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**COMPUTERIZATION OF
EXAMINATION SYSTEM
for PGD and PC**

By

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FINAL APPROVAL

This is to certify that we have read the thesis submitted by **Muhammad Qaisar** and **Manzar Nisar**. It is our judgment that this thesis is of sufficient standard to warrant its acceptance by the Quaid-i-Azam University, Islamabad for PGD (Post Graduate Diploma) in COMPUTER SCIENCE.

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PROJECT BRIEF

PROJECT NAME:

Computerization of PGD and PC Examination System of Quaid-i-Azam University, Islamabad

OBJECTIVE

The major objective is to computerize the manual system.

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&
MUHAMMAD QAISAR

PREFACE

Presently, all the procedures including Admission, Examination, Payroll, Accounts and Record keeping in Quaid-i-Azam University are being carried out manually. This study is related to the computerization of Examination SYSTEM OF COMPUTER CENTRE of Quaid-i-Azam University, Islamabad.

The first chapter gives a bird's eye view of Quaid-i-Azam University, its organizational structure and need for computerization.

Chapter second describes the present manual Examination and Student Record Keeping system along with their drawbacks.

Chapter third deal with the technical details of the proposed system and summary of the proposed system have also been brought out in this chapters.

Chapter fourth including table structures and batchman diagram.

Chapter fifth gives the general concept of the software. In this chapter the proposed conversion method and implementation of the proposed system have also been discussed.

Chapter sixth is a user's guide to give the idea of using the database designed in best possible manner.

TABLE OF CONTENTS

1- INTRODUCTION

| | |
|---|---|
| 1.1 An introduction to the Q.A.U Islamabad | 1 |
| 1.2 Main objective of the University | 2 |
| 1.3 University Authorities | 2 |
| 1.4 Facilities and institutes. | 3 |
| 1.5 Needs for Computerization | 4 |
| 1.6 Scope of the study and problem definition | 5 |
| 1.7 Objective of the project | 5 |

2. STUDDING THE EXISTING SYSTEM

| | |
|---|----|
| 2.1 Academic system | 9 |
| 2.2 Courses of study | 9 |
| 2.3 Admission | 9 |
| 2.4 Registration | 10 |
| 2.5 Examination | 11 |
| 2.6 Grade, promotion and merit | 11 |
| 2.7 Drawbacks and limitations of Present system | 12 |

3. PROPOSED SYSTEM

| | |
|---|----|
| 3.1 Introduction to the proposed system | 15 |
| 3.2 The study phase report | 16 |
| 3.3 objective of the proposed system | 16 |
| 3.4 Software selection | 18 |

4. TABLES AND BATCH MAN DIAGRAM

| | |
|-----------------------------|-----------|
| 4.1 Course detail | 20 |
| 4.2 Course master | 20 |
| 4.3 Education master | 21 |
| 4.4 Password | 21 |
| 4.5 Result detail | 22 |
| 4.6 Result master | 22 |
| 4.7 STD detail | 23 |
| 4.8 STD master | 23 |

5. SYSTEM DESIGN

| | |
|---------------------------------|-----------|
| 5.1 Introduction | 25 |
| 5.2 RDBMS | 25 |
| 5.3 Developer /2000 | 25 |
| 5.4 System development | 26 |
| 5.5 System design | 28 |
| 5.6 Input design | 29 |
| 5.7 Physical data design | 30 |

6. USER GUIDE

| | |
|------------------------------------|-----------|
| 6.1 Introduction | 32 |
| 6.2 Logging in and out | 32 |
| 6.3 Important consideration | 33 |
| 6.4 Record manipulation | 33 |
| 6.5 Report generation | 35 |
| 6.6 Security implementation | 35 |
| 6.7 Special consideration | 36 |

CHAPTER- 1

INTRODUCTION

1.1 AN INTRODUCTION TO THE QUAID-I-AZAM UNIVERSITY ISLAMABAD

The Quaid-i-Azam University was established in the year 1967 under Act XIV of 1967 of the National Assembly of Pakistan. It is one of the largest Universities in the country imparting higher education to over one thousand students every year. Pakistan being a developing country needs a large number of experts and specialists in various branches of knowledge and different fields of scientific and technological disciplines. Post-graduate education is vitally essential for efficient functioning of research laboratories, professional institutes, colleges, universities, technical departments of the Government, business and commercial concerns as well as in the rapidly expanding sphere of commerce and industry. All the national plans and schemes for economic development depend on the availability of a large number of personnel of requisite qualifications and competence.

In the past, the country was dependent largely upon foreign experts and advisors for implementing its programs of higher training. It is, however, obvious that such an arrangement could not continue indefinitely. In addition, a large number of personnel used to be sent abroad for higher studies particularly in the specialized fields. This state of affairs could not continue for hard earned foreign exchange. Moreover, with the increase of pace for industrialization in the country, requirement of highly educated and trained personnel became so large and pressing that the government gave serious thought to establish educational facilities in the country commensurate to the growing needs. It was evident that large number of personnel could not be sent abroad every year for obvious reasons. Similarly, services of foreign experts and advisors also involved colossal expenditure in foreign exchange. Taking stock of the whole situation, the Government of Pakistan felt concerned about the production of trained manpower and about the quality and standard of education including advanced studies and research in the country.

It was because of these considerations that by the end of 1964, the Government of Pakistan decided to establish a residential university at Islamabad. In form it was to be a unitary institution devoted to Post-graduate research. It was envisaged that the new university should produce scholars and specialists who may be able to contribute effectively in the development of the country. These trained personnel would then provide leadership in education and science of the best international standards.

The Quaid-i-Azam University, initially called The University of Islamabad, was thus founded in 1965 under an ordinance promulgated by the then President of Pakistan, Field Marshal Mohammad Ayub Khan. The foundation stone of the University was laid by him in June 1967. The Act of the

University was passed by the National Assembly on July 13, 1967. It was the first university established by the Federal Government in the country. The University was renamed as Quaid-i-Azam University in 1967 on the occasion of centenary celebrations of the great leader Quaid-i-Azam Mohammed Ali Jinnah. It provides teaching and research scholars leading to the degree of M.Sc, M.Phil and Ph.D in various disciplines.

1.2 MAIN OBJECTIVES OF THE UNIVERSITY

The Quaid-i-Azam University Islamabad is operating as a Federal University for the over-all benefit of all regions of the country. The major objectives were to impart post-graduate studies and the conduct research in all the scientific fields. The university has statutory powers to:

- a) Provide for instructions in such branches of learning as it may deem fit. It is envisaged to make provisions for research projects and for the advancement and dissemination of knowledge in such a manner as it may determine.
- b) Hold examination and to award or confer degrees, diplomas, certificates and other academic distinctions to, and on, persons who have been admitted to and have passed its examinations under prescribed conditions etc.

1.3 UNIVERSITY'S AUTHORITIES

Major authorities presently functioning in the Quaid-i-Azam University are as follows:

- a) The Senate.
- b) The Syndicate
- c) Aht Academic Council.
- d) The Board of Faculties.
- e) The Selection Board.
- f) The Board of Studies.
- g) The Advanced Studies and Research Program.
- h) The Affiliation Committee.

- i) The Finance and Planning Committee.
- k) The Discipline Committee and such other committees as may be prescribed by the Statutes.

1.4 **FACULTIES AND INSTITUTES**

The University has the following faculties and institutes:

a) **FACULTY OF NATURAL SCIENCES**

This faculty includes the following departments:

- Department of Computer Science.
- Department of Electronics
- Department of Physics.
- Department of Chemistry.
- Department of Mathematics.
- Department of Earth Sciences.
- Department of Biology.

b) **FACULTY OF SOCIAL SCIENCES**

This faculty includes the following departments:

- Department of Administrative sciences.
- Department of Economics.
- Department of History.
- Department of International Relations.
- Department of Anthropology.
- Department of Defense and Strategic Studies.

c) **FACULTY OF MEDICINE**

This faculty includes the following departments:

- Army Medical College.
- Armed Forces Medical College.

d) **STUDY CENTRES AND INSTITUTES.**

The University has the following study centers and institutes:

- Area Study Center for Africa, North America and South America.
- National Institute of Historical and Cultural Research.
- National Institute of Pakistan Studies.
- National Institute of Psychology.
- Computer Center.

e) **AFFILIATED INSTITUTIONS**

Presently there is only one institute affiliated to the the University namely National Institute of Modern Languages.

f) **INSTITUTIONS COLLABORATING WITH THE QUAID-I-AZAM UNIVERSITY ISLAMABAD**

These institutes are given as under:

- National Defense College Rawalpindi.
- Pakistan Institute of Nuclear Science and Technology, Nilore, Islamabad.

1.5 **NEED FOR COMPUTERIZATION**

In almost all the advanced countries "Computer" is playing a significant role in almost every sphere of life. It is not only used in the field of science but also in the commercial field. It is being utilized effectively by archaeologists, physicists, engineers, doctors, teachers etc. Computer has also emerged in certain fields where its existence seemed rather impossible. In developing countries including Pakistan, there is a great urge for modernization and authorities are fully aware of the need to introduce the computer in as many fields as possible.

The increasing number of candidates and departments in the Quaid-i-Azam University poses many problems like accuracy of results, record handling, efficiency etc. At present all the procedures are manual, time consuming and uneconomical. Due to manual reporting and compilation system. It takes a long times to access and retrieve information.

Keeping the above aspects in mind, a computerized system is suggested to be introduced which will not only lessen the laborious manual operations but will also be more accurate, efficient, quick and effective.

1.6 SCOPE OF THE STUDY AND PROBLEM DEFFINITION

The basic purpose of conducting this study is to convert the present manual examination of PGD and PC into a computerized one. It will improve compilation of results of the individual subjects, semester and overall percentage. This study has been conducted keeping in view the under mentioned respects:-

- a) Various problems faced by the students and University staff.
- b) The increasing number of candidates for admission to the University.
- c) Huge amount of the data handling.

In view of the fact that computer has rendered immense help and made tremendous contribution in the advancement of Commercial and Scientific fields, a computerized Examination and Student Record Keeping System is designed. The implementation of this system will reduce the manual operations, give cent per cent accurate results and data handling will become easier and efficient. Thus the problem is defined as under:

"A computerized student examination system for PC and PGD"

1.7 OBJECTIVES OF THE PROJECT

Presently, the system is functioning manually, which is time consuming, inaccurate and uneconomical. The concerned departments and the offices are, therefore, facing hardship in keeping Students record, Admission and Examination process etc. In order to remove these difficulties and hurdles, the objectives of the new system are formed :

- a) To study the problems which are faced by the Quaid-i-Azam University Examination staff and candidates.
- b) To find out the drawbacks in the existing system.
- c) To propose steps in order to overcome the problem and difficulties.
- d) To make the present student examination system, free of drawbacks and flaws and hence to increase its efficiency by its computerization.

The Quaid-i-Azam University examination staff conducts terminal examination at the end of each semester. The tenure of each semester is sixteen weeks. As we know, before a terminal, each department has to distribute half of the marks of a subject according to the desire of the teacher. This is done by distributing marks in sessionals, assignments, quizzes, surprise tests, mini projects etc. Since the existing system is manual, it involves a lot of work and creates many problems for the office employees such as record handling, accuracy of results, record keeping and other such problems. Following steps will summarize the aims and objectives of the study in brief:

a) ANALYSING THE PRESENT SYSTEM

The proposed system is analysed on the following bases:

- What is the present system?
- What type of problems and difficulties are faced by the staff and the students?
- How can these difficulties be removed?

b) PROPOSING THE NEW SYSTEM

The new system is proposed on the following steps:

- Design of a feasible system to meet the demands of the University in the best possible manner within the limits of the given constraints.
- Steps for removal of faults.
- Software development.
- steps to reduce the manual operations.
- Steps to achieve efficient and smooth flow of data and fast retrieval of information.
- Advantage of the new system.

c) IMPLEMENTATION

During implementation, the following steps should be kept in mind:

- How should the proposed system be implemented?
- What types of amendments or changes are required in the existing system?
- How can the existing staff be used more efficiently?
- What types of hardware and software will be required?



CHAPTER- 2

STUDDING THE EXISTING SYSTEM

2.1 ACADEMIC SYSTEM

The Quaid-i-Azam University undertakes to impart post-graduate studies leading to the degree of Master of Science, Master of Business Administration, Master of Philosophy and Doctor of Philosophy in the subjects provided in the Schedule and introduced from time to time.

The computer center department also admits students in PGD and PC after their graduation. The minimum duration for obtaining Post Graduate Diploma is one year having three semesters and for PC is six months. Courses of study for M.Sc. M.B.A., and M.P.A. degree are normally completed in four semesters. Masters degree is of 60 credit hours and for PGD is of 36 credit hours. A full time student is required to take courses of not less than 12 credit hours in a semester.

2.2 COURSES OF STUDY

The courses of study or syllabi for various degrees of the University are submitted by the respective Boards of studies to the Academic Council for approval. Such courses or syllabi become effective from the date of approval by the Academic Council or on such other date as the academic Council may determine.

2.3 ADMISSION

The procedure of admission to the University is described as follows:-

- a) A student holding bachelors degree from any University of Pakistan or equivalent degree from any recognized University from abroad with at least second division is eligible for admission to Masters' program of study and for PGD and PC.
- b) Each student makes an application for admission in response to an advertisement by the University on the prescribed form.
- c) Each student is admitted on the basis of academic merit excepting the departments of administrative sciences (MBA/MPA), Computer Science and PGD and PC where in addition to academic record, students are required to appear for a written test and interview.

In these departments 75% weightage is given to the academic record and 25% to test and interview.

- d) All admissions are approved by the Dean of Faculty of recommendations of the Chairman of the teaching department.

2.4 REGISTRATION

The main points of registration are discussed below:

- a) At the beginning of each semester a student must register himself in the courses of studies on the prescribed registration cards.
- b) The Chairman of each department forwards within seven days of the commencement of the semester all the registration cards to the Controller of Examinations.
- c) A student can change/drop course(s) within 15 days from the date of commencement of the semester on the recommendations of the teachers and the chairman of the department concerned. No change, drop of course(s) is/are allowed 15 days after commencement of the semester.
- d) Each course is of 150 marks of which 75 marks are reserved for the terminal examination.
- e) Minimum pass marks in a course are 75.
- f) A student who has been admitted in one class cannot be transferred on the basis of that admission to another department where he had not applied initially. There is in fact no such thing as interdepartmental migration of students. Applications of only those students can be considered for admission who apply at the right time.
- g) A student who has passed the Master's examination from this University or any other University or has been on the roll of this University previously is not admitted to any department of the University, except with the permission of the Vice Chancellor.

The V.C. may refuse admission to any student without assigning any reason.

2.5 EXAMINATION

The important points in respect of examination process are given below:

- a) A student is eligible to sit for the terminal examination provided that he has been on the roll of the University during that semester. Further that he has registered himself for the courses of study and has attended not less than 80% of the lectures/seminars delivered to his class in each course including practical/laboratory demonstrations. A committee comprising of the Dean of Faculty of Natural Sciences, the Dean of Faculty of Social Sciences and the Chairman of the respective departments may on the recommendations of the teacher of the course concerned, condone the deficiency in attendance upto 5% of the total lectures, seminars, practicals and laboratory demonstrations. The students falling short of the required percentage of the lectures, seminars, practicals and laboratory demonstrations etc. are not allowed to appear in the terminal examination of the concerned course and are treated as having failed in that course.
- b) There is a written examination for each course at the end of each semester, on the dates to be fixed by the Controller of Examination in consultation with the Dean/Chairman. Each course carries 150 marks of which 75 marks are reserved for class tests, assignments, sessionals etc.,
- c) All semester examinations are held on the University Campus.

2.6 GRADE, PROMOTION AND MERIT

The rules governing students academic performance regarding grades, promotion and merit are described below:

- a) The minimum pass marks of each course are 50%. Candidates securing 80% or more marks are placed in grade "A", 65% to 79% marks in grade "B" and 50% to 64% marks in grade "C". Candidates obtaining less than 50% marks in any course are deemed to have failed in that course.
- b) A student is required to maintain 50% marks in each course in each semester.
- c) A student failing to maintain 50% marks in any semester is placed on probation provided we could pass only a credit course.
- d) A student failing to maintain 50% mark at the end of a semester during which he was placed on probation shall cease to be a student of the University.
- e) On successful completion of the requisite courses for PGD and PC, each candidate is awarded a Post-Graduate Diploma of Computer Science and professional certificate.

2.7 DRAWBACKS AND LIMITATIONS OF PRESENT SYSTEM

The major drawbacks and limitations in the present manual system are as follows:

- a) **LACK OF ACCURACY**
In the present system huge amount of data calculations are made manually by individuals and the results compiled by them cannot be considered accurate and fool proof. "To err is human" is a well known proverb which proves true in such cases in particular. So, one can never claim that such a type of system is accurate.

b) SLOW DATA PROCESSING

All the operations on data handling such as sorting, searching, retrieving, matching and deleting are performed manually. Due to huge amount of data and a number of activities to be performed therein, delay is invariably caused in carrying out these operations. These operations on data can be performed by a computer with high speed and accuracy. The required information becomes available not in days or hours but within a few minutes.

c) SECRECY

In the manual system, a number of personnel are involved in the compilation of results and for most of the time even sensitive information is exposed on the papers. It is very likely that some unauthorised person might get access to secret information.

d) TIME FACTOR

In view of the fact that the number of departments and strength of the students in the Quaid-i-Azam University is increasing with the passage of time, their examination and record keeping data is becoming difficult to handle. A number of problems are encountered during the compilation of results, report generation etc. Further, the data is stored on the paper files and to maintain, handle, search and update these files is quite cumbersome.

e) DATA REDUNDANCY

The existing system has a high level of redundancy of information. The only source of input for the examination and student record keeping system is the Admission Form which includes a number of columns that are not required subsequently. Similarly, many columns of the Form are not required after their initial use. However, such redundancy of information can be minimized by designing better input forms and a better coding scheme.

- f) It has been observed that slow processing of results creates several problems for the administration. However, a computerized approach to the examination and students' record keeping system may produce quick results and access to any information may be made in seconds. It will be a great assistance to the University in making timely decision for switching over the modern age method of using computers.

CHAPTER- 3

PROPOSED SYSTEM

3.1 INTRODUCTION TO THE PROPOSED SYSTEM

Every new system, whether manual or computerized, that replaces the previous system, brings about some changes. These changes may be in procedures or in documents. The system introduces new terms, designs new documents and at times redesigns the existing ones. The existing procedures are, therefore, modified and new procedures are introduced. In this case the manual system of Examinations and Students' Record Keeping of the Quaid-i-Azam University is proposed to be changed into a computerized system.

The Quaid-i-Azam University does not have computer based system in any of its departments. Therefore, for various technical and administrative reasons, it is not practical to design a short term project to computerize the University's overall existing manual system as one major project. The University cannot accept an all out change in its procedures all at once. It needs time to define its problems. The Administration should, therefore, divide the total system into sub-systems.

The sub-system, namely, The Examinations and Students' Record Keeping System of Quaid-i-Azam University was proposed to be computerized. Since the University does not have computer based system, therefore, this sub-system is designed as a pilot project that will initially be implemented in the Computer Science department and later on it may be adopted by other departments with appropriate modifications.

The proposed system has been designed after thoroughly evaluating the existing manual procedure. It is a computerized system in which electronic data processing methods are used for making the system more efficient, economical and error free. New techniques and procedures have been adopted in the proposed system. These will meet all the requirements of the administration. It is so designed as to achieve the objectives within the resources of the user.

The proposed system is mainly related to the redesigning of different input forms, computerized compilation of results, record keeping and retrieval of student data, files creation and maintenance of the record. As the existing manual system is cumbersome, inaccurate and inefficient, the requisite information has to be dug out with great labour consuming a lot of precious time. The computerized system is, therefore, developed which is quite comprehensive and covers every aspect of the objectives in detail.

3.2 THE STUDY PHASE REPORT

In this phase problems and needs of the University administration, departments and students were studied in detail. The objectives of the systems were defined and the purpose of this study was to convert the present manual system to a computerized one which is more robust and flexible. During this stage, procedures currently used by the University examination section and department were studied including the students record keeping system and their problems particularly in procuring/retrieval of information. Attempt has been made to take into account all aspects of the old system. The present as well as future requirements are also taken into consideration. It is expected that the proposed system solution will be acceptable to the University authorities.

3.3 OBJECTIVES OF THE PROPOSED SYSTEM

Before designing any computer based system, it is essential and helpful to establish the objectives that the computer based system should satisfy. In addition, the relative importance of each objective should also be established. Following are as objectives of the proposed system:

a) EFFICIENCY

Efficiency is the degree to which we minimise utilization of resources for achieving an objective. One could not be termed efficient if one achieves unwanted results at low costs. The Proposed Computer System is more efficient than existing manual system.

b) DATA SECURITY

Security refers to protection from deliberate or accidental loss or destruction of important data. The data required for decision making is highly sensitive and valuable, therefore, reliability of

the Proposed Computer system is secured by giving a regular and guaranteed service to the user.

c) TIME FACTOR

Time is a very important factor in the working of an organization. The higher authorities require quick response to their queries which should be met urgently because decisions are based on up-to-date information. The proposed system is designed to cater for their requirement.

d) ACCURACY

The system will provide accurate and error-free information Needed for decision making. It will ensure efficient and accurate record keeping and security-tight examination process including GPA calculation.

e) MAINTAINABILITY

Once the proposed computerized system is adopted by the Computer Science Department it would be maintain within the available resources.

f) FLEXIBILITY

The algebra of information processing system is liable to change in terms of objectives, information or processes. The Proposed Computer System would be sufficiently flexible to cope with such changes.

g) ACCEPTABILITY

The system would be acceptable to the design of the University standard. Such standards are set to ensure that the previous objectives are likely to be met.

CHAPTER- 4

TABLES AND BATCHMAN DIAGRAM

4.1 CORSE DETAIL

| Column name | Data type | Width | Primary key | Foreign key |
|---------------|-----------|-------|-------------|-------------|
| Course_name | Varchar2 | 20 | | |
| Course_code | Varchar2 | 20 | Pk | |
| Semester | Varchar2 | 20 | | |
| Subject_id | Varchar2 | 20 | Pk | |
| Subject_name | Varchar2 | 40 | | |
| Mid_term | Number | 2 | | |
| Final | Number | 2 | | |
| Quiz | Number | 2 | | |
| Assignments | Number | 2 | | |
| Presentations | Number | 2 | | |
| Test | Number | 2 | | |
| T_marks | Number | 4 | | |
| Passing_marks | Number | 2 | | |
| Cr_hr | Number | 2 | | |

4.2 COURSE MASTER

| Column name | Data type | Width | Primary key | Foreign key |
|-------------|-----------|-------|-------------|-------------|
| Course_name | Varchar2 | 20 | Pk | |
| Course_id | Varchar2 | 20 | | |
| Semester | Varchar2 | 20 | | |

4.3 EDUCATION MASTER

| Column name | Data type | Width | Primary key | Foreign key |
|----------------|-----------|-------|-------------|-------------|
| Degree | Varchar2 | 30 | | |
| Roll_no | Varchar2 | 20 | Pk | |
| Year | Varchar2 | 10 | | |
| Percentsge | Number | 3 | | |
| University | Varchar2 | 40 | | |
| Degree_roll_no | Varchar2 | 20 | | |

4.4 PASSWORD

| Column name | Data type | Width | Primary key | Foreign key |
|-------------|-----------|-------|-------------|-------------|
| User_name | Varchar2 | 40 | Pk | |
| Password | Varchar2 | 40 | | |

4.5 RESULT DETAIL

| Column name | Data type | Width | Primary key | Foreign key |
|--------------|-----------|-------|-------------|-------------|
| Roll_no | Varchar2 | 20 | | |
| Semester | Varchar2 | 20 | | |
| Subject_id | Varchar2 | 10 | | |
| Subject_name | Varchar2 | 40 | | |
| Course_code | Varchar2 | 20 | | |
| mid_term | Number | 2 | | |
| Final | Number | 2 | | |
| Quiz | Number | 2 | | |
| Assignments | Number | 2 | | |
| Presentation | Number | 2 | | |
| Test | Number | 2 | | |
| T_marks | Number | 4 | | |
| Cr_hr | Number | 1 | | |
| Course_code | Varchar2 | 20 | | |
| Grade | Varchar2 | 10 | | |
| Percentage | Number | 5 | | |

4.6 RESULT MASTER

| Column name | Data type | Width | Primary key | Foreign key |
|---------------|-----------|-------|-------------|-------------|
| Roll_no | Varchar2 | 20 | Pk | |
| <u>Reg_no</u> | Varchar2 | 20 | | |
| Year | Number | 4 | | |
| Degree_no | Number | 6 | | |
| P_date | Date | 7 | | |
| Remarks | Varchar2 | 50 | | |
| Semester | Varchar2 | 20 | Pk | |
| Course_name | Varchar2 | 20 | | |

4.7 STD DETAIL

| Column name | Data type | Width | Primary key | Foreign key |
|-------------|-----------|-------|-------------|-------------|
| Course_code | Varchar2 | 20 | | Fk |
| Roll_no | Varchar2 | 20 | Pk | |
| Name | Varchar2 | 30 | | |
| F_name | Varchar2 | 30 | | |
| Dob | Date | 7 | | |
| Religion | Varchar2 | 10 | | |
| Nationality | Varchar2 | 20 | | |
| C_add | Varchar2 | 50 | | |
| P_add | Varchar2 | 20 | | |
| Sex | Varchar2 | 1 | | |

4.8 STD MASTER

| Column name | Data type | Width | Primary key | Foreign key |
|-------------|-----------|-------|-------------|-------------|
| Course | Varchar2 | 20 | | |
| Course_code | Varchar2 | 20 | Pk | |

CHAPTER- 5

SYSTEM DESIGN

5.1 Introduction

System designing is the most important of all phases in a system life cycle. System design presents specific information for the designing of the input forms, output forms, codes and table structure.

5.2 RDBMS

A DBMS(database management system) is basically a computerized record keeping system;that is,it is a computerized system whose overall purpose is to maintain information and to maintain that information and to make that information available on demand.

A relational database is a database that is perceived by its user as a collection of tables(and nothing but tables). The software that manages the relational database is known as relational database(RDBMS).

5.3 DEVELOPER/2000

After considering a number of relational database management systems available these days, DEVLEOPER/2000 was selected the product from ORACLE Corporation that makes it easy to build database applications it handles most of the issues elegantly and well using the features of ORACLE7.

DEVELOPER/2000 provide a number of sophisticated tools for the development of applications. Some of these tools are given as:

5.3.1 ORACLE SQL* PLUS

Oracle SQL * PLUS is an interface through which SQL commands may by entered and executed. We can use SQL * PLUS program in conjunction with SQL database language and its procedural language extension PL/SQL. The SQL database language allows us to store and retrieve data in ORACLE. SQL * PLUS , SQL and PL/SQL command languages are powerful enough to serve the needs of users with some database experience. Yet straightforward enough for new users who are just learning to work with ORACLE.

5.3.2 ORACLE * FORMS

The form component of DEVELOPER/2000 is the environmental component in which you develop ,not surprisingly form modules. It also provides the development framework for developing menu and PL/SQL library modules. These forms provide fast and easy data entry updating, deletion and queries to an ORACLE database.

5.3.3 ORACLE * REPORTS

The report component of DEVELOPER/2000 is used to create different reports in a variety of styles. The report designer also includes libraries and data object. It can be used to produce a report derived from a single oracle table with column headings, columns of database information system and totals as desired.

5.3.4 ORACLE * GRAPHS

The graph component of DEVELOPER/2000 is used to create different types of graphs (e.g. pie chart, bar chart, etc.) based on the one or more tables of a database .Numbers of utilities are also available which allow easy manipulation of data. Structures along with the data stored in these structures. For example DEVELOPER/2000 provide import/export utilities with the help of which it is possible to move structures along with the data contained in these field, from one to an other.

5.4 SYSTEM DEVELOPMENT

Each system comprises of one or more components relation to one specific branch of system, a description of system components are given below.

5.4.1 EDITORS

DEVELOPER/2000 provides editors which are :

- Layout Editor
- PL/SQL editor
- Object Navigator

5.4.1.1 LAYOUT EDITOR

It is used for creating, formatting and arranging interface items and boilerplate graphics. It provides us with complete set of drawing and editing tools. It provides quick excess to frequently used commands.

5.4.1.2 PL/SQL EDITOR

It is used to write triggers, program units, procedure etc.

5.4.1.3 OBJECT NEVIGATOR

It is used to display editors. It provides work area for creating and modifying form objects.

5.4.2 FORMS

A form application represents data in an on line format consisting of a series of fields laid out in one or more windows. They also provide a good way of executing and changing that information. You can type data into the form fields or change that is in them, depending upon what the form designer lets you do.

There is a particular kind of form called a master/detail form that divides the form into a master record and several detail records.

Once a form has been designed, data entry operators need not to know the SQL commands.

5.4.3 CANAVAS

A canvas is the “ surface “ on which you paint objects like text item, push buttons and check boxes etc. The window is the “ frame “ or “ boarder ” which forms a “ view port “ for the user. The user may not see all of the canvas at any one time, only as much as the window on the canvas allows him to. This view is some time refereed to as the canvas view.

5.4.4 BLOCK

Block is the intermediate building unite for forms. You can think of a block in two ways, as a collection of items or as a collection of records, each of which has the same structure of items.

Block usually corresponds to one table in the database. A form may have one or more blocks. A block contains a group of related fields that are used to store some specific information.

5.4.5 BASE TABLE

A database table, which is associated to a block, is called the base table for that block. This block contains all or some of the fields defined in that particular base table.

5.4.6 FIELD

A block item is the primary building unite of the form. Represent columns or data entry areas and describe how the data should be displayed and validated and how an operator should interact with the data while it is entered. At the most basic level, field serves as container for data with in a form. A field is always Owned by or associated with a block. Each block normally owns one or more fields.

5.4.7 MASTER DETAIL RELATIONSHIP

A form may contain more than one block. These forms may have independent status or they may have master detail relationship. A block is called master block if in mater, there exists one or multiple records in detail blocks. There is primary to foreign key relationship between blocks.

5.4.8 TRIGGER

A trigger is a block of PL/SQL code you write to customize your application. You use triggers to respond run time events with appropriate processing. Triggers are set of processing commands. Triggers can be impose at field level, block level and form level.

5.5 SYSTEM DESIGN

The system design phase can be classified into two categories:

- Logical database design
- Physical database design

5.5.1 LOGICAL DATABASE DESIGN

This phase simplifies the approach to design large relational database by reducing the number of data dependencies that need to be analyzed. Logical database design consists of:

- Output Design
- Input Design

5.5.1.1 OUTPUT DESIGN

The output design constitutes and important part of the system. The output may either be in soft form (displayed on screen) or in hard form (print out). The output design of the proposed system consists of the following:

- Query : normally screen oriented
- Report : normally printed out
- Graphic display: normally printed out for decision purposes.

5.5.1.1.1 QUERIES

Some of the most important queries are attached:

5.5.1.1.2 REPORTS

Some of the most important reports are attached:

5.5.1.1.3 GRAPHIC DISPLAY

Some of the most important queries are attached:

5.6 INPUT DESIGN

Input design is the main source of interaction between the user of the system and DEVELOPER. The output of the system is based upon this design. More efficient and accurate would be the output design.

5.6.1 CODE DESIGN

A code is a small combination of characters used to represent a large item and is used whenever there is a high chance of entering incorrect information. Following are the advantages of introducing codes in the system:

- Codes save computer storage as compared to the actual data.
- Low chances of spelling errors.
- Speeds up entry process.

The present system uses

- Item-codes
- Location codes

5.6.2 FORM DESIGNING

The input screens for the system are designed so as to handle exceptional cases, checks for possible errors are provided and resulting into an error free output. The general characteristics of the input screens are:

5.6.2.1 Password

The Password system would be implemented for the security purposes, whenever a user logs in. Such users are called registered users.

5.6.2.2 Validation Checks

These checks are imposed at different hierarchical levels. For instance at item level, block level, form level which don't allow the user to move ahead until a valid data is entered.

5.6.2.3 Duplicate Codes

The possibility of entering a duplicate code has been totally eliminated.

5.6.2.4 List Of Values

LOVs are provided for various items, on line help, this help is provided for a better understanding of the system and for ease of the user.

5.6.2.5 Error Messages and Alerts

These are handled in all the forms and as soon as the user commits the mistake, an error message or an alert is displayed on the screen.

5.6.2.6 Data Type Checks

These checks are taken care of by oracle itself and in case of type mismatch, error messages are shown on the message line at the bottom of screen.

5.6.2.7 Modification and Deletion

These strategies are defined in such a way that under certain circumstances no modifications or deletions are allowed.

5.7 Physical Database Design

A database design is the physical design matured from the logical design. It is based upon the relationship among the data rather than the convenience of the storage structure. A remarkable feature of the database is that, the data is organized in a systematic way, such that a tabular format depending upon the structure defined for it. The systematic organization of data, applied in a computer based system, makes a database distinct form of record keeping.

While designing the database, the facts such as data sharing, data integration, consistency, no redundancy and data standardization have been taken care of.

CHAPTER -6

USER GUIDE

6.1 INTRODUCTION

The proposed system has been designed for IBM PC and compatibles . The system is user friendly , provides help and displays appropriate messages for the user's convenience.

6.2 LOGGING IN AND OUT

Since the system operates in a multi users environment ,so it requires the services of a D.B.A to perform several tasks such as:

- Creating new users
- Giving privileges to users
- Keeping backup of data
- Ensuring the efficiency of the system

Windows 95 or higher version is the first step towards system implementation .Next step is the Oracle 7/Developer 2000 installation .Oracle 7is the database engine where as developer 2000 is it's front end development tools ,which consists of Oracle Forms 4.5 and Oracle Reports 2.5.

After installing Oracle 7/Developer 2000,the Database Administrator (D.B.A) will create user and it's password.

First of all user should start database .He should mount Oracle 7 database engine by clicking start data in personal Oracle for Windows 95.A message appears:

Oracle instance started
Database dismounted
Press OK.

here user can describe the database tables and can project on data in database tables.

Then user double click the icon of Named PGD and PC So the Form Designer can now start up and main menu is displayed as

| | | | |
|-------------------|----------------|----------------|-------------|
| Data-Entry | Queries | Reports | Exit |
|-------------------|----------------|----------------|-------------|

Data entry

In Data-Entry menu its sub menu contains Data-forms options.

In Data forms option any data form can be selected and corresponding data to that form can be entered in that form.

In date entry menu different forms will appear e.g.
 Education master Form
 Student Information Form
 Result Master Form

Queries

By clicking on queries menu the Submenu will open like
 Query about student information
 Query about result master
 Query about education master
 and by clicking on each menu individual query Forms will open.

Reports

By clicking on reports menu the Submenu will open like
 Query about student information
 Query about result master
 Query about education master
 and by clicking on each menu individual Reoprt will open.

6.3 IMPORTANT CONSIDERATIONS

Before using the system , the following definitions should be kept in mind .Various forms layouts have been designed to enter and retrieve data from the database .They form the basis for the database.

Editing Fields

It is a basic unit in the form designing .A form layout uses this to store and retrieve information from the database.

Status Line

It is the bottom of the screen in which status is displayed .It indicates the number of records retrieved .

Message Line

The message line is displayed at bottom of input forms , in which messages and additional help is displayed .

6.4 RECORD MANIPULATION

There are four operations on a record i.e. insertion, modification and retrieval.

Insert Record

If user wants to insert new record ,he will adopt the following procedure.

- The format in which he wants to insert the record must be displayed.
- Click on <Record>key in the form menu.
- The select <Insert>,blank form will appear on the screen.
- The data can be entered through the form.
- The new record will be saved in the work space by clicking the <save> button.
- The cursor will be go to the first again ,an other record can be inserted and saved.
- If the user does not want to insert another record ,he should click on <Exit> to return to main menu.
- The system will generate a warning on entering a duplicate primary key value.

Delete/Remove Record

If a user wants to delete record ,he will adopt the following procedure:

- The form for which records are to be deleted must be displayed.
- Click on <Query> button.
- Select the Record with the <Previous> or <Next> key unit the desired records appears.
- Click on <Record >and then click on <Remove>,the desired record is deleted or removed from the database.
- Then click on <Save >to save the record.
- If user wants more records to be deleted, repeat the same procedure.
- Click on <Exit> to return to main menu.

Modify Record

To modify the records that were committed previously ,The following procedure is adopted.

- The form must be displayed first ,from which records are to modified .
- Click on <Query> button.

- The first record will be displayed ,keep on pressing <Next Record> key until the desired record appears .Enter new data displayed editing fields ,where values are to be modified.
- Click on <Save > to save the change in the database.
- Repeat the above procedure if more records are to be modified.
- Press<Exit> to return to main menu.

Retrieve Record

- The form from which we wants to retrieve records must be displayed first.
- Click on <Query >.
- First record is displayed ,keep on pressing the <Next> key to scroll the records. The desired record can be retrieved by scrolling by scrolling up or down.
- Click on<Exit> to return to main menu.

6.5 REPORT GENERATION

Selecting the report option from the main menu .Screen displays the sub menu .which consists of the system reports .Select the required report by moving the cursor. Then click on the desired report . The collected results will be displayed on the screen from where can be printed on the printer .

6.6 SECURITY IMPLEMENTATION

Security is promptly handled by D.B.A. One of the D.B.A. is to enable the user of the computer system to use an ORACLE database .In order to use ORACLE database ,One must first have an access to the computer and the operating system i.e through an identification name and a password in order to ensure no invalid access to the system.

To gain access to an ORACLE database he/she must have an ORACLE user name and password that are valid for a given database.

The data dictionary stores information about every user name i.e . Whether the user has CONNECT ,RESOURCE and D.B.A. privileges .At any time a D.B.A. can create new ORACLE user name using the SQL statement GRANT with the CONNECT option. E.g. GRANT , CONNECT ,RESOURCE ,D.B.A. to

QAISER IDENTIFIED BY PGD where user name = QAISER and password PSDP.

6.7 SPECIAL CONSIDERATION

The system has been developed in Windows 95 based ORACLE .Thus user must have a sound knowledge of this system. Every user have log-in account and password assigned to him/her by the System Administrator . Then only he/she has the authority to access the system. The system should be carefully shutdown. The ORACLE database should be dismounted before switching off the system. Otherwise the system might be corrupted , which may either result in the loss of data of inconsistent data.

Developer/2000 Reports Designer for Windows 95 / NT - [std_Info: Preview]

File Edit Window Help

Prev Next First Last Page Print Mail Close New

Student Information

Course PC Course Code PC

| Roll No | Name | F Name | Dob | Religen | Nationality |
|-------------------|-------------|---------------------------|-----------|---------|-------------|
| Course <u>PC</u> | | Course Code <u>PGD</u> | | | |
| Roll No | Name | F Name | Dob | Religen | Nationality |
| Course <u>PGD</u> | | Course Code <u>PGD/99</u> | | | |
| Roll No | Name | F Name | Dob | Religen | Nationality |
| PGD-1 | TARIQ | FAIZ | 12-JAN-75 | ISLAM | PAKISTANI |
| PGD-2 | ASAD | SADAT | 12-JAN-74 | ISLAM | PAKISTANI |
| PGD-3 | MUNIR | NOMAN | 03-JUN-75 | ISLAM | AFGHANI |
| PGD-4 | SADAT | KASHIF | 12-JAN-77 | ISLAM | PAKISTANI |
| PGD-5 | MUDASIR | KHAN | 09-JAN-89 | ISLAM | PAKISTANI |
| PGD-6 | FAISAL FAIZ | FAIZ | 12-DEC-77 | ISLAM | PAKISTANI |

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Developer/2000 Reports Designer for Windows 95 / NT - [r_course_final: Previewer]

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Page Next First Last Page Print Mail Close New

SUBJECTS INFORMATION

| Subject Id | Subject Name | Mid Term | Final | Passing Mar | Quiz | Assignments | Presentation | Test |
|------------|--------------|----------|-------|-------------|------|-------------|--------------|------|
| CC-1 | COBOL | 50 | 75 | 75 | 5 | 5 | 5 | 10 |
| CC-2 | VB | 50 | 75 | 75 | 5 | 5 | 5 | 10 |
| CC-3 | C++ | 50 | 75 | 75 | 5 | 5 | 5 | 10 |
| CC-4 | PACAL | 50 | 75 | 75 | 5 | 5 | 5 | 10 |
| CC-5 | ORACLE | 50 | 75 | 75 | 5 | 5 | 5 | 10 |
| CC-6 | SAD | 50 | 75 | 75 | 5 | 5 | 5 | 10 |
| CC-7 | CC | 50 | 75 | 75 | 5 | 5 | 5 | 10 |
| CC-8 | DLD | 50 | 75 | 75 | 5 | 5 | 5 | 10 |

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EDUCATION MASTER REPORT

| Degree | University | Roll No | Year | Percentage | Degree | Roll N |
|--------|-------------------|---------|------|------------|--------|--------|
| BSC | PUNJAB UNIVERSITY | PGD-2 | 98 | 88 | 999 | |
| BCOM | PUNJAB UNIVERSITY | PGD-3 | 97 | 77 | 9989 | |
| BSC | PUNJAB UNIVERSITY | PGD-5 | 99 | 56 | 232333 | |
| BA | PUNJAB UNIVERSITY | PGD-6 | 99 | 78 | 23333 | |
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| BA | PUNJAB UNIVERSITY | PGD-1 | 99 | 78 | 7767 | |

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STUDENTS INFORMATION

Course

Course Code

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|---------|-------------|--------|-----------|----------|-------------|-----------|
| PGD-1 | TARIQ | FAIZ | 12JAN-75 | ISLAM | PAKISTANI | WAH CANTT |
| PGD-2 | ASAD | SADAT | 12JAN-74 | ISLAM | PAKISTANI | WAH CANTT |
| PGD-3 | MUNIR | NOMAN | 03JUN-75 | ISLAM | AFGHANI | RWP |
| PGD-4 | SADAT | KASHIF | 12JAN-77 | ISLAM | PAKISTANI | WAH CANTT |
| PGD-5 | MUDASIR | KHAN | 09JAN-89 | ISLAM | PAKISTANI | WAH CANTT |
| PGD-6 | FAISAL FAIZ | FAIZ | 12-DEC-77 | ISLAM | PAKISTANI | WAH CANTT |
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EXIT

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Query

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Action Edit Block Field Record Query Window Help

QUERY ABOUT STUDENTS INFORMATION

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| PGD-1 | TARIQ | FAIZ | 12-JAN-75 | ISLAM | PAKISTANI | WAH CANTT |
| PGD-2 | ASAD | SADAT | 12-JAN-74 | ISLAM | PAKISTANI | WAH CANTT |
| PGD-3 | MUNIR | NOMAN | 03-JUN-75 | ISLAM | AFGHANI | RWP |
| PGD-4 | SADAT | KASHIF | 12-JAN-77 | ISLAM | PAKISTANI | WAH CANTT |
| PGD-5 | MUDASIR | KHAN | 09-JAN-89 | ISLAM | PAKISTANI | WAH CANTT |
| PGD-6 | FAISAL FAIZ | FAIZ | 12-DEC-77 | ISLAM | PAKISTANI | WAH CANTT |
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QUERY ABOUT STUDENTS RESULT

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 Course Name Degree No Year
 Roll No Remarks P Date

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|------------|---------|----|----|-----|-------|------|--------|-------|------|---------|----------|----|------|
| CC-5 | ORACLE | 3 | 23 | 34 | 4 | 4 | 4 | 4 | | 73 | 98 | 98 | Pass |
| CC-6 | SAD | 3 | 34 | 45 | 5 | 5 | 5 | 5 | | 99 | 66 | 66 | P |
| CC-7 | CC | 3 | 45 | 45 | 5 | 5 | 5 | 5 | | 110 | 77 | 77 | P |
| CC-8 | DLD | 3 | 45 | 67 | 5 | 5 | 5 | 7 | | 134 | 89 | 89 | A |
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