

proge 4 // projekt

-üldinfo-

rühma liikmed : Jevgeni Golosov
programmi nimi : "Keemia kalkulaator"
probleem : keemia võrrandite tasakaalustamine

Lühikirjeldus

programm võimaldab võrdsustada kasutaja poolt sisestatud keemilisi reaktsioone

GitHubi link

https://github.com/JevGolo/proge4_project

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-programmi koodi-

Python

```
from flask import Flask, redirect, render_template, request
from chemlib import Compound, Reaction
import json

app = Flask(__name__)

@app.route("/")
def index():
    return redirect("/main")

@app.route("/main")
def main():
    return render_template("main.html")

@app.route("/calc")
def calc():
    return render_template("calc.html", mess="")

@app.route("/result", methods=['POST', 'GET'])
def result():
    if request.method == "POST":
        reaction = request.form['reaction']
        if reaction != "":
            return render_template("result.html", react=request.form['reaction'])
        else:
            return redirect("/calc")
    else:
        return redirect("/calc")

@app.route("/help")
def help():
    return render_template("help.html")

def calc_react( reaction_input ):
    try:
        parts = reaction_input.split(" ")
        reactants_str = [a.strip() for a in parts[0].split("+")]
        products_str = [a.strip() for a in parts[1].split("+")]

        reactants = [Compound(e1) for e1 in reactants_str]
        products = [Compound(e1) for e1 in products_str]

        r = Reaction( reactants, products )
        r.balance()

        coeffs_str_list = [f'{value}' for key, value in r.coefficients.items()]
        coeffs_output = [ int(el) for el in coeffs_str_list ]

        output = {
            'reactants' : reactants_str,
            'products' : products_str,
            'coeffs' : coeffs_output,
        }

        return json.dumps( output ), 200
    except:
        return "error", 200

@app.route("/get_coeffs", methods=['POST', 'GET'])
def get_coeffs():
    if request.method == "POST":
        return calc_react( request.form['react'] )
    else:
        return redirect("/main")

if __name__ == "__main__":
    app.run(host = "localhost", port = 80, debug=True)
```

JavaScript

```
let hidden_input = document.getElementById('reaction');
let user_react = hidden_input.getAttribute('data-r');

let resultDiv = document.getElementById('result');

function smaller_numbers(_text_) {
    let output = '';
    for (let i = 0; i < _text_.length; i++){
        if ( !isNaN(Number(sign)) ){
            output += '<sub>' + _text_[i] + '</sub>';
        } else {
            output += sign;
        }
    }
    return output
}

function set_data(_data_json_){
    data_obj = JSON.parse(_data_json_);
    console.log(data_obj);

    let len_reactants = data_obj.reactants.length;
    let len_products = data_obj.products.length;

    let coeffs_reactants = data_obj.coeffs.slice( 0, len_reactants );
    let coeffs_products = data_obj.coeffs.slice( len_reactants );

    console.log(coeffs_reactants);
    console.log(coeffs_products);

    let reactants_str_array = [];
    let products_str_array = [];

    // REACTANTS
    for( let i = 0; i < len_reactants; i++ ) {
        let part = '';
        e = data_obj.reactants[i];
        c = coeffs_reactants[i];

        if (c > 1) {
            part += '<a class="coeff-number">' + c + '</a>';
        }
        part += smaller_numbers( e );
        reactants_str_array.push( part );
    }

    for( let i = 0; i < len_products; i++ ) {
        let part = '';
        e = data_obj.products[i];
        c = coeffs_products[i];

        if (c > 1) {
            part += '<a class="coeff-number">' + c + '</a>';
        }
        part += smaller_numbers( e );
        products_str_array.push( part );
    }

    let f_result = reactants_str_array.join( ' + ' ) + ' -> ' + products_str_array.join( ' + ' );
    resultDiv.innerHTML = f_result;
}

$.post("/get_coeffs",
{
    react: user_react
});

function(data, statusTxt, xhr){
    console.log(xhr.status);
    if( data == "error" ){
        alert("Midagi liks valesti. Kontrollige keemia võrrand ja proovige uesti palun");
        window.location.href = "/calc";
    } else {
        console.log("data: " + data);
        set_data(data);
    }
});
```