

ER Diagram Clarifications:

Our Lifetime Earnings table is normalized by decomposing by major for ease of use. In the ER diagram the tables are represented by one entity called Lifetime Earnings. Each Attribute is repeated by major ie: Lifetime_Earnings_Bachelors(by Major) represents Lifetime_Earnings_Bachelors(Education), Lifetime_Earnings_Bachelors(Engineering), Lifetime_Earnings_Bachelors(Liberal Arts), etc.

The server used to host this site is a apache-tomcat-8.0.39.

We used Java Server Pages for each page, and FusionCharts to plot our graphs. Some jsp files were used internally to organize our code.

When designing the Results page, our first goal was User friendliness. To that end, we allow the User to input two pieces of information: The state they live in, and their undergraduate Major. We extrapolate this information and make assumptions, assuming the user follows the national averages in order to create a full set of data to display. Of course, the information produced with assumptions such as these is not completely accurate.

In order to refine the accuracy of our page, we have an Advanced Options menu, in which the user may select various options from dropdown menus, and free number input. In the code, each of these selections will allow the web page to reactively adjust the queries executed, using the more specific data provided by the user. At each point, the web page will default to assumed values if there is no input, to display data robustly.

To answer the overarching question, whether or not the user should attempt a Master's degree, we begin with three basic assumptions. The User wishes to maximize their earnings within 5 year period. The User wishes to be in debt for less than one year. The user wants to pay a tuition less than a certain max value. There is a default value for the first two conditions, but not for the last. All of these conditions may be adjusted in advanced options, and the user defined value will always be used if specified.

We perform a complicated calculation to determine the opportunity cost of going to college versus entering the industry directly, which depends on a large variety of variables, such as the tuition, the number of years it will take for the user to graduate, how soon after graduating the user will find a job, how much the job pays, et cetera. Our comprehensive query considers all of these variables, and computes three values in order to determine whether the user should attempt a Master's degree or not: The opportunity cost of going to grad school, the number of years the user will be in debt, and the number of years it will take for the user to pay off the opportunity cost. We assume that in this short period of time, any raises in the user's salary will be minimal, and so we chalk that up to negligible variation. With these three values, we may compute The Answer.