamin\_D\_in\_mcg = 0  
 nutrition\_data.energy\_value\_in\_kcal = 0  
 return nutrition\_data  
  
  
def calculate\_dish\_nutrition(dish):  
 products\_amount\_list = dish.products.all()  
 nutrition\_data = create\_empty\_nutrition\_data()  
 for product\_amount in products\_amount\_list:  
 untits\_multiplayer = (product\_amount.amount \* 1000 if product\_amount.unit in ['kg', 'l'] else 100)/100  
 print(untits\_multiplayer)  
 nutrition\_data.proteins += float(product\_amount.product.proteins\_in\_100\_g) \* float(untits\_multiplayer)  
 nutrition\_data.proteins\_including\_animals += float(product\_amount.product.proteins\_in\_100\_g\_including\_animals) \* float( untits\_multiplayer)  
 nutrition\_data.fat += float(product\_amount.product.fat\_in\_100\_g) \* float( untits\_multiplayer)  
 nutrition\_data.fat\_including\_animals += float(product\_amount.product.fat\_in\_100\_g\_including\_animals) \* float( untits\_multiplayer)  
 nutrition\_data.digestible\_carbohydrates += float(product\_amount.product.digestible\_carbohydrates\_in\_100\_g) \* float( untits\_multiplayer)  
 nutrition\_data.digestible\_carbohydrates\_incl\_m\_and\_d += float(product\_amount.product.digestible\_carbohydrates\_in\_100\_g\_incl\_m\_and\_d ) \* float( untits\_multiplayer)  
 nutrition\_data.dietary\_fiber += float(product\_amount.product.dietary\_fiber\_in\_100\_g ) \* float( untits\_multiplayer)  
 nutrition\_data.dietary\_fiber\_including\_fiber\_and\_pectin += float(product\_amount.product.dietary\_fiber\_in\_100\_g\_including\_fiber\_and\_pectin ) \* float( untits\_multiplayer)  
 nutrition\_data.polyunsaturated\_acid += float(product\_amount.product.polyunsaturated\_acid ) \* float( untits\_multiplayer)  
 nutrition\_data.saturated\_acid += float(product\_amount.product.saturated\_acid ) \* float( untits\_multiplayer)  
 nutrition\_data.monounsaturated\_acid += float(product\_amount.product.monounsaturated\_acid ) \* float( untits\_multiplayer)  
 nutrition\_data.calcium\_in\_mg += float(product\_amount.product.calcium\_in\_100\_g\_in\_mg ) \* float( untits\_multiplayer)  
 nutrition\_data.phosphorus\_in\_mg += float(product\_amount.product.phosphorus\_in\_100\_g\_in\_mg ) \* float( untits\_multiplayer)  
 nutrition\_data.magnesium\_in\_mg += float(product\_amount.product.magnesium\_in\_100\_g\_in\_mg ) \* float( untits\_multiplayer)  
 nutrition\_data.potassium\_in\_mg += float(product\_amount.product.potassium\_in\_100\_g\_in\_mg ) \* float(untits\_multiplayer)  
 nutrition\_data.sodium\_in\_mg += float(product\_amount.product.sodium\_in\_100\_g\_in\_mg ) \* float( untits\_multiplayer)  
 nutrition\_data.chlorine\_in\_mg += float(product\_amount.product.chlorine\_in\_100\_g\_in\_mg ) \* float( untits\_multiplayer)  
 nutrition\_data.sulfur\_in\_mg += float(product\_amount.product.sulfur\_in\_100\_g\_in\_mg ) \* float( untits\_multiplayer)  
 nutrition\_data.iron\_in\_mg += float(product\_amount.product.iron\_in\_100\_g\_in\_mg ) \* float( untits\_multiplayer)  
 nutrition\_data.zinc\_in\_mg += float(product\_amount.product.zinc\_in\_100\_g\_in\_mg ) \* float( untits\_multiplayer)  
 nutrition\_data.iodine\_in\_mg += float(product\_amount.product.iodine\_in\_100\_g\_in\_mg) \* float( untits\_multiplayer)  
 nutrition\_data.fluorine\_in\_mg += float(product\_amount.product.fluorine\_in\_100\_g\_in\_mg ) \* float( untits\_multiplayer)  
 nutrition\_data.thiamine\_vitamin\_B1\_in\_mg += float(product\_amount.product.thiamine\_vitamin\_B1\_in\_100\_g\_in\_mg ) \* float( untits\_multiplayer)  
 nutrition\_data.riboflavin\_vitamin\_B2\_in\_mg += float(product\_amount.product.riboflavin\_vitamin\_B2\_in\_100\_g\_in\_mg ) \* float( untits\_multiplayer)  
 nutrition\_data.pyridoxine\_vitamin\_B6\_in\_mg += float(product\_amount.product.pyridoxine\_vitamin\_B6\_in\_100\_g\_in\_mg ) \* float( untits\_multiplayer)  
 nutrition\_data.pantothenic\_acid\_vitamin\_B3\_in\_mg += float(product\_amount.product.pantothenic\_acid\_vitamin\_B3\_in\_100\_g\_in\_mg ) \* float( untits\_multiplayer)  
 nutrition\_data.folacin\_acid\_vitamin\_B9\_in\_mcg += float(product\_amount.product.folacin\_acid\_vitamin\_B9\_in\_100\_g\_in\_mcg ) \* float( untits\_multiplayer)  
 nutrition\_data.cobalamin\_acid\_vitamin\_B12\_in\_mcg += float(product\_amount.product.cobalamin\_acid\_vitamin\_B12\_in\_100\_g\_in\_mcg ) \* float( untits\_multiplayer)  
 nutrition\_data.niacin\_vitamin\_PP\_in\_mg += float(product\_amount.product.niacin\_vitamin\_PP\_in\_100\_g\_in\_mg ) \* float( untits\_multiplayer)  
 nutrition\_data.ascorbic\_acid\_vitamin\_C\_in\_mg += float(product\_amount.product.ascorbic\_acid\_vitamin\_C\_in\_100\_g\_in\_mg ) \* float( untits\_multiplayer)  
 nutrition\_data.retinol\_vitamin\_A\_in\_mcg += float(product\_amount.product.retinol\_vitamin\_A\_in\_100\_g\_in\_mcg ) \* float( untits\_multiplayer)  
 nutrition\_data.tocopherol\_vitamin\_E\_in\_mg += float(product\_amount.product.tocopherol\_vitamin\_E\_in\_100\_g\_in\_mg ) \* float( untits\_multiplayer)  
 nutrition\_data.cholecalciferol\_vitamin\_D\_in\_mcg += float(product\_amount.product.cholecalciferol\_vitamin\_D\_in\_100\_g\_in\_mcg) \* float(untits\_multiplayer)  
 nutrition\_data.energy\_value\_in\_kcal += float(product\_amount.product.energy\_value\_in\_kcal) \* float(untits\_multiplayer)  
 return nutrition\_data  
  
  
def calculate\_nutrition\_for\_menu\_for\_one\_day(menu\_for\_one\_day):  
 nutrition\_data = create\_empty\_nutrition\_data()  
 nutrition\_data.proteins = calculate\_dish\_nutrition(menu\_for\_one\_day.breakfast).proteins + calculate\_dish\_nutrition(menu\_for\_one\_day.dinner).proteins + calculate\_dish\_nutrition(menu\_for\_one\_day.evening\_meal).proteins  
 nutrition\_data.proteins\_including\_animals = calculate\_dish\_nutrition(menu\_for\_one\_day.breakfast).proteins\_including\_animals + calculate\_dish\_nutrition(menu\_for\_one\_day.dinner).proteins\_including\_animals + calculate\_dish\_nutrition(menu\_for\_one\_day.evening\_meal).proteins\_including\_animals  
 nutrition\_data.fat = calculate\_dish\_nutrition(menu\_for\_one\_day.breakfast).fat + calculate\_dish\_nutrition(menu\_for\_one\_day.dinner).fat + calculate\_dish\_nutrition(menu\_for\_one\_day.evening\_meal).fat  
 nutrition\_data.fat\_including\_animals = calculate\_dish\_nutrition(menu\_for\_one\_day.breakfast).fat\_including\_animals + calculate\_dish\_nutrition(menu\_for\_one\_day.dinner).fat\_including\_animals + calculate\_dish\_nutrition(menu\_for\_one\_day.evening\_meal).fat\_including\_animals  
 nutrition\_data.digestible\_carbohydrates = calculate\_dish\_nutrition(menu\_for\_one\_day.breakfast).digestible\_carbohydrates + calculate\_dish\_nutrition(menu\_for\_one\_day.dinner).digestible\_carbohydrates + calculate\_dish\_nutrition(menu\_for\_one\_day.evening\_meal).digestible\_carbohydrates  
 nutrition\_data.digestible\_carbohydrates\_incl\_m\_and\_d = calculate\_dish\_nutrition(menu\_for\_one\_day.breakfast).digestible\_carbohydrates\_incl\_m\_and\_d + calculate\_dish\_nutrition(menu\_for\_one\_day.dinner).digestible\_carbohydrates\_incl\_m\_and\_d + calculate\_dish\_nutrition(menu\_for\_one\_day.evening\_meal).digestible\_carbohydrates\_incl\_m\_and\_d  
 nutrition\_data.dietary\_fiber = calculate\_dish\_nutrition(menu\_for\_one\_day.breakfast).dietary\_fiber + calculate\_dish\_nutrition(menu\_for\_one\_day.dinner).dietary\_fiber + calculate\_dish\_nutrition(menu\_for\_one\_day.evening\_meal).dietary\_fiber  
 nutrition\_data.dietary\_fiber\_including\_fiber\_and\_pectin = calculate\_dish\_nutrition(menu\_for\_one\_day.breakfast).dietary\_fiber\_including\_fiber\_and\_pectin + calculate\_dish\_nutrition(menu\_for\_one\_day.dinner).dietary\_fiber\_including\_fiber\_and\_pectin + calculate\_dish\_nutrition(menu\_for\_one\_day.evening\_meal).dietary\_fiber\_including\_fiber\_and\_pectin  
 nutrition\_data.polyunsaturated\_acid = calculate\_dish\_nutrition(menu\_for\_one\_day.breakfast).polyunsaturated\_acid + calculate\_dish\_nutrition(menu\_for\_one\_day.dinner).polyunsaturated\_acid + calculate\_dish\_nutrition(menu\_for\_one\_day.evening\_meal).polyunsaturated\_acid  
 nutrition\_data.saturated\_acid = calculate\_dish\_nutrition(menu\_for\_one\_day.breakfast).saturated\_acid + calculate\_dish\_nutrition(menu\_for\_one\_day.dinner).saturated\_acid + calculate\_dish\_nutrition(menu\_for\_one\_day.evening\_meal).saturated\_acid  
 nutrition\_data.monounsaturated\_acid = calculate\_dish\_nutrition(menu\_for\_one\_day.breakfast).monounsaturated\_acid + calculate\_dish\_nutrition(menu\_for\_one\_day.dinner).monounsaturated\_acid + calculate\_dish\_nutrition(menu\_for\_one\_day.evening\_meal).monounsaturated\_acid  
 nutrition\_data.calcium\_in\_mg = calculate\_dish\_nutrition(menu\_for\_one\_day.breakfast).calcium\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.dinner).calcium\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.evening\_meal).calcium\_in\_mg  
 nutrition\_data.phosphorus\_in\_mg = calculate\_dish\_nutrition(menu\_for\_one\_day.breakfast).phosphorus\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.dinner).phosphorus\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.evening\_meal).phosphorus\_in\_mg  
 nutrition\_data.magnesium\_in\_mg = calculate\_dish\_nutrition(menu\_for\_one\_day.breakfast).magnesium\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.dinner).magnesium\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.evening\_meal).magnesium\_in\_mg  
 nutrition\_data.potassium\_in\_mg = calculate\_dish\_nutrition(menu\_for\_one\_day.breakfast).potassium\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.dinner).potassium\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.evening\_meal).potassium\_in\_mg  
 nutrition\_data.sodium\_in\_mg = calculate\_dish\_nutrition(menu\_for\_one\_day.breakfast).sodium\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.dinner).sodium\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.evening\_meal).sodium\_in\_mg  
 nutrition\_data.chlorine\_in\_mg = calculate\_dish\_nutrition(menu\_for\_one\_day.breakfast).chlorine\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.dinner).chlorine\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.evening\_meal).chlorine\_in\_mg  
 nutrition\_data.sulfur\_in\_mg = calculate\_dish\_nutrition(menu\_for\_one\_day.breakfast).sulfur\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.dinner).sulfur\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.evening\_meal).sulfur\_in\_mg  
 nutrition\_data.iron\_in\_mg = calculate\_dish\_nutrition(menu\_for\_one\_day.breakfast).iron\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.dinner).iron\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.evening\_meal).iron\_in\_mg  
 nutrition\_data.zinc\_in\_mg = calculate\_dish\_nutrition(menu\_for\_one\_day.breakfast).zinc\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.dinner).zinc\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.evening\_meal).zinc\_in\_mg  
 nutrition\_data.iodine\_in\_mg = calculate\_dish\_nutrition(menu\_for\_one\_day.breakfast).iodine\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.dinner).iodine\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.evening\_meal).iodine\_in\_mg  
 nutrition\_data.fluorine\_in\_mg = calculate\_dish\_nutrition(menu\_for\_one\_day.breakfast).fluorine\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.dinner).fluorine\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.evening\_meal).fluorine\_in\_mg  
 nutrition\_data.thiamine\_vitamin\_B1\_in\_mg = calculate\_dish\_nutrition(menu\_for\_one\_day.breakfast).thiamine\_vitamin\_B1\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.dinner).thiamine\_vitamin\_B1\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.evening\_meal).thiamine\_vitamin\_B1\_in\_mg  
 nutrition\_data.riboflavin\_vitamin\_B2\_in\_mg = calculate\_dish\_nutrition(menu\_for\_one\_day.breakfast).riboflavin\_vitamin\_B2\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.dinner).riboflavin\_vitamin\_B2\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.evening\_meal).riboflavin\_vitamin\_B2\_in\_mg  
 nutrition\_data.pyridoxine\_vitamin\_B6\_in\_mg = calculate\_dish\_nutrition(menu\_for\_one\_day.breakfast).pyridoxine\_vitamin\_B6\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.dinner).pyridoxine\_vitamin\_B6\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.evening\_meal).pyridoxine\_vitamin\_B6\_in\_mg  
 nutrition\_data.pantothenic\_acid\_vitamin\_B3\_in\_mg = calculate\_dish\_nutrition(menu\_for\_one\_day.breakfast).pantothenic\_acid\_vitamin\_B3\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.dinner).pantothenic\_acid\_vitamin\_B3\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.evening\_meal).pantothenic\_acid\_vitamin\_B3\_in\_mg  
 nutrition\_data.folacin\_acid\_vitamin\_B9\_in\_mcg = calculate\_dish\_nutrition(menu\_for\_one\_day.breakfast).folacin\_acid\_vitamin\_B9\_in\_mcg + calculate\_dish\_nutrition(menu\_for\_one\_day.dinner).folacin\_acid\_vitamin\_B9\_in\_mcg + calculate\_dish\_nutrition(menu\_for\_one\_day.evening\_meal).folacin\_acid\_vitamin\_B9\_in\_mcg  
 nutrition\_data.cobalamin\_acid\_vitamin\_B12\_in\_mcg = calculate\_dish\_nutrition(menu\_for\_one\_day.breakfast).cobalamin\_acid\_vitamin\_B12\_in\_mcg + calculate\_dish\_nutrition(menu\_for\_one\_day.dinner).cobalamin\_acid\_vitamin\_B12\_in\_mcg + calculate\_dish\_nutrition(menu\_for\_one\_day.evening\_meal).cobalamin\_acid\_vitamin\_B12\_in\_mcg  
 nutrition\_data.niacin\_vitamin\_PP\_in\_mg = calculate\_dish\_nutrition(menu\_for\_one\_day.breakfast).niacin\_vitamin\_PP\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.dinner).niacin\_vitamin\_PP\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.evening\_meal).niacin\_vitamin\_PP\_in\_mg  
 nutrition\_data.ascorbic\_acid\_vitamin\_C\_in\_mg = calculate\_dish\_nutrition(menu\_for\_one\_day.breakfast).ascorbic\_acid\_vitamin\_C\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.dinner).ascorbic\_acid\_vitamin\_C\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.evening\_meal).ascorbic\_acid\_vitamin\_C\_in\_mg  
 nutrition\_data.retinol\_vitamin\_A\_in\_mcg = calculate\_dish\_nutrition(menu\_for\_one\_day.breakfast).retinol\_vitamin\_A\_in\_mcg + calculate\_dish\_nutrition(menu\_for\_one\_day.dinner).retinol\_vitamin\_A\_in\_mcg + calculate\_dish\_nutrition(menu\_for\_one\_day.evening\_meal).retinol\_vitamin\_A\_in\_mcg  
 nutrition\_data.tocopherol\_vitamin\_E\_in\_mg = calculate\_dish\_nutrition(menu\_for\_one\_day.breakfast).tocopherol\_vitamin\_E\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.dinner).tocopherol\_vitamin\_E\_in\_mg + calculate\_dish\_nutrition(menu\_for\_one\_day.evening\_meal).tocopherol\_vitamin\_E\_in\_mg  
 nutrition\_data.cholecalciferol\_vitamin\_D\_in\_mcg = calculate\_dish\_nutrition(menu\_for\_one\_day.breakfast).cholecalciferol\_vitamin\_D\_in\_mcg + calculate\_dish\_nutrition(menu\_for\_one\_day.dinner).cholecalciferol\_vitamin\_D\_in\_mcg + calculate\_dish\_nutrition(menu\_for\_one\_day.evening\_meal).cholecalciferol\_vitamin\_D\_in\_mcg  
 nutrition\_data.energy\_value\_in\_kcal = calculate\_dish\_nutrition(menu\_for\_one\_day.breakfast).energy\_value\_in\_kcal + calculate\_dish\_nutrition(menu\_for\_one\_day.dinner).energy\_value\_in\_kcal + calculate\_dish\_nutrition(menu\_for\_one\_day.evening\_meal).energy\_value\_in\_kcal  
 return nutrition\_data

Файл «bnfmc.py»

from random import choice  
  
from catalog.citmmtf import check\_if\_the\_menu\_matches\_the\_formula  
from catalog.cp import calculate\_price  
from .models import MenuForOneDay  
  
  
def balanced\_nutrition\_formula\_menu\_calculation(dishes\_list, amount\_of\_days, amount\_of\_money, user\_data, bnf):  
 global menu  
 menu\_is\_ready = False  
 while not menu\_is\_ready:  
 menu = []  
 money\_left = amount\_of\_money  
 no\_money = False  
 i = 1  
 for day in range(amount\_of\_days):  
 print(f'calculating day {i}')  
 day\_ready = False  
 while not day\_ready:  
 i += 1  
 breakfast = choice(dishes\_list)  
 dinner = choice(dishes\_list)  
 evening\_meal = choice(dishes\_list)  
 menu\_for\_one\_day = MenuForOneDay()  
 menu\_for\_one\_day.breakfast = breakfast  
 menu\_for\_one\_day.dinner = dinner  
 menu\_for\_one\_day.evening\_meal = evening\_meal  
 money\_left\_temp = money\_left - (calculate\_price(menu\_for\_one\_day.breakfast, user\_data) + calculate\_price(menu\_for\_one\_day.dinner, user\_data) + calculate\_price(menu\_for\_one\_day.evening\_meal, user\_data))  
 if money\_left\_temp > 0:  
 if check\_if\_the\_menu\_matches\_the\_formula(menu\_for\_one\_day, bnf, user\_data):  
 menu.append(menu\_for\_one\_day)  
 print(menu\_for\_one\_day.evening\_meal.name)  
 money\_left = money\_left - (calculate\_price(menu\_for\_one\_day.breakfast, user\_data) + calculate\_price(menu\_for\_one\_day.dinner, user\_data) + calculate\_price(menu\_for\_one\_day.evening\_meal, user\_data))  
 day\_ready = True  
 # else:  
 # no\_money = True  
 # break  
 # if no\_money:  
 # break  
 menu\_is\_ready = True  
 for i in menu:  
 i.save()  
 return menu

Файл «calculated\_menu.html»

{% extends "base\_generic.html" %}  
  
{% block content %}  
{% if menu\_inst %}  
 <h1>Calculated Menu</h1>  
{% for menu in menu\_inst.list\_of\_menus.all %}  
<p><strong>Dish name: </strong><a href="{{menu.breakfast.get\_absolute\_url}}">{{menu.breakfast.name}}</a></p>  
<p><strong>Dish recipe: </strong>{{menu.breakfast.recipe}}</p>  
<p><strong>Dish kitchen utensils: </strong></p>  
{% for kitchen\_utensil in menu.breakfast.kitchen\_utensils.all %}  
<p><strong><a href="{{ kitchen\_utensil.get\_absolute\_url }}">{{kitchen\_utensil.name}}</a></strong></p>  
{% endfor %}  
<p><strong>Dish products: </strong></p>  
{% for product in menu.breakfast.products.all %}  
<p><strong><a href="{{ product.product.get\_absolute\_url }}">{{product.product.name}}</a></strong> {{product.amount}}-{{product.unit}}</p>  
{% endfor %}  
<p><strong>Dish name: </strong><a href="{{menu.diner.get\_absolute\_url}}">{{menu.dinner.name}}</a></p>  
<p><strong>Dish recipe: </strong>{{menu.dinner.recipe}}</p>  
<p><strong>Dish kitchen utensils: </strong></p>  
{% for kitchen\_utensil in menu.dinner.kitchen\_utensils.all %}  
<p><strong><a href="{{ kitchen\_utensil.get\_absolute\_url }}">{{kitchen\_utensil.name}}</a></strong></p>  
{% endfor %}  
<p><strong>Dish products: </strong></p>  
{% for product in menu.dinner.products.all %}  
<p><strong><a href="{{ product.product.get\_absolute\_url }}">{{product.product.name}}</a></strong> {{product.amount}}-{{product.unit}}</p>  
{% endfor %}  
<p><strong>Dish name: </strong><a href="{{menu.evening\_meal.get\_absolute\_url}}">{{menu.evening\_meal.name}}</a></p>  
<p><strong>Dish recipe: </strong>{{menu.evening\_meal.recipe}}</p>  
<p><strong>Dish kitchen utensils: </strong></p>  
{% for kitchen\_utensil in menu.evening\_meal.kitchen\_utensils.all %}  
<p><strong><a href="{{ kitchen\_utensil.get\_absolute\_url }}">{{kitchen\_utensil.name}}</a></strong></p>  
{% endfor %}  
<p><strong>Dish products: </strong></p>  
{% for product in menu.evening\_meal.products.all %}  
<p><strong><a href="{{ product.product.get\_absolute\_url }}">{{product.product.name}}</a></strong> {{product.amount}}-{{product.unit}}</p>  
{% endfor %}  
{% endfor %}  
{% endif %}  
{% endblock %}

Файл «views.py»

@login\_required  
def calculate\_formula(request):  
  
 if request.method == 'POST':  
  
 form = DataForCalculatingTheFormulaForm(request.POST)  
 profile = request.user.profile  
 if profile.weight == '' or profile.city == '' or profile.country == '' or profile.date\_of\_birth == '':  
 return HttpResponse('<h1>First fill your profile</h1>')  
 else:  
 if form.is\_valid():  
 balanced\_nutrition\_formula = BalancedNutritionFormula.objects.all().filter(country=profile.country)[0]  
 menu\_inst = MenuForMultipleDays()  
 amount\_of\_days = int(form['amount\_of\_days'].value())  
  
 amount\_of\_money = int(form['amount\_of\_money'].value())  
   
 menu = balanced\_nutrition\_formula\_menu\_calculation(Dish.objects.all(), amount\_of\_days, amount\_of\_money, profile, balanced\_nutrition\_formula)  
 menu\_inst.save()  
 menu\_inst.list\_of\_menus.add(\*menu)  
 return render(request, 'catalog/calculated\_menu.html', {'menu\_inst': menu\_inst})  
  
 else:  
 form = DataForCalculatingTheFormulaForm()  
  
 return render(request, 'catalog/data\_for\_calculating\_the\_formula\_form.html', {'form': form})