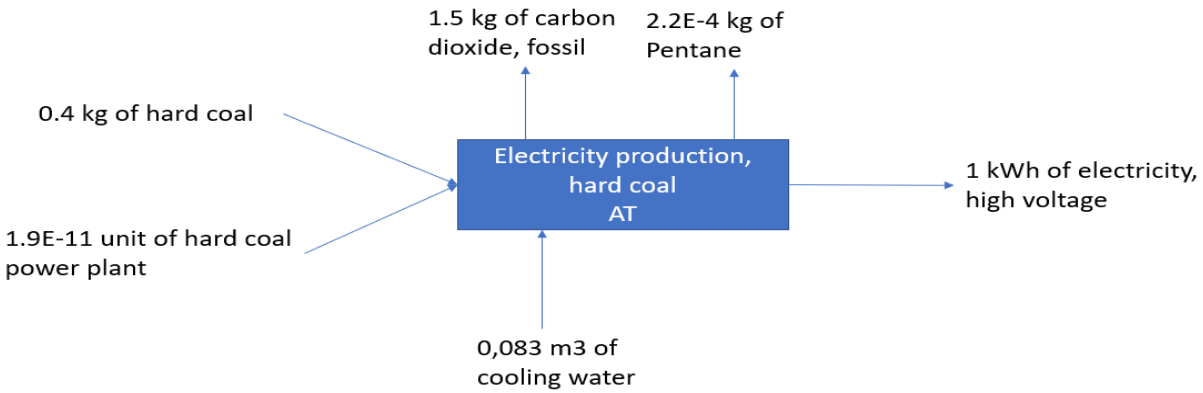
Interview Coding Challenge

An ecoinvent dataset models the pollution of a plant, and its connection to the rest of the supply chain. The important information in a dataset are the reference product (the main valuable output of the plant), byproducts (waste or secondary outputs), inputs from technosphere (what is bought from other plants), emissions to environment, and resource consumptions from environment.

The datasets, which we have supplied to you, are available in the ecoSpold2 format (xml) and are not very human friendly. The objective of the application is to represent the dataset in a diagram similar as the one shown below.



The central box shows the activityName and geography short-name field content. To the right, the reference product and byproducts are shown. Inputs from technosphere are at the left, emissions to environment are on the top and inputs from environment are at the bottom. These are 4 "groups" of exchanges.

- Show the quantity with up to 4 digits, the unit, and the name of the exchange.
- If more than one exchange has the same name (for example, emission of Pentane to air and to water), the amounts should be summed up and the name should only appear once per group.
- Show a maximum of 5 exchanges per group. The reference product should always be displayed. If there are more than 4 byproducts, select the 4 exchanges with the largest production volume. For the other groups, choose the 5 exchanges with the largest amount.
- Font type/size, color and other cosmetic details are left unspecified. Clarity of the output is the most important criteria.

The application should be web-based (Full-Stack). The back-end should be written in Python 3.5 or later. You can choose your own framework (Flask or Django). From a user interface, files should be selected through drag-and-drop or via a dialogue window. Only one ecoSpold file should be selected at the time. After selecting a file, the user should be notified of the activity name and geography of the dataset selected in the file and asked if they want to proceed. After accepting the conversion, the user should be shown a diagram similar to the one found above, directly in the browser. Then, the user can reset, or export the diagram in a graphical file format (PDF, JPEG, PNG, and the likes). Please comment your code for understandability. Some pseudocode to outline your intentions prior to writing the actual code would be a great plus.