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Today's college ranking systems garner nothing but complaints for their misguided use of metrics by which to evaluate institutions. Why ask administrators to judge universities they've never stepped foot on? Why weight standardized test scores at 7.5% of an institution's outcome? And where's the quality of food metric? We can't promise to fix that last one (yet), but our app will resolve common complaints by placing ranking metrics in the hands of its users. We'll start humble and use the factors from our API (see mockup below).

The MVC design pattern is the pattern for us. Modeling Colleges and a data structure to manage them (AllColleges) will allow us to reuse these classes upon future expansion of the user interface. Separating the design thusly will allow Kevin and me to work on different pieces of the project and reduce merge conflicts. When we begin reading resumes and our team expands, this conventional design pattern will be familiar to new recruits. Views will include nested AnchorPanes (or Regions or a close relative), buttons, text input fields, and text labels.

Potential mockup:

The mockup is a hand-drawn sketch of a web application interface, divided into several sections:

- Title:** A large text input field with the placeholder "(Brief description?)".
- Filters:** A section containing three rows of filters, each with three radio button options:
  - Designation: ☐ public ☒ private ☐ both
  - State:
  - Enrollment: ☐ >5,000 ☐ <5,000 ☐ both
- Metrics:** A section with a heading "Brief instructions:" followed by several metrics, each with a text input field and a percentage sign:
  - Tuition:  %  
Uses in-state tuition where applicable if state filter's on
  - Midpoint ACT:  %
  - Acceptance Rate:  %
  - Three vertical dots indicating more metrics.
  - <Other Factors>
- Buttons:** At the bottom, two buttons labeled "Start Over" and "Rank Colleges".
- Results:** On the right side of the interface, a list of results:
  - 1. Carleton College ← (link to Tracker page?)  
(Selected states? All states?)
  - 2. Other colleges
  - Three vertical dots indicating more results.

## Models

- College
  - Instance variables for all attributes – We'll grab this data from our API.
  - double totalWeightedOutcome – See example below. We'll use this to sort.
  - Constructor will take in a dictionary, sets all instance variables except totalWeightedOutcome
  - Getters for all instance variables
- AllColleges:
  - collegeList – an ArrayList of Colleges
  - Constructor will hit API, construct each College from its dictionary, and add it to the list
  - rankByUserMetrics – ranks (sorts) CollegeList using user's weights
  - Getter for collegeList

Ranking algorithm: the following example assigns Carleton its totalWeightedOutcome metric, which we'll use to sort all colleges in the user's ranking list.

Ex: Carleton

Factor/metric	data	Normalizing operation <small>Converts to # on 0-100 scale</small>	User Weight	outcome
acceptanceRate	22.77	$100 - 22.77 = 77.23$	.25	19.31
ACT	32	$(32/36) \cdot 100 = 88.89$	.25	22.22
outStateTuition	47,736	$\frac{53,000 - 47,736}{53,000} \cdot 100 = 9.93$	.5	+ 4.97
				46.5
				↓ totalWeightedOutcome