

Úloha D

TODO POPIS IMPORTY etc

```
from typing import Union
import numpy as np
import pandas as pd
from Task_E.normModels import L1Model, LInfModel
```

Funkcia je súčasťou triedy Model, vstupy sú riadkové vektory x, stĺpcový vektor y, a ako normu Union[L1Model, LInfModel], počíta R kvadrát podľa definície $R^2 = 1 - \frac{\sum_{i=1}^n (y_i - \hat{y}_i)^2}{\sum_{i=1}^n (y_i - \bar{y})^2}$

```
class Model:
    def r_kvadr(self, x, y, norm: Union[L1Model, LInfModel]) -> float:
        model = norm(y, x)
        betas = model.solve()

        y_hat = betas[0] + np.dot(x.transpose(), betas[1:])
        y_mean = np.mean(y)

        print(y - y_hat)

        res1 = 0
        res2 = 0

        for i in range(len(y)):
            res1 += (y[i] - y_hat[i]) ** 2
            res2 += (y[i] - y_mean) ** 2

        result = 1 - (res1 / res2)
        return result
```

Využitie:

```
diabetes = pd.read_csv('data/diabetes.csv')
x_names = ['Pregnancies', 'BloodPressure', 'SkinThickness', 'Insulin', 'BMI',
            'DiabetesPedigreeFunction', 'Age']
x = diabetes[x_names].to_numpy().transpose()
y = diabetes['Glucose']
model = Model()

r2_l1 = model.r_kvadr(x, y, L1Model)
r2_linf = model.r_kvadr(x, y, LInfModel)

print(f'R-squared L1: {r2_l1}')
print(f'R-squared LInf: {r2_linf}')
```