

# Sindhi Academic Informatic Portal

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**Abstract** The Information and Communication Technology has been an integral part of development of any country. Sindhi Academic Informatics Portal plays a very important vital role in this context for Sindhi Speaking community. Our country is in the phase of economic development process; therefore it badly needs to build software market for the Sindhi users. The development of software products, which fulfill the Sindhi people requirements in the form of community while sharing ideas, pictures, knowledge, creative content, etc. are extremely essential and high in demand. The idea of developing this type of software can be building block of Sindhi Language revolution and it leads towards the Sindhi peoples. This academic web portal system is based on three tier architecture and follows the principle design features of Content Management System for the server side. This software is developed in PHP, JavaScript, Adobe Flash CS3, HTML, Ajax and MySQL, compatible with all operating system. The main object of this system is to provide a generalized academic and management based knowledge sharing of department to Sindhi students on the internet.

**Keywords:** Sindhi, Informatics, web portal, academic portal

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## 1. Introduction

Portals are source of obtaining various types of information at one place. Portals provide a single interface to access the different categories of webs resources [1]. A university portal is a web based system that is responsible to facilitate and provide all-in-one mode of information access to a variety of backend resources [2,3]. Unfortunately, all the portals are rich with *English* language and in other languages and no such a system exists in *Sindhi* language. Information Portal for Sindhi students is an online web resource through which it can provide easiness of obtaining the academic information and resources quickly and easily. As most of the students live in remote area of the province, it becomes very difficult for them to come to the University for obtaining their academic information like, results, notices, course schedules, transcripts etc. Therefore this system is developed to provide a complete platform for Students of Sindh based on the knowledge sharing under one roof. The development of portals, which fulfill the people's requirements in the form of seeking online result information, course Schedule, transcript and mark sheets etc. can be effective for time of space trade off. The idea of developing this type of portal can provide Sindhi students with computing resources on the internet with rich faculties and rich information in Sindhi Language, and then our nation can be included in the list of developed nation.

The Sindhi Academic Informatics Portal is a special type of web resource designed for Sindhi community. This

software is developed in PHP, AJAX, JavaScript, HTML, CSS, Adobe Flash CS 3 and MySQL for any operating system like as Windows/2000/XP/NT or Latest or Linux, UNIX. The main object of this software is to provide a platform, available on regular web browser and secure online portal facilities on the web. A secure database management system is also designed for collective resources to provide management of knowledge sharing. The resources would be connected securely to database and database would be connected to the Internet. Hence the services would be available worldwide. The Sindhi communities, Sindhi users can access their accounts on the web and wireless device without any fear of cybercrime, because strong security features are implemented in the whole system. The Sindhi community users can also view any other information depending on the Sindhi Academic Informatics Portal rules and regulations to expose the services and information for them. The major goal to develop this web resource is to remove the complex problem of Sindhi peoples, and Sindhi students etc., and facilitate them to process their knowledge sharing, and discussions so on at the palm of their hands. The designed system will provide rapid solutions, so the peoples process all kinds of knowledge sharing.

Online Portal is an extremely popular area of research and development. Yasser in his paper discusses using cellular automata for developing web portal system for Egyptian University with adaptive link-structures [4]. Moreover Shu Liu recommends a conceptual model for library portal [5], whereas Steve et al. discusses a usability study for a customized library portal [6]. Contrary to this Lin et al. introduces "playfulness in Expectation

Confirmation Theory (ECT)” in context to the use of web portals [7]. Similarly Gant investigates “the role of web portals in state-government service delivery”, where findings conclude that every web portal system are still in their early stage of development [8].

## 2. The Database ERD

The Web Portal IICT maintains the records of examinations, course schemes, result announcements, positions, library books, teacher names etc. It completely real solution of existing problem, following ERD shows the strong relationship between tables. We used relational database management system rules and regulation. Figure 1 (a- f) shows various schematics of the ERD model of database used in this system.

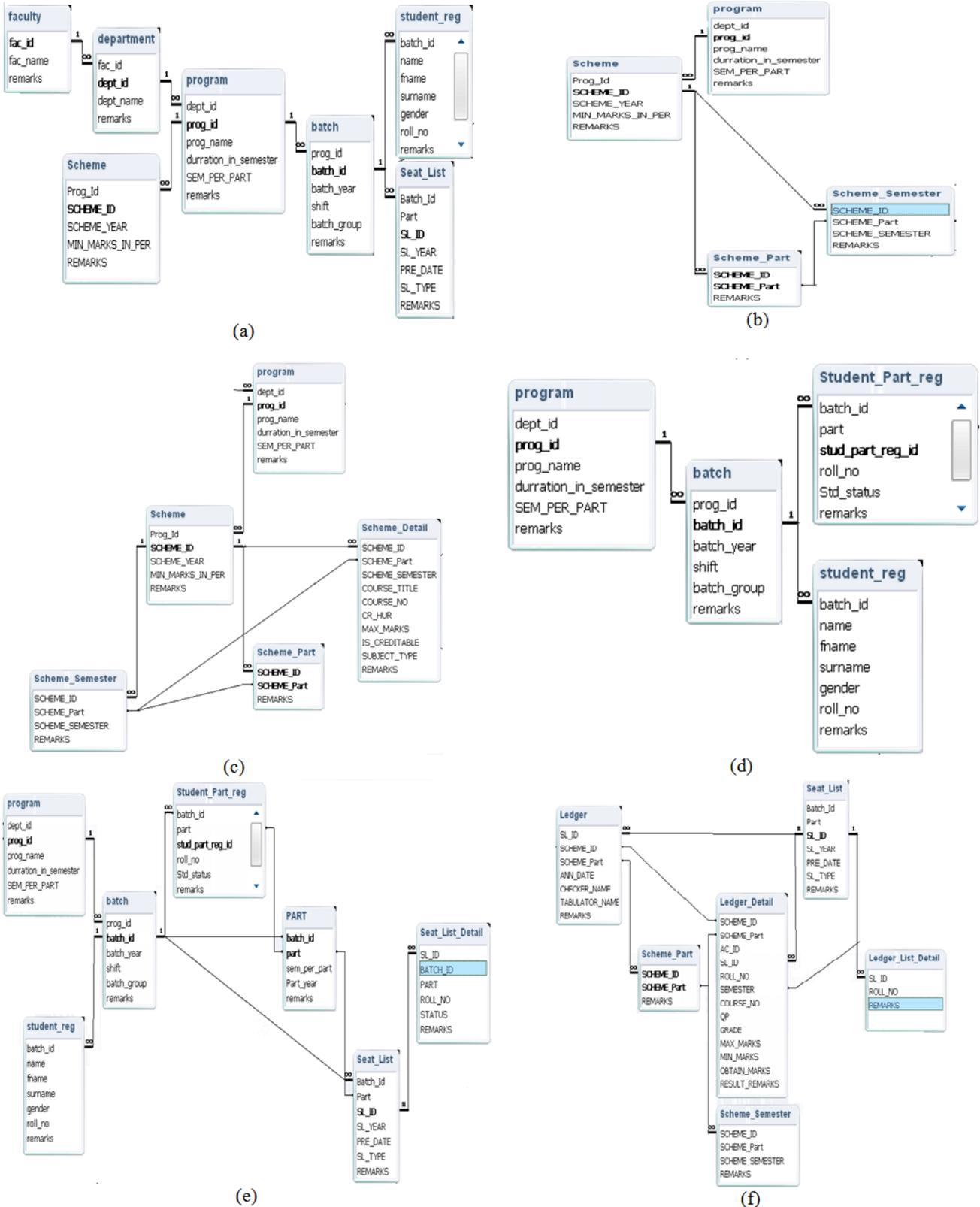


Figure 1. ERD of the Database

### 3. System Overview

The designed system has been generalized and is applicable for any examination wing in any university. It is totally dynamic system with strong database connectivity and relationships provided, the designed system is fully network based. A student can access the system through the local LAN network of the campus, as the system is based on SQL Server 2000; the built-in network protocol support is available in SQL server, so that LAN clients can frequently use this system without any hesitation. We used the most powerful technology (dot)Net Framework to develop this application, it is a dynamic programming language with .Net runtime environment required to run the application. The designed system is portable and can be deployed anywhere having .Net runtime environment. Up to now Microsoft provided .Net runtime environment for two platforms (Personal PC's) Windows and Linux Operating System.

Sindhi Academic Informatics Portal has a life cycle, just like any other commercial product or portals. The process of the software development that we have used is developed by the three amigos of the UML, known as Rational Unified Process [9]. Each product passes through these stages although the duration, sequence, number of iterations and exact effect of each stage may vary. An Incremental and Iterative development process was used in Sindhi Academic informatics portal as the project will be updated and released in incremental pieces. The construction phase of Sindhi academic informatics portal consists of multiple iterations and within each stage; the quality of software is increased with testing and integration of various academic modules that satisfies a subset of the requirements for the undertaken project. Each phase of development contains the usual life cycle phases of analysis, design, implementation, and testing [10].

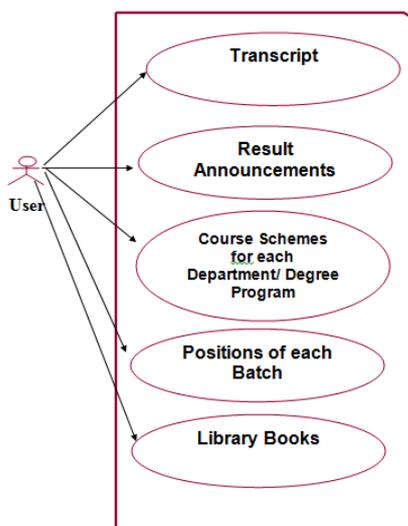


Figure 2. Simple use case diagram of the system

We established an academic foundation for the project and decided on the scope. This is where we get the commitment to go further. In elaboration, we collected more detailed requirements, done high-level analysis and

design to establish baseline architecture, and created the plan for construction.

In this iterative process of software life cycle, the implementation of various modules has been left till the end for the transition phase. These modules include the testing, performance evaluation and user training. Generally as the project initially analyzed is huge in implementation and thus has been divided into numerous modules that are implemented at various phases. We tried to keep the modules to a minimum level. We have used the iterations in the initial construction of modules. Figure 2 shows the basic use case diagram of the system.

### 4. Implementation and Results

Although the Implementation is the fruition of chain of the efforts starting with analysis, it is most demanding stage in the Sindhi Academic Informatics Portal life cycle. In fact, if detailed design has been done properly, thought and creativity are less needed than persistence, accuracy, and attention to detail.

During the implementation stage of the system, we converted the detailed design into code in a programming language using PHP and SQL database. The major product of the implementation stage, the source code, is the ultimate goal of the entire software development process. There is real sense of accomplishment when software reaches its deliverable form. Executable code seems much more immediate, real and exciting than specifications or designs. Nevertheless, implementation is not the culmination of developers' efforts. Developers must still test the source code to determine that it meets the specifications, and that it satisfies the needs of the user. In this portal system we developed three tier architecture and Content Management System for the server side and for the online access Web Browser is used as. One of the most important point is above all systems are based on Client/server architecture; Most of the coding has been done by using PHP & AJAX.

Figure 3(a) shows the main screen of our academic informatics portal system, built for Institute of Information and Communication Technology, University of Sindh. In this system various academic resources have been integrated for the ease of Sindhi Students.

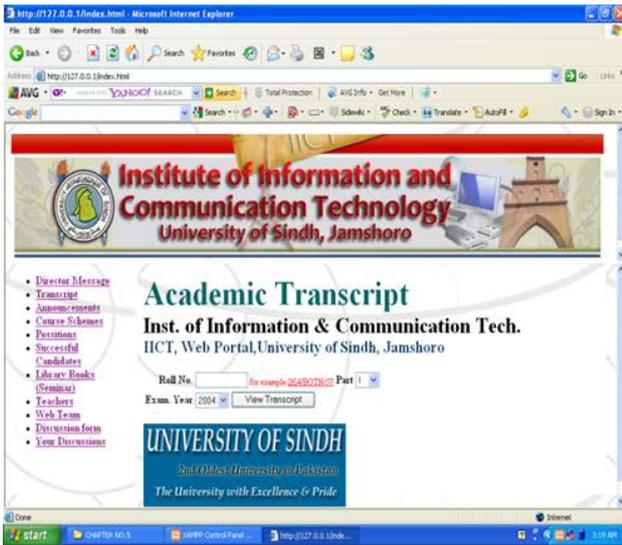
Figure 3(b) shows the announcement module where the student can view various academic related announcements made by the administration.

Figure 3(c) shows the results section of the portal where the user can easily browse and select the class in which he belongs. The Figure 3(d) will then show the details results sheet of the entire class with final detail results.

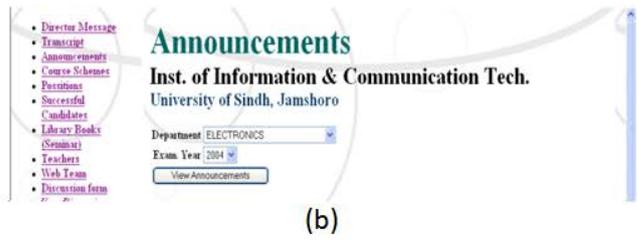
Once the user is in Result sheet, then he can click his roll no, to view further breakdown of his results and an online academic transcript is also displayed to him as shown in Figure 3(e).

Other modules of the portal consists of displaying the course scheme of each discipline or program course offered as shown in Figure 3(f) with details displayed in Figure 3(g), Figure 3(h).

As discussed earlier there are multiple modules and section of this portal and not all have been discussed here but are fully functional.



(a)



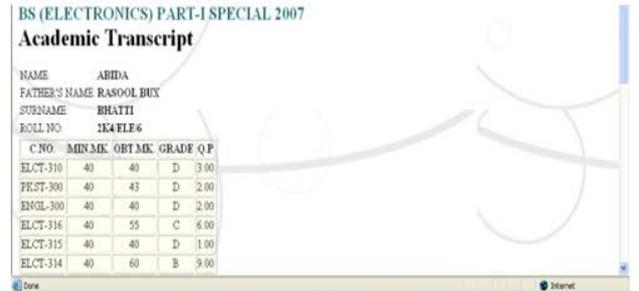
(b)



(c)



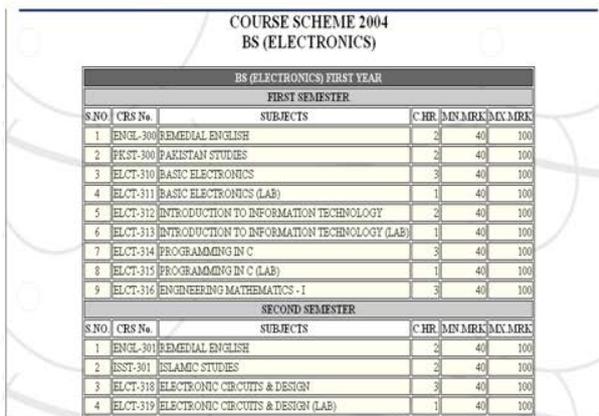
(d)



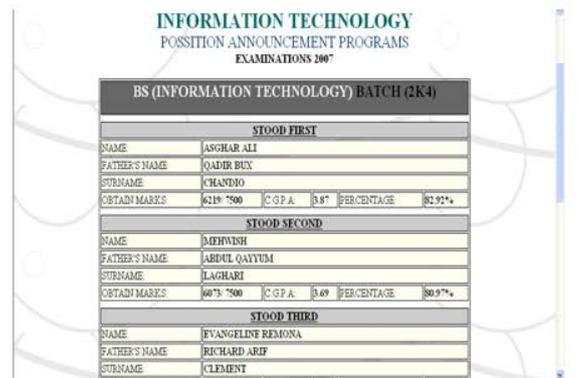
(e)



(f)



(g)



(h)

Figure 3. (a): Main UI of the Portal System; (b): Announcements section of the portal; (c): Results section of the portal; (d): Results Sheet of the Portal(e): Online Academic transcript; (f): UI of the Portal System; (g): UI of the Portal System; (h): UI of the Portal System

### 4.1. Testing

Testing is the last stage of software development, before a developer releases the product to the customer. During testing of Sindhi Academic Informatics Portal, we tried to make sure that the product does exactly what it is

supposed to do. The testing stage goes beyond a simple effort of running the academic webportal with some input to see whether it works properly. A major activity of testing is the disclosure and correction of errors in the specification, design and code. Three different kinds of tests were performed, Unit test, Integration Test and System acceptance test. Initially Unit test was performed,

which investigates the correctness of individual modules and checks for the structural weaknesses within the system if any. Secondly Integration tests, where the interactions of modules and the functionality of integrated subsystems are examined. Finally, System and acceptance tests were performed, which determine whether the final product complies with the user's original specifications or not.

## 5. Conclusion and Future Work

In this paper we presented a academic web portal with a new framework for providing more knowledge and information to Sindhi students, teachers and Sindhi Community. The above portal is designed and developed by using the modern programming languages. It is concluded that the Software "Sindhi Academic Informatics Portal" is efficient, reliable, portable and user-friendly. It is effectively and accurately applicable for heterogeneous network environment where internet facility exists. It is also concluded that Sindhi academic informatics portal is designed in such a manner that it costs less and provides a lot of benefits and is easily expandable due to incremental framework of various modules.

In future we will implement and increase the functionality of the system with dynamic user intervention, increasing the modules to incorporate various other academic resources such as admission information, pass certificates, marks sheet correction, verification requests

and updates, etc. and adding the digital signatures for the security purpose.

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