RECOMMENDATION SYSTEM WITH MINIMAL IDENTIFIABLE FEATURES

Exploring the possible feature / stretch goal

Data and Computational workflow

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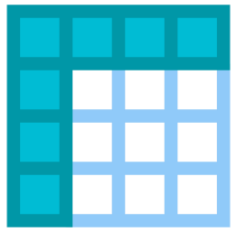
student_all_interests.csv

clubs_similarity.csv

pipeline.py



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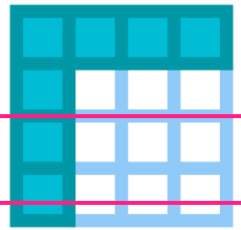

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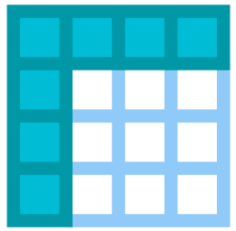

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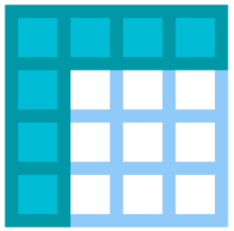

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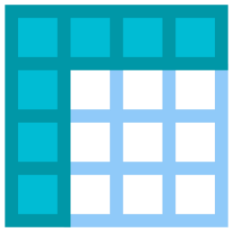

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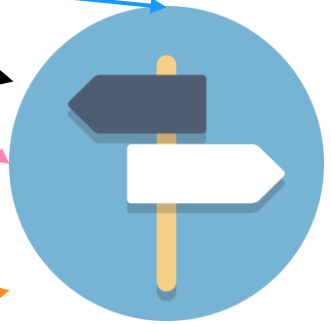

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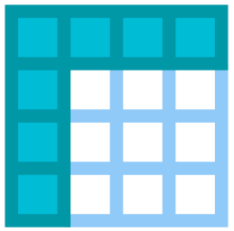

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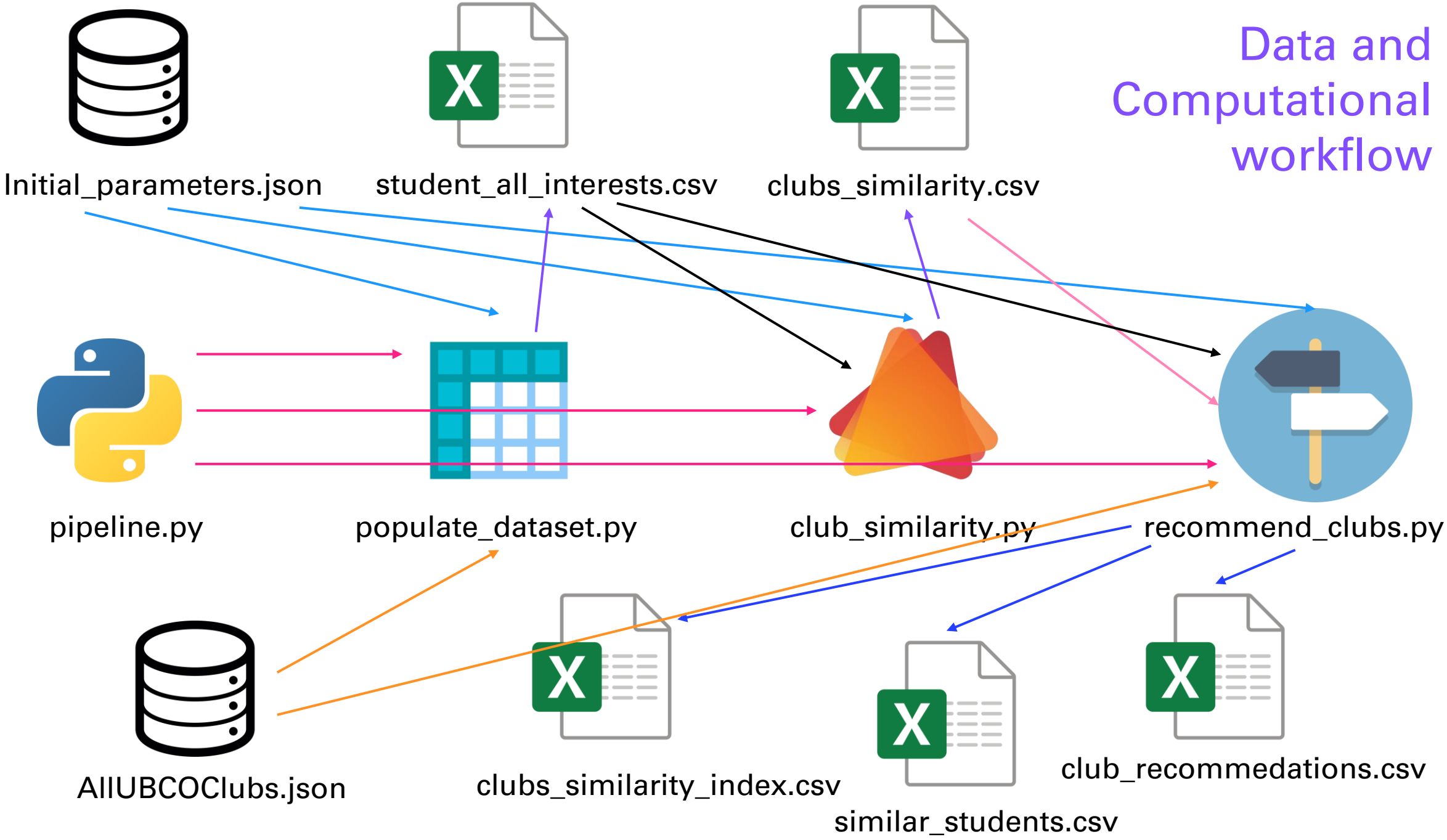

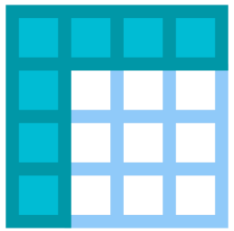

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- Generates random event interests [still under development]

club_similarity.py

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- Generates club_similarity.csv for better interpretability of the recommendation system

recommend_clubs.py

Objective: Generates a .csv of club recommendations

- Finds similarity indices between a pair of different students (how many clubs are similar?)
  - Stored as clubs_similarity_index.csv
- Sorts these values for each student to find most similar students
  - Stored as similar_students.csv

- Computes importance of a similar user
  - Importance = similarity_index(this_user, other_similar_user)

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  - Normalise the weights for each club

  - Store them from highest weight to lowest weight (i.e. most recommended to least recommended)

  - Generates club_recommendations.csv

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- Recommendations takes all user interests into account, not just those that are most similar. (Can be treated as a hyper-parameter to include n-most similar users).
- Generates a unique order of all clubs and not just a subset of recommended clubs. This can be used as a native club-view order for each student (each student sees all clubs but in a unique order, personalized to them)

Areas of improvement

- For better personalized lists, more data is needed
  - Women in engineering
  - Indonesian students of Okanagan
  - African Caribbean Students Club
  - Asian Student Association
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    - Women in engineering
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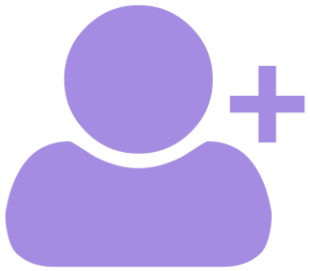
- Personal data vs Personalized results trade-off
    - Example: biased results (Women in engineering)
    - Using “categories” data in AllUBCOClubs.json

What about new users?

- Initial run: no club interests for any student



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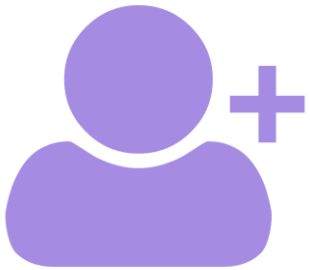

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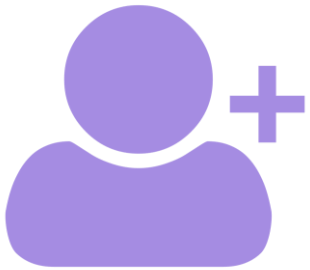

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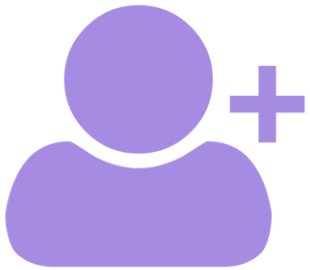

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     - Reluctance to answer a questionnaire (cannot assume that everyone will respond)
  3. (Best case but more high-effort)
     - Obtain the dataset of current students and what clubs they are a part of
     - Generate an average portfolio by faculty
     - Display this order

RECOMMENDATION SYSTEM WITH OPTIMAL IDENTIFIABLE FEATURES

Exploring the possible feature / stretch goal

What if we had the following features?

1. Gender
    - Women in Engineering
    - Inclusive Men’s Health Partnership

NEW

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What if we had the following features?

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2. Ethnicity
    - Asian Student Association
    - African Caribbean Student Club
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3. Country
    - Hong Kong Student Club

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3. Country
    - Hong Kong Student Club

4. Religion
    - Bible Discussion Club
    - Not including this would only affect 1 club (unless new religious clubs form in the future)

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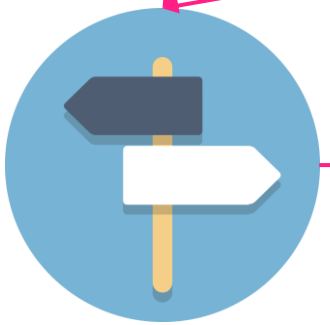

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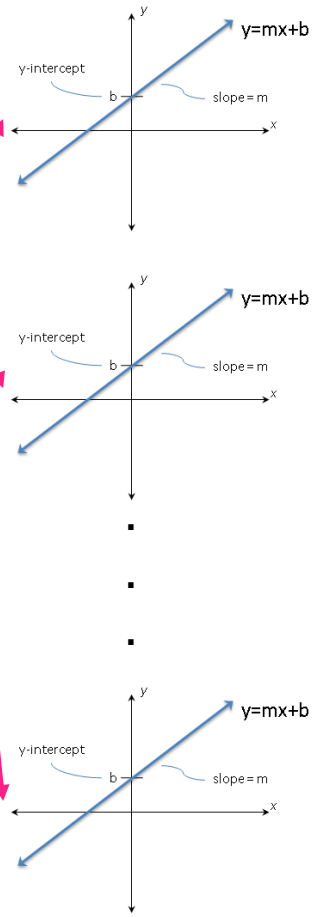

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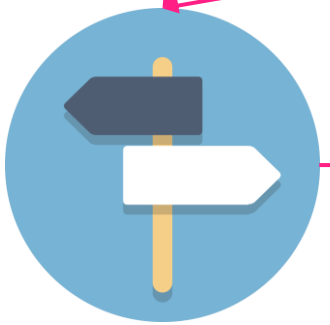

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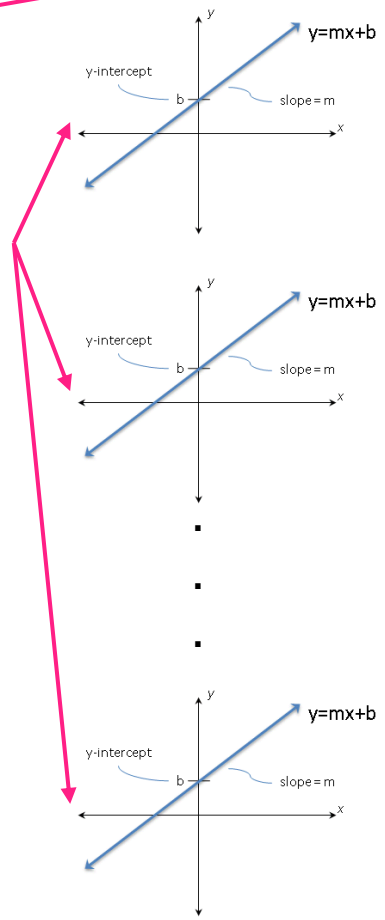

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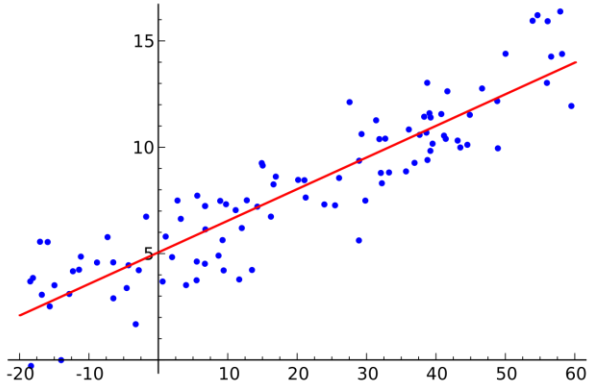

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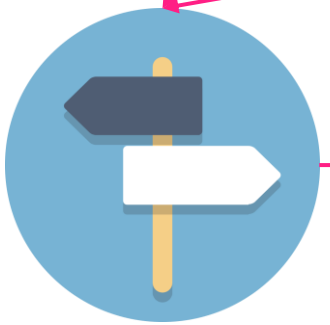

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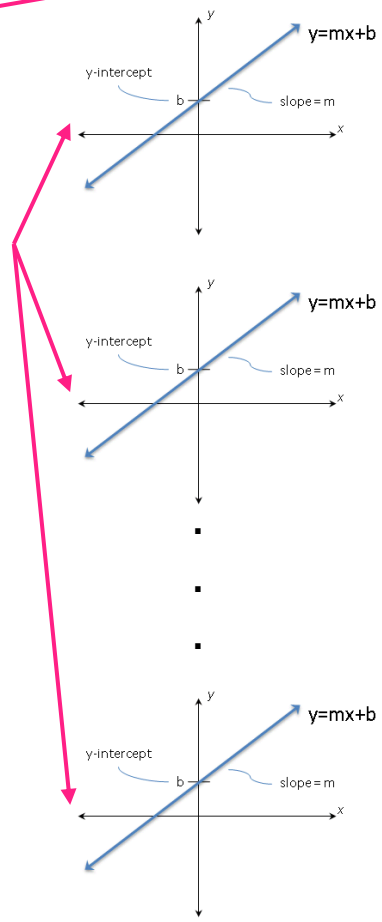

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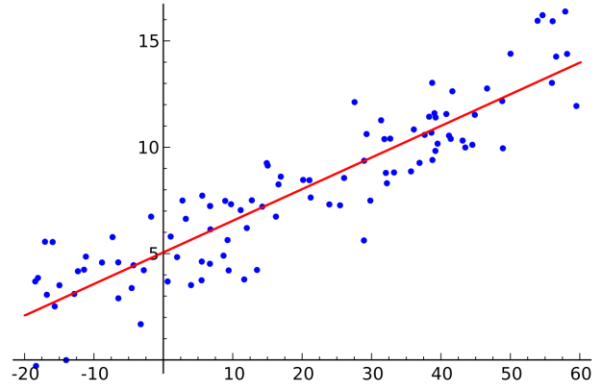

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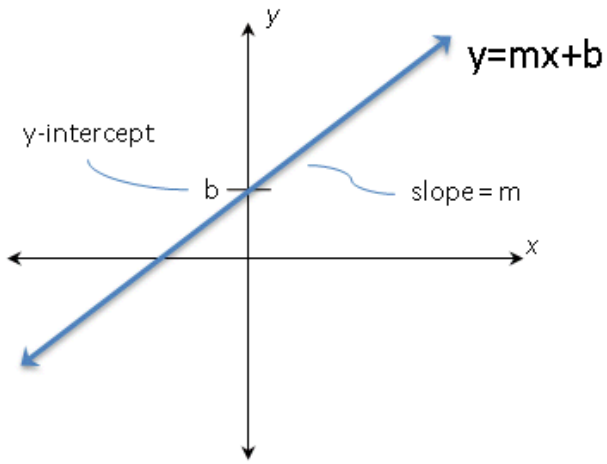
Importance of a pair of students

- One dimensional linear equation: y = mx +c



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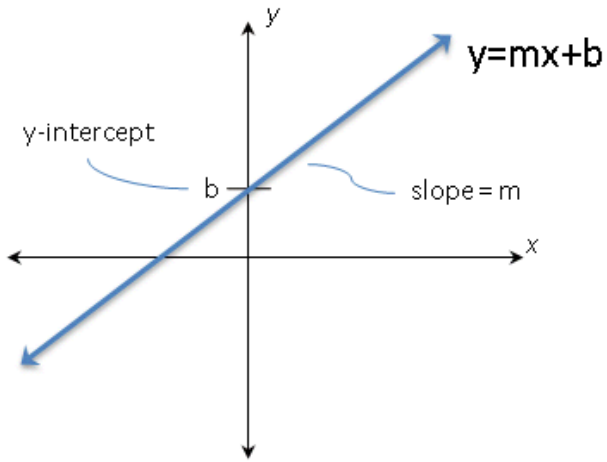

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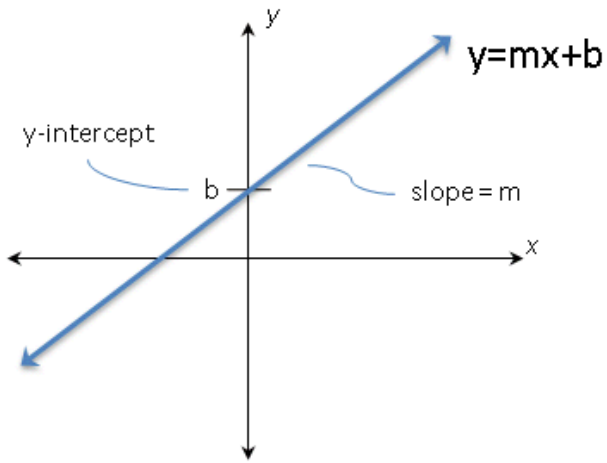

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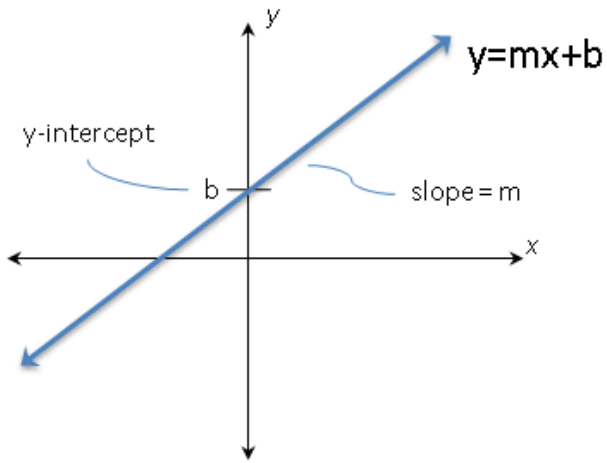

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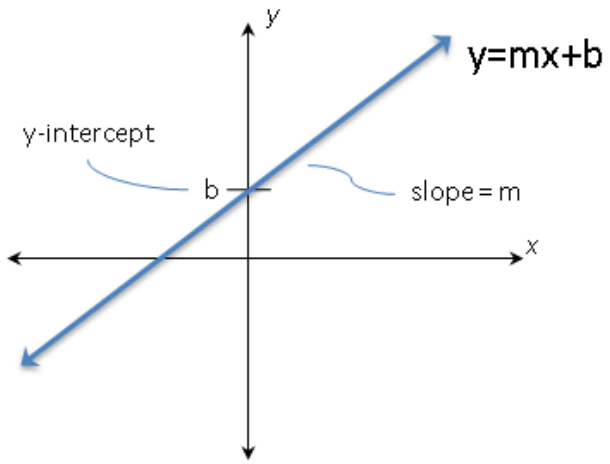

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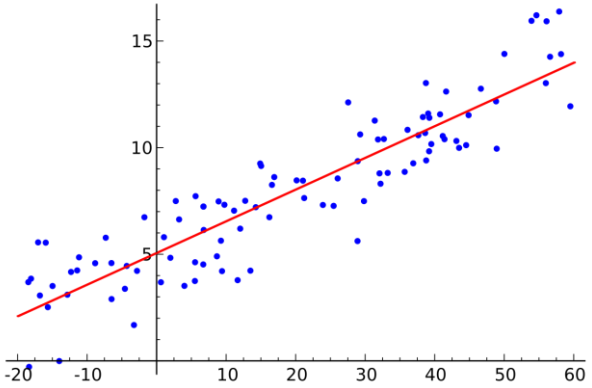
- bias: function parameter, non-zero x ∈ Z^(++)
  - To ensure that even those with nothing in common get some unit importance, for completeness



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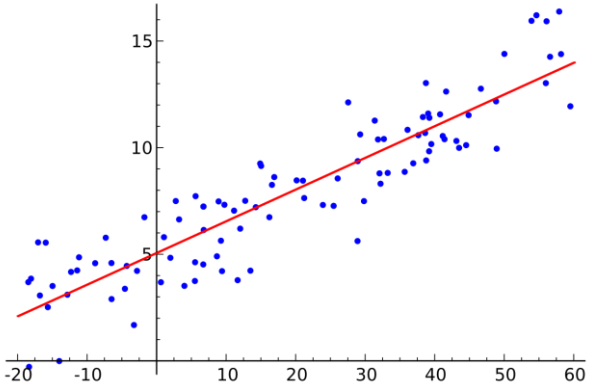

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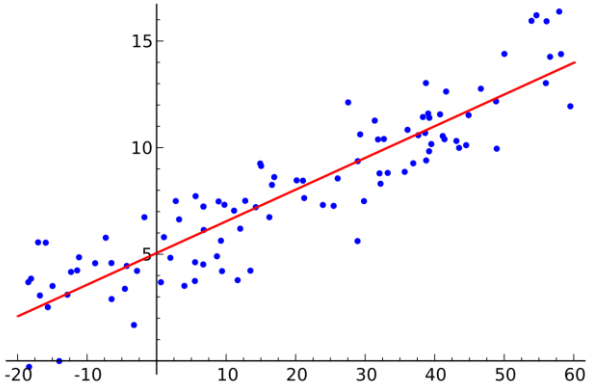

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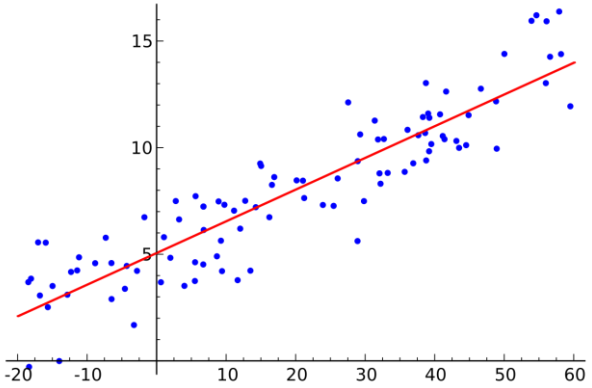

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- Find unique clubs (algorithm similar to the previous one with minimal features)