CS526 GCRS - Graduate Course Request System - Spring 2018

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***Abstract*— We will create a Graduate Course Request System that will allow for easier and faster delivery and approval of graduate course requests for undergraduate students. It will incorporate our multi-purpose Visual Transcript visualization, which provides an interactive interface for extracting useful information from a student's course history.

I. Project Description

The Rutgers University Graduate CS Department allows for undergraduate students to register for graduate courses through a special request process. This process, as it is now, involves manually signing a form for every graduate course that the student wishes to register for. This signed form must then be signed by the instructor of the course that is being requested. Afterwards, the form is given to the graduate secretary of the Graduate CS Department. Depending on whether or not the requested course requires a prerequisite override (it often does, considering the student submitting this request is an undergraduate student), the form would then have to be forwarded to the graduate school for approval. This step of the process specifically may take up to a full week to complete! Once the course request is finally approved by the graduate school, the student receives his Special Permission Number (SPN) for the requested course.

Not only is this process tedious to describe, but it is tedious in practice as well. The student often has to chase down instructors for their approvals in person, as it is not realistic for them to constantly check their emails for course requests, as well as do the necessary background checks on the student to see if an approval for their request is appropriate. Further complications occur if an instructor is on sabbatical leave, if the graduate secretary is taking a day off, etc.. To make matters worse, students are bound by the add/drop week deadline for course registration at the beginning of every semester, thus making this registration process a timely matter that cannot always be done before the start of the semester. These issues are further compounded by the fact that the Rutgers Graduate CS Department has been growing in terms of student enrollment. The increased frequency of these requests end up delaying this process even further.

We propose the GCRS - Graduate Course Request System, which is a system that can be linked with Rutgers's Central Authentication System (CAS) to allow for Rutgers faculty to digitally manage and pass along student graduate course requests. This system will use our Visual Transcript visualization, which will allow easy and fast data visualization of a student's course history and related data. Incorporating Visual Transcript into GCRS will give an interactive interface for faculty to quickly see the information they require when it comes to approving these requests.

Requirements: *Insert your overall project description here. Specify the project type according to the posted sakai announcement.What is it that you are proposing?. Why is it useful?. Is it feasible to complete your project within the semester?. Is it a novel idea? What are the main stumbling blocks? What is the timeline for your project progress?. How are you planning to reach the major milestones?*
The project has four stages: ***Gathering***, ***Design***, ***Infrastructure Implementation***, *and* ***User Interface***.

A. Stage1 - The Requirement Gathering Stage.

Get a realistic project idea that includes potential real world scenarios, with a description of the different user types along with their interactions with the system as well as the system feedback to them, according to their information needs. This stage also requires the specification of the different constraints and restrictions that need to be enforced depending on the different types of user (system interactions). The deliverables for this stage include the following items:

- A general description (in plain English) of your project's deliverables (understandable by computer illiterate users).
- A specific description of at least three types of users.
- A description of detailed real world scenarios (at least 2 scenarios) representing those typical interactions between the different user types and the system (including inputs and outputs and data types).
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- A detailed time line for completion of the major implementaion stages together with the division of labor including testing, documentation, evaluaton, project report, and power point presentation.

Please insert your deliverables for Stage1 as follows:

- The general system description: Please insert the system description here.

- The three types of users (grouped by their data access/update rights): Please insert the users types in here, as follows:
- The user's interaction modes: Please insert the user's interaction modes here.
- The real world scenarios: Please insert the real world scenarios in here, as follows.
  - Scenario1 description: Please insert Scenario1 description here.
  - System Data Input for Scenario1: Please insert System Data Input for Scenario1 here.
  - Input Data Types for Scenario1: Please insert Input Data Types for Scenario1 here.
  - System Data Output for Scenario1: Please insert System Data Output for Scenario1 here.
  - Output Data Types for Scenario1: Please insert Output Data Types for Scenario1 in here.
  - Please repeat that pattern for each scenario (at least 2 scenarios per user).

  Please repeat that pattern for each user type.
- Project Time line and Divison of Labor. Please insert here the time line and the corresponding implementation tasks.

B. Stage2 - The Design Stage.

Transform the project requirements into a system flow diagram, specifyng the different algorithms, data types and structures required for processing and their associated operations. The deliverables for this stage include the system flow diagram containing a graphical representation and textual descriptions of the corresponding data trasnformations, high level pseudo code of the overall system operation, and overall system time and space complexity.

Please insert your deliverables for Stage2 as follows:

- Short Textual Project Description. Please insert here the flow diagram textual description here together with its overall time and space complexity.
- Flow Diagram. Please insert your system Flow Diagram here.
- High Level Pseudo Code System Description. Please insert high level pseudo-code describing the major system modules as per your flow diagram.
- Algorithms and Data Structures. Please insert a brief description of each major Algorithm and its associated data structures here.
- Flow Diagram Major Constraints. Please insert here the integrity constraints:
  - Integrity Constraint. Please insert the first integrity constraint in here together with its description and justification.

  Please repeat the pattern for each integrity constraint.

C. Stage3 - The Implementation Stage.

Specify the language and programming environemnt you used for your implementation. The deliverables for this stage include the following items:

- Sample small data snippet.
- Sample small output
- Working code
- Demo and sample findings
  - Data size: In terms of RAM size; Disk Resident?; Streaming ?;
  - List the most interestng findings in the data if it is a Data Exploration Project. For other project types consult with your project supervisor what the corresponding outcomes shall be. Concentrate on demonstrating the Usefuness and Novelty of your application.

D. Stage4 - User Interface.

Describe a User Interface (UI) to your application along with the related information that will be shown on each interface view (How users will query or navigate the data and view the query or navigation results). The emphasis should be placed on the process a user needs to follow in order to meet a particular information need in a user-friendly manner. The deliverables for this stage include the following items :

- The modes of user interaction with the data (text queries, mouse hovering, and/or mouse clicks ?).
- The error messages that will pop-up when users access and/or updates are denied
- The information messages or results that wil pop-up in response to user interface events.
- The error messages in response to data range constraints violations.
- The interface mechanisms that activate different views in order to facilitate data accesses, according to users' needs.
- Each view created must be justified. Any triggers built upon those views should be explained and justified as well. At least one project view should be created with a justification for its use.

Please insert your deliverables for Stage4 as follows:

- The initial statement to activate your application with the corresponding initial UI screenshot
- Two different sample navigation user paths through the data exemplifying the different modes of interaction and the corresponding screenshots.
- The error messages popping-up when users access and/or updates are denied (along with explanations and examples):
  - The error message:
  - The error message explanation (upon which violation it takes place): Please insert the error message explanation in here.
  - The error message example according to user(s) scenario(s): Please insert the error message example in here.
- The information messages or results that pop-up in response to user interface events.

  - The information message: Please insert the error message in here.
  - The information message explanation and the corresponding event trigger
  - The error message example in response to data range constraints and the coresponding user’s scenario Please insert the error message example in here.
- The interface mechanisms that activate different views.
  - The interface mechanism: Please insert the interface mechanism here.

II. Project Highlights.