CS 411 Project Template

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| ***Team Name*** | Paper Chasers |
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| ***Captain*** | Jonathan Kuik (kuik2) |
| ***Project Title*** | Is that program worth it? |
| ***Project Summary*** | Help students understand the ROI of a college, Masters, or PH.D program by utilizing data from the Department of Education on the median student debt and annual salary of students who graduate from those programs. Our application will provide a simple way to consume the data, compare programs, and make an informed choice on the education they are pursuing and what it will cost them in the short and long term. |
| ***Project Description*** | * **Description of an application of your choice.** [CarGurus](https://www.cargurus.com/) for post-secondary education. CarGurus provides unique insight into the quality of the “deal” of the vehicle for sale, based on how it’s priced compared to other similar vehicles. We will provide students with this same type of insight for the school and degree program they are interested in pursuing. We will help a user answer the following questions:   + How much does the average student graduating from this program make after college?   + How much student debt do they have?   + If I’m interested in a particular college/university, what programs have the greatest pay off? And which programs should I avoid?   + If I’m interested in a particular program of study, which school provides the greatest return?   + I’m interested in a particular college/university, are there other schools out there that are a better deal?   + Is it worth it for me to pursue this Masters degree? What’s the break even? What can I expect to gain over the next 5-10 years? * **Usefulness.** There are several sites out there that are geared towards helping a potential student find a college they are interested in. But the financial side of the program is usually exclusively focused on the cost of the school and what kind of student debt one might have leaving that particular college. This focus misses on two accounts: 1. It completely misses the potential salary a student leaving the program might earn (making student debt relative), and 2. It fails to differentiate by the program of study, which can vary dramatically in the potential earning power of a student. Finally, most of these sites are geared towards bachelors degree-seekers-very little tooling is available to someone pursuing a graduate degree to understand the pay-off of that particular degree. Graduate-degree seeking students must often more carefully balance the benefits of pursuing an additional degree with that of working, and without better tools, this decision is unnecessarily difficult. * **Dataset.** We will be using two major data sets.   + [Program Level Data](https://ed-public-download.app.cloud.gov/downloads/Most-Recent-Field-Data-Elements.csv) on Median debt and annual salary of graduating students, which contains 216,638 records.   + [Institution Level Data](https://ed-public-download.app.cloud.gov/downloads/Most-Recent-Cohorts-All-Data-Elements.csv) – which provides a wide array of data on the profile of each school. * **Description of the functionality that you plan to offer.** In general, the website will over a user the ability to search, compare, and save programs and institutions.   + **Basic Functions**: A user will be able to search both college/institutions and programs and get back basic information on the them-such as region, cost, competitiveness-with a focus on the financials of that particular school/program. In addition, a user will be able to create a profile that will allow them to save a school, search, or comparison.   + **Advanced Functions:**     - Possible List. * Advanced Techniques. Use 6 or more advanced techniques from the following list. (You can decide this later)   + Indexing   + Parallel query execution   + Transaction   + Approximate query processing   + Triggers   + Partitioning\Sharding   + Stored procedure   + Prepared Statements   + Compound Statements   + Constraint   + View |
| ***ER Design*** | * Have the ER diagram for your application, plus descriptions in plain words on the assumptions you make. For example, "we think that there must be only 1 advisor for each student". |
| ***Development Plan*** | * The relational schema of your database. Remember to include all keys and dependencies (e.g., functional dependencies) as appropriate. * Describe the final choice of databases and software platforms/languages that you will be using. Check the guidelines under Tools and Resources to see what tools can be used. * Describe where and how you will get data for your application. Do you get it from the Web, or some other application. * Describe the labor division among group members. * A project timeline with milestones. |
| ***System Demo URL*** | Insert the link to the system page. |
| ***Initial Demo Video*** | Insert the link to the initial demo video here  **Initial Demo Video Requirement:** each group needs to demonstrate all of the following using web page or mobile app interface connected with SQL queries. We won't accept the basic queries directly written in cPanel/SQL editor at the demo time.   * Have all the data you need in your database and it should be enough to demo the basic functionality (other requirements for this stage). * Functionality:   + Show how to insert records to the database   + Show at least one query that searches the database and list or print the returned records   + Show how to update records   + Show how to delete records * **NOTE:** This should not be your page login information (insert username/delete etc). We want to see some actual records from your project updates, else you will get no credits. * Talk about your plan for the next stage of the project, including what advanced functions do you plan to support. Having clear idea about advanced functions is very important. Please, make sure you can articulate the challenge clearly.   The initial demo video should be uploaded to MediaSpace at [https://mediaspace.illinois.edu](https://mediaspace.illinois.edu/) by the team captain.  The team captain will need to log in (with your NetID and AD password). Select “Add New” and then “Media Upload” (at the top corner of the page). The team captain will be asked to fill in a form describing the uploaded video. Make sure to:   1. Name the initial demo video as “Project TeamName Initial Demo” 2. Use the tag “CS411-SPRING-2020” 3. Add all group member names to the “team members” field (using “Add” to expand the form for additional members). 4. Check “unlisted” as the type of upload at the bottom (which would allow others to see your video). 5. After uploading, the initial demo video should appear under “My Media”. Make sure to test it. 6. If the team is satisfied, click “Share” beneath the video-playing frame. This gives a shareable link to the initial demo video. |
| ***Project Files*** | Link to all the project files here  Pack all your project files in a zip archive, upload the archive to one of the file hosting services (e.g. Dropbox, Box, Github), and add the link to the archive to your project page. All project teams are also required to share the repository with All TAs. |
| ***Final Demo Video Link*** | Link to the final demo video  Final Demo Video Requirements:   * Introduce your group's project and walk your audience through its goals and features. (We don't expect a professional movie from you, just record a quick screencast with your narration) * Basic Functions:   + Show how to insert/update/delete records to the database (repeat from the Initial Demo)   + Show how to search the database and list or print returned results. You need to show a few different interesting queries over your database. **One of the queries must involve join of multiple (at least 2) tables**. * **Demo Two Advanced Functions**: Give a brief overview of your advanced functions and their link with your project. **You have to be able to clearly define the technical challenge in advanced functions and articulate it during the presentation**. * Explain the **Advanced Techniques** used in the project: Use 5 or more advanced techniques from this list   + Indexing   + Parallel query execution   + Transaction   + Approximate query processing   + Triggers   + Partitioning\Sharding   + Stored procedure   + Prepared Statements   + Compound Statements   + Constraint   + View   The final demo video should be uploaded to MediaSpace at [https://mediaspace.illinois.edu](https://mediaspace.illinois.edu/) by the team captain.  The team captain will need to log in (with your NetID and AD password). Select “Add New” and then “Media Upload” (at the top corner of the page). The team captain will be asked to fill in a form describing the uploaded video. Make sure to:   1. Name the final demo video as “Project TeamName Final Demo” 2. Use the tag “CS411-SPRING-2020” 3. Add all group member names to the “team members” field (using “Add” to expand the form for additional members). 4. Check “unlisted” as the type of upload at the bottom (which would allow others to see your video). 5. After uploading, the final demo video should appear under “My Media”. Make sure to test it. 6. If the team is satisfied, click “Share” beneath the video-playing frame. This gives a shareable link to the final demo video. |