proge 4 // projekt

-Üldinfo-

rühma liikmed : Jevgeni Golosov

programmi nimi : “Keemia kalkulaator”

probleem : keemia võrrandite tasakaalustamine

lühikirjeldus

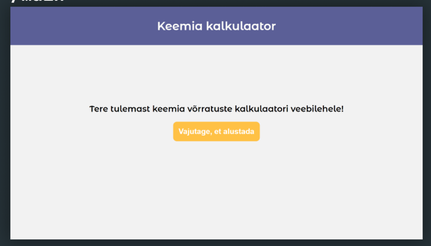
programm võimaldab võrdsustada kasutaja poolt sisestatud keemilisi reaktsioone

GitHubi link

https://github.com/JevGolo/proge4_project

-pildid-

/main



/calc

/result

-programmi kood-

Python

```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(el) for el in reactants_str]
        products = [Compound(el) for el 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

```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++){

        let sign = _text_[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 läks valesti. Kontrollige keemia võrrand ja proovige uuesti palun" );
      window.location.href = "/calc";

    } else {
      console.log( "data: " + data );
      set_data( data );
    }

  });
```