DELIVERABLE 3

Due Wednesday, November 30th at 2:59 p.m.

This is a team deliverable – self-select your teams on Canvas -> People. A representative from each team needs to upload three separate files by the due date: 1) a PDF file as described below, 2) a Jupyter notebook file (extension ipynb) implementing your team's analysis, and 3) an html rendering of the Jupyter notebook (extension html).

A consulting firm believes its consultants work best through multi-disciplinary collaboration. All consultants employed by the firm are highly qualified professionals. However, the firm believes its teams work best and are most productive when their members contribute diverse specialized expertise and diverse viewpoints.

For the purposes of this stylized exercise consider 100 consultants to be allocated across 20 teams of 5 members each. The firm has identified the following 4 attributes to partially differentiate its consultants:

- Their expertise in Analytics (including Python programming)
- Their functional expertise in business and or operations strategy and management
- Their domain expertise in the healthcare sector where these 20 teams will be working
- Their communication skills (including languages spoken by regional clients)

The attributes are measured on a binary scale (1 if the consultant possesses that expertise and 0 otherwise).

The comma-separated values (.csv) file <consultants.csv>, available on Canvas, contains the data for each consultant. Your task is to devise an algorithm and implement it in Python to construct 20 *balanced* teams of 5 members each. Each consultant can only be assigned to one team. You can read in the dataset as follows:

```
import pandas as pd
consultants = pd.read_csv("consultants.csv").to_dict("records")
```

This creates a list where each consultant is represented as a dictionary (similar to the list of jobs in the scheduling application discussed in class)

Your PDF submission should consist of the following sections:
1. A clear and succinct description (not more than one page) of your solution approach, including how you defined the notion of a "balanced" team, and the algorithmic approach you chose;
2. A summary of table of the result of your allocation that looks as follows:

Team	Number of members in team with			
	Analytics expertise	Functional expertise	Domain expertise	Communication skills
1				
2				
⋮				
20				

Note 1: Each team must consist of exactly 5 members

Note 2: Perfect balance may not be achievable. Just provide a reasonable practical approach. Do not spend too much time "optimizing"!

Note 3: In practice, teams are tailored to the expertise required for each project. For our purposes, we assume all projects are similar and assume that balancing expertise across teams is a good approach.