RESEARCH ARTICLE

TNAU Post Graduate Students Academic Data Management System: An Overview

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ABSTRACT

The present study aimed to digitize academic records of Masters and Doctoral students belonging to TNAU. Further, automation of student database management system and develop a database containing the academic records of TNAU's Masters and Doctoral students. Additionally, automation/digitization of the academic data of TNAU Masters and Doctoral students (2020-21) using the front-end user interface was also attempted. The various developed modules will be accessible by the faculty members, students, and officials of PG School. They will be able to communicate with the developed system for various activities of the school. The expertise and capability obtained from the proposed PG School System will be utilized to automate the whole PG office of TNAU, including fees, scholarships, fellowships, seminars, symposium, conferences and other related activities.

Keywords: *Application logic layer; Hypertext markup language; Entity relationship model; Software requirement specification; Dynamic website*

INTRODUCTION

Student academic records management and assessment are critical activities in any higher education institution. Shark *et al.,* 2015 state that these processes must be efficient and methodical. The major flaws in the existing system for keeping track of a student's academic records have been recognized. A centralized students' academic record management system is presented based on the limits and problems of the existing procedures of manual saving and archiving of students' academic data (Craig *et al*., 2016). The primary goal of this project is to create a computerized student academic record management system to improve student record assessment and evaluation.

MATERIALS AND METHODS

The following is the methodology that will be used:

- In collaboration with stakeholders from many disciplines, the critical modules for PG (Post Graduate) School software would be selected in the office of the Dean (SPGS), TNAU, Coimbatore.
- The software's parameters of interest will be finalized, and modules and reports will be identified.
- The outcomes of the preceding discussions will be compiled into a Software Requirement or Design Document and presented for approval.
- Three-tier web architecture will be followed.

1. User Interface

HTML (Hypertext Markup Language), JavaScript, and CSS will be used to create the user interface (Cascaded Style Sheets). It will include forms for communicating with users as well as reports for retrieving data (Piedade *et al.,* 2015). The user-friendly interface will also allow for easy navigation.

2. Application Logic Layer

In practice, the most challenging aspect of developing a web-based system is getting the data into the database (Marjan *et al.,* 2010). Once the data has been saved, searching and manipulating it using typical database procedures is extremely simple. The current study will implement the Application Logic Layer in one of the existing technologies, such as Java Server Pages, PHP, or ASP.NET.

- Linkage and data transmission to and from the User Interface shall be its purpose.
- To hide the complicated application code and the connection between the user interface and the database.
- To carry out all necessary data transfers and transformations.

3. Database Layer

A relational database will be used to store the data (Li *et al.,* 2005). The database layer offers the essential tables for storing data and their relationships. This layer will be implemented using appropriate RDBMS software such as MS SQL server, MS-Access, or My SQL (Feng and Xue, 2013).

- The necessary algorithms and solutions for their creations will be developed.
- The test information will be collected and fed into the database.
- The modules so developed will be integrated with the system.

The system will first be tested at the TNAU server for feasibility.

- The feedback during different stages of the development of software will be taken and incorporated.
- When the product is approved from all corners, it will be released.

RESULTS AND DISCUSSION

The present system for PG School activities is not online and involves the manual processing of numerous activities. Because the divisions of PG School are physically dispersed, a lot of time is wasted, and more paperwork is required. To get or submit information, one must contact the appropriate offices and disciplines at the PG School. The collection and dissemination of information are not readily available easily (Wanfeng *et al.,* 2016). As a result, developing intranet solutions for PG schools is critical to strengthening the educational system (Onyekwelu *et al.,* 2010). The programme will strive to improve the system's efficiency and save students, staff members, and officials valuable time and resources (Mansourvar and Yasin, 2010). It will also aid in the timely release of examination results and the instillation of greater transparency in the system. The software will provide information with a click of a mouse on desktop computers of the users.

The E-R (Entity Relationship) model of the proposed project is given as follows:

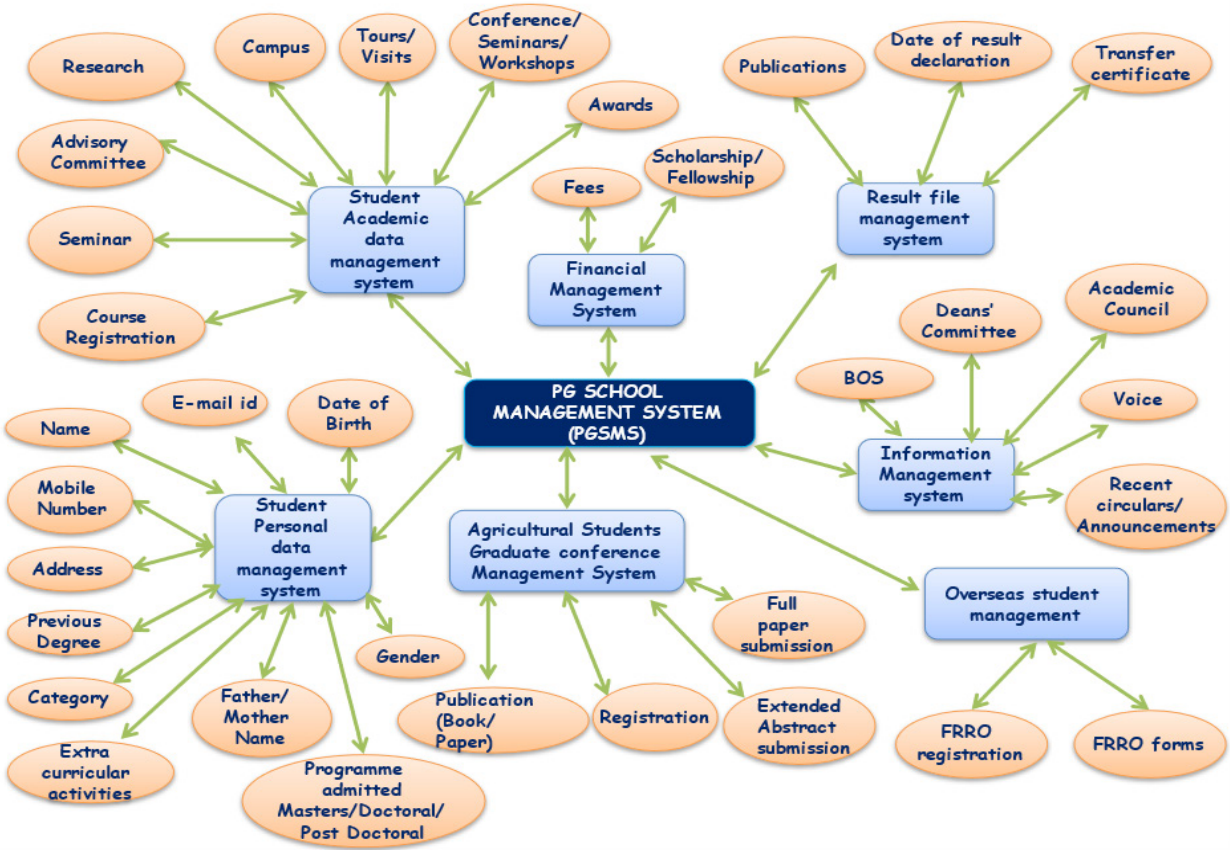

Figure 1. Entity Relationship Flow Diagram for PGSAMS

This project primarily aims to develop a computerized student academic record management system to improve the assessment and evaluation of student records of the Dean (SPGS) office of TNAU. This project is a LAN based desktop application and is primarily focused on the automation and computerization of student academic records activities in all academic units of Masters and Doctoral students of TNAU.

Table 1: Details and duration of work to be done for the proposed project

S.No.	Details of work to be done	Duration
(i)	SRS: Software Requirement Specification	
	a) Requirement analysis of PG school, TNAU	6 weeks
	b) Analysis of available data @ PG school, TNAU	5 weeks
	c) Preparation of SRS cum design document	8 weeks
(ii)	Design	
	a) Designing database schema	15 weeks
	b) Designing Navigation flow, form designing and report designing	15 weeks
	c) Developing the modules	12 weeks
	d) Integrating the modules	6 weeks
	e) Data entry for testing purpose	8 weeks
(iii)	Software testing	
	a) Test and implement the modules	12 weeks
	b) Test the different forms, reports and database queries for consistency	10 weeks
	c) Implementation	5 weeks
(iv)	Deployment of software tool	
	Final deployment and launching	2 weeks

This project was created to make data upkeep simpler and easier. Various user-friendly interfaces will be included to help accelerate the process of lowering maintenance time, but the ERP data structure will maintain the data's reliability and completeness. It will be able to handle a variety of exceptions that arise in day-to-day transactions within the constraints of several departments. The TNAU Post Graduate School benefits from a centralized system and standardized processes that help to bring uniformity to the school. Constant monitoring of reports can lead to discovering gaps and attempts at process re-engineering, which can improve the office.

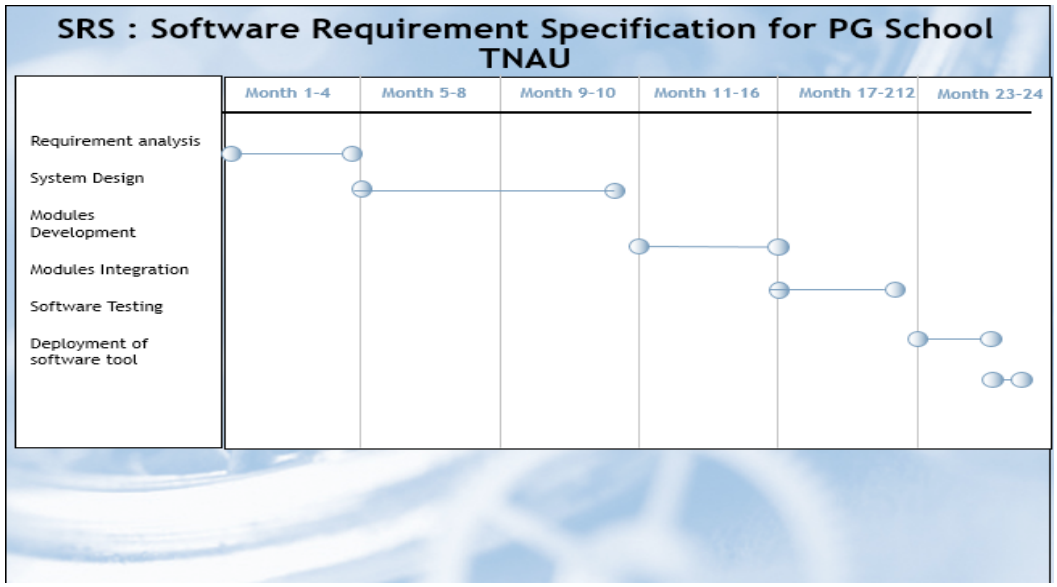

Figure 2. Time line chart for the Proposed Project

Anticipated Process/Products/Technology/ Knowledge expected to be evolved

The system will have the following deliverables:

Database containing information about

- Students, faculty members and officials
- Courses with their syllabus
- Research areas of students and faculty members
- Dynamic Website having forms and reports from the database
- Refined Process (compared to operational now) for different activities of PG School

CONCLUSION

Practical Utility of Anticipated Results of the Research

a. Immediate benefits: The various developed modules will be accessible by the faculty members, students and officials of PG School. They will be able to communicate with the developed system for various activities of the school.

b. Medium-term benefits: The methodology applied and tested will work as a base and be available for development of other similar systems.

c. Long-term benefits: The expertise and capability obtained from the proposed PG School System will be utilized to automate the whole PG office of TNAU, including fees, scholarships / fellowship, seminars / symposium / conferences permission, etc.

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Ethics statement

No specific permits were required for the described field studies because no human or animal subjects were involved in this research.

Originality and plagiarism

The authors acknowledged that this research is original and have not been submitted/consideration in any other journal.

Consent for publication

All the authors agreed to publish the content.

Competing interests

There were no conflict of interest in the publication of this content

Data availability

All the data of this manuscript are included in the MS. No separate external data source is required. If anything is required from the MS, certainly, this will be extended by communicating with the corresponding author through corresponding official mail; jskennedy@tnau.ac.in.

Author contributions

Idea conceptualization-KJS, Experiments-VG, RSK, PR, GS, Guidance-KJS, Writing original draft-VG, PR, Reviewing & Editing-PR

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