Degree Planning and Audit Tool

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Short Abstract:

**What?**

This project is designed to take a student's transcript and generate a degree plan showing the remaining courses they need to take in order to graduate. It will do this by parsing the PDF file, storing the data, and comparing it with the graduation requirements.

**Why?**

Advisors spend hours manually auditing students' degrees and our goal is to minimize time spent on the audits by automating the process

**How?**

We will create a program that reads the student's pdf transcripts and scrapes the data to fill out a masters degree plan. It will then use that filled-out degree plan to create an audit report that shows their core GPA, elective GPA, combined GPA, the core courses they've taken, the elective courses they've taken, the leveling courses, prerequisites, and outstanding requirements.

**So What?**

Saving advisors hours from work allows them to divert their attention to other tasks which allow students to get help from their advisors in a more timely manner.

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15. **EXECUTIVE SUMMARY**

The goal of this project is to design a program that automates the process of generating degree plans and audit reports to help automate the process of completing audit reports for students. This will benefit the students as well as the advisors who would normally have to audit them manually.

The program will collect information from a transcript provided by the user, including personal information and academic records. This will provide students with an accurate and reliable way to assess their degree progress. The program should ensure data privacy and transparency, avoid bias and inaccuracies, and provide users with informed consent involving the use of the program. Addressing these ethical issues ensures the program will be reliable and beneficial to students.

Overall, the program will aid students in ensuring they are on track to graduate and complete their academic goals.

1. **INTRODUCTION**

The goal of this project is to design a program that will automate the process of creating degree plans and generating audit reports by passing data from a student’s transcript and taking in user input from academic advisors. Our program will specifically be intended for use for generating audit reports for graduate students in the computer science graduate masters program at the University of Texas at Dallas (UTD). The user will navigate to a saved PDF of the student’s transcript in their directory and input this PDF into the program. The application’s will then capture the transcript data, allow the user to specify the chosen degree plan, select pre-reqs from a drop down list, and indicate whether the student is Fast Track(FT) or pursuing a thesis. Once this is done, the application generates a degree plan which is editable by the user. They will then be allowed to save this in their directory and print it. After, they can either decide to make another degree plan, or create an audit report from the current degree plan. The application will calculate GPAs and the user will be asked if the student will be taking additional courses. If the student is taking additional courses the program will calculate what GPA they need in order to obtain a satisfactory standing. The audit will list all the classes taken and what the core GPA and elective GPA’s are. Finally the audit report can be saved and printed. This whole application is made to speed up the degree plan and audit process

Currently, the process for reviewing degree plans and generating audit reports is completely manual. Due to the increasingly large number of students enrolled in the computer science graduate program at UTD, the current way of manually reviewing degree plans and creating audit reports is not sufficient to meet the advising needs of all the enrolled computer science graduate students. Students are forced to wait an unusually long time, which can result in them not signing up for the classes they need to get their degree. Our program will allow advisors to fulfill the advising needs of students in a timely manner.

There are currently no solutions to automate the reviewing process. The final project will be a desktop application that can read PDF transcripts and generate degree plans and audit reports from the parsed information.

1. **RESOURCES**

Project resources are components that are necessary for successful project implementation. For our project we have access to many resources. Our faculty advisor, who we meet with bi-weekly is an available resource to our group. She allows us to ask questions in order to clarify any confusion surrounding the project specs. The team is a resource because we can ask each other questions and we’re the ones who have to code for our project to be implemented. Another resource is the IDE which our team has chosen to implement the project in. Our group is using IntelliJ as our IDE so that everyone is on the same page and any encountered problems can be fixed with a group member’s assistance. Our group decided to use Java as our coding language. In order for us to parse the PDF’s, we had to download the Apache PDFBox 2.0.27 jar file and add it to the library of our IDE. We then decided that the GUI will be done using Java Swing which is already in the JDK file along with Java. Since we are using Java as our language we will use Oracle Java Documentation to assist us on any syntax. Another resource is the time and effort our group puts each week into the project. Finally, the most obvious resource is a PC, that is required to do any part of the project and to be able to communicate with the team.

1. **KEY** **ROLES**

* **PDF Parsing:** Will be responsible for extracting the data of the transcripts to be read into our program.
  + **Read data -** Whole team
  + **Organize Data -** Jason Vu, Jonathan Vu
* **Generate degree plan:** Prompts the user to generate necessary information into the transcript and feeds it into the audit.
  + **GUI -** Grant Reed
  + **GUI integration with data -** Michael Wu
* **Create Audit:** Calculates all the data from the transcript and asks the user if additional courses are being taken.
  + **Generate report -** Adam kosicki, Adrian Sanchez

1. **COMMUNICATION PLAN**:

We will be using two applications for communication with both our team and project manager.

* **Discord:** This application is a server based text chat and call system. Here, we will communicate between teammates to figure out what needs to be done. We can also use this application to send files and information about the project.
* **Microsoft Teams:** We will be using this application to communicate with our project manager. We have scheduled bi-weekly meetings on MS Teams and will ask for help as needed.

1. **RISK ANALYSIS/CONTINGENCY PLAN**
2. If a team member gets sick
   * We will redistribute tasks evenly so we can still complete the project on time.
3. If we are behind on deadlines
   * We will increase the number of times we meet per week
   * Work on our given tasks in our individually outside of meetings
4. Our software is having issues ( i.e. compiler is not working as intended)
   * We will change compilers from IntelliJ
   * Use online resources to try and fix the problem
   * Ask for help
5. If a team member doesn’t want to do their part
   * Continue to split up the task and finish it in a timely manner
   * When the time comes to do the peer evaluation, that will determine how they did and will decide how they should be graded
6. **ETHICS**

While developing this program our team will be met with several ethical challenges to consider.

* **Data Privacy:** We are developing a program that analyzes the personal information and academic records of students. In doing so, we must ensure that this data is collected and stored in a secure manner to protect the user and their privacy.
* **Informed Consent:** Since we are collecting sensitive information from our users it is our responsibility to make sure they are provided with informed consent. Meaning, we will need to clearly describe the type of data we are collecting and how it will be used. This should inform them about any risks involved when using the program and submitting the data.
* **Transparency:** Along with informed consent it is important to ensure we are giving an accurate description of the personal information we are collecting. Being transparent with our users is not only ethical, but a good way to build trust.
* **Accuracy:** As the developers, it is important for us to make sure our program gives reliable results. Making the final product provides accurate information about the students' degree plan will help them plan for their future in the best way possible.
* **Bias:** Another ethical principle to ensure is the elimination of bias. Our audit program should be designed to avoid bias due to any and all information given by the user. This means it should not discriminate based on race, gender, income, or any other characteristic and remains fair and impartial.

Adhering to these ethical principles will guarantee that our program delivers the most effective and helpful results to our users.

1. **COSTS**: Our group does not plan on incurring any costs throughout our development.

If we do need funding the procedure to secure funding will be as follows:

1. Justify your purchase, discuss with mentor/adviser,
2. Find the product (provide the link, description, and cost),
3. Complete the form (requires your faculty advisor's signature and may require the CS-UTDesign director’s signature)
4. Submit the form to UTDesign <([utdesign@utdallas.edu](mailto:utdesign@utdallas.edu)>), and follow up.
5. **TIMETABLE**

**Phase I**: due **3/10/2023**: Read the PDF and extract information to make the degree audit.

* Phase 1a: Writing code to read all the information off the pdf
* Phase 1b:Formatting the information read off the pdf
* Phase 1c: Write logic to get specific needed portions of information and store them into the appropriate data structures
* Phase 1d: Write code to output specific information needed to generate degree audit

**Phase II:** Get user input and use input to generate editable degree plan

* Phase 2a: Get pdf transcript from user
* Phase 2b: Get student’s selected track from user
* Phase 2c: Get leveling courses/pre-reqs from user
* Phase 2d: Get whether student is on fast track as well as whether student is pursuing a thesis or non-thesis masters from user
* Phase 2e: Use information extracted from transcript PDF as well as information given by user to generate degree plan

**Phase III**: due **4/10/2023**: GUI implementation for our program.

* Phase 3a: Display completed core, elective, and leveling courses
* Phase 3b: Have editable fields in generated audit report that allows user to add, delete, and move courses and pre-reqs by dragging and dropping fields
* Phase 3c: Allow for user to save and print degree plan in user-chosen location
* Phase 3d: Ask user for confirmation for continuing audit report

**Phase IV**: due **4/28/2023**: Combining both phases I, II, and III into the final program and complete code to generate audit report.

* Phase 4a: Display core, elective, and overall GPAs on generated audit report
* Phase 4b: Ask user if student will be taking additional courses and if so, ask user for number of additional courses
* Phase 4c: Ask user to choose disposition of all uncompleted pre-reqs
* Phase 4d: Allow user to print and save final audit report in user-chosen location

1. **PROGRESS TRACKING**

**Progress Tracking Plan:**

<https://trello.com/b/tA4akgoB/degree-audit-program-team-8>

Here, we are using Trello to track our progress.

This will allow our group to keep up to date what needs to be done, what is being worked on, and what has finished. We also included questions & comments and future work that needs to be worked on for each phase that needs to be done for our due dates.

1. **CONTACT INFORMATION** (Your contact information and short bios are good enough)

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1. **SOURCES**

* Oracle Java Documentation

1. **APPENDIX**
2. **Print Name/Signatures/Date**

| **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **Adam Kosicki** | **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **Grant Reed** |
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| **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  Company Mentor | **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  Faculty Advisor |