Exercise: Graph Design (Networks)

In this assignment, you have to design visualization solutions for questions related to the AidData dataset. This dataset contains information about financial transactions for aid purposes between two countries. Given the data structure and analytical questions presented below, your goal is to sketch views that would help an analyst to obtain the answer for those questions.

Dataset

In the AidData dataset, each row represents a financial transaction between two countries. The dataset contains the following attributes:

- **Year:** year of the commitment
- **Donor:** country providing the financial resource
- **Recipient:** country or organization receiving the money
- **Commitment Amount:** the total amount of financial resources provided
- **Coalesced Purpose Name:** the purpose of the transaction

Below is an example of the data:

Year	Donor	Recipient	Commitment Amo...	Coalesced Purpose Name
1996	United States	Peru	19,085,570	Radio/television/print media
1996	United States	Brazil	272,863,443	Energy generation and supply, purpose unspeci...
1996	United States	Argentina	34,107,930	Power generation/non-renewable sources
1996	United States	Argentina	68,215,861	Power generation/non-renewable sources
1996	United States	Argentina	73,788,687	Power generation/non-renewable sources
1996	United States	Argentina	102,323,791	Power generation/non-renewable sources
1996	United States	Argentina	115,966,963	Power generation/non-renewable sources
1996	United States	Bolivia	27,286,344	Power generation/non-renewable sources
1996	United States	Bolivia	150,074,894	Power generation/non-renewable sources

**Note: The full dataset has many more columns and it also includes international organizations other than countries. The description here focuses only the attributes and entities (countries) relevant for the assignment.*

You can find a (simplified and reduced) copy of the data here:

https://drive.google.com/open?id=1YiuHdfZv_JZ-igOemKJMRaU8dkucfmHxOP6Od3FraW8

You can find the full dataset with descriptions here:
https://www.aiddata.org/data/aiddata-core-research-release-level-1-3-1

Goal

Your goal is to create 3 independent visualizations of the same data set, each one with the intent of answering the questions stated below. For each numbered visualization, you should be able to create a data visualization that answers **all** of the questions specified.

- **Visualization 1:** Create an overview of the relationships between countries so that it is possible to see who donates to whom and how much. Questions one should be able to answer are: 1) Who are the major donors and to which countries do they donate the most? And conversely, who are the major receivers and which countries do they receive from the most? [Optional: 2) Are there groups of countries that tend to donate/receive to/from a similar set of countries?]

- **Visualization 2:** Create an overview to see if there are groups/clusters of countries that are tightly related (in terms of donations) one to another, that is, countries in a group tend to donate/receive from the same set of countries. Question: are there groups of tightly linked countries that donate/receive more between then with other countries?

- **Visualization 3:** Considering only the top 5 purposes of donation, how does the relationship between countries look like in terms of purposes? What purposes do countries donate for to other countries? Are there countries that donate to a given country using multiple purposes? Or do counties always donate using one single purpose when donating to another country?

Instructions

For this assignment, your goal is to come up with effective visualization designs to answer the questions posed and to communicate their answers found in the data.

You have to submit the following:

1) Submit one or more (hand-drawn) sketches that show your thinking (do not use Tableau or other tools). The sketches can contain multiple solutions. If your sketch contains more than one solution you have to describe pros and cons of each one and explain which one you decided to implement and why. If you submit only one sketch then add only a justification for your design and why you think it works for the problem assigned.
2) Submit a screenshot of the visualization you developed in D3.
3) Submit your D3 code in a separate file.