**Raptor Solar Analysis**

**Objectives**

* To provide authenticated data on global resource consumption and production from verified sources:
  + Global Resource Consumption: <https://worldpopulationreview.com/>
  + Global Resource Production: <https://ourworldindata.org/fossil-fuels>
* To provide a tool to analyze a suitable plan to set up your own residential solar panel based on your requirements.

**Subprojects**  
The Subprojects within this project are:

* ResourceRadar
* RaptorSolar

**Working**  
The working of these projects is as follows:

1. **ResourceRadar**
   * **Global Resource Consumption**
     + The web application displays a form that asks you to enter the country for which you want to view the data.
     + The data for each country is from 2023.
     + About 210 countries and international bodies have been included in the database.
     + *Example*: The user enters "India" into the form. The form then processes and displays the resource consumption data for India. It includes various resources like Coal, Electricity, Oil, Natural Gas, and Biofuel.
     + **Note**: The form is not case-sensitive.
   * **Global Resource Production**
     + The web application displays a form that asks the user for the desired country and year, for which you want to retrieve the data.
     + The data for each country is available from the late 1900s.
     + *Example*: The user enters "India" in the country field and "2010" in the year field. The user will then receive data about the resources produced by India in the year 2010.
     + **Note**: The form is not case-sensitive.
2. **RaptorSolar**
   * The web application displays a form that includes the following fields:
     + Land area the user is willing to devote to the solar panel setup.
     + The minimum power required by the user, to be generated from the solar panel setup.
     + The current annual electricity bill being paid by the user.
   * Based on the inputs from the user, the form processes the data and then displays all the suitable solar setup plans that suit the user's needs, which have been retrieved from the form.
   * All the plans are from [TataSolar](https://www.tatapowersolar.com/rooftops/residential/)
   * For each plan, a profit calculator has been included.
   * As solar setups are one-time investments, and electricity bills are paid regularly, there will be a point in time, or a "break even" when the user will start gaining profits from their investments.
   * The profit calculator, hence, calculates the approximate number of years after which the investment in Tata Solar becomes a profit.
   * **Note**: The solar setup plans include both off-grid and on-grid options.

**Use Cases**

* **ResourceRadar**
  + One place to get authentic data on global resource consumption and production from a span of many years.
* **RaptorSolar**
  + One place to analyze and find out a solar panel setup plan for you.
  + To get an approximate break-even point using a profit calculator custom-designed by me.

**Tools Used**

* Golang
* PostgreSQL
* Go Templates
* CSS
* Bootstrap v5.3

**External Libraries**

* go-chi
* jackc/pgconn
* crypto