IN THE NAME OF ALLAH THE MOST GRACIOUS THE MOST MERCIFUL

QUAID-I-AZAM UNIVERSITY

HOSTEL ROOM ALLOCATION

BY

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A dissertation submitted to Quaid-i-Azam University Islamabad in partial fulfillment of the requirement for the degree of M.Sc. in Computer Science.

Department of Computer Science

Quaid-i-Azam University

Islamabad

November 1992

DEPARTMENT OF COMPUTER SCIENCE
QUAID-I-AZAM UNIVERSITY
ISLAMABAD

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FINAL APPROVAL

Certified that we have read the thesis submitted by MUNIR HUSSAIN and it is our judgement that this thesis is of sufficient standard to warrant its acceptance by QUAID-I-AZAM UNIVERSITY, ISLAMABAD for the degree of Master of Science in Computer Science.

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PROJECT BRIEF

PROJECT TITLE :	Quaid-i-Azam University, Hostel Room Allocation.
ORGANIZATION :	Quaid-i-Azam University, Islamabad.
OFFERED BY :	Department of Computer Science, Quaid-i-Azam University, Islamabad.
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STARTING MONTH:	Mar, 1992.
COMPLETION MONTH:	Nov, 1992.
LANGUAGE USED :	RM-Cobol/85
OPERATING SYSTEM:	MS-DOS Ver 3.3
SYSTEM USED :	IBM PC/AT

ABSTRACT

The system described in this dissertation is computerization of Quaid-i-Azam University Hostel Rooms Allocation. This includes keeping student's record, accounts,and room allocation and de-allocation. The system provides correct information about students and position of rooms etc. The system also provides efficient means of data storage and retrieval with a number of fields.

Different types of queries and reports which are required by the hostel management time to time are provided by the system.

DEDICATED TO MY PARENTS

AND

LATE AUNT AND COUSIN

ACKNOWLEDGEMENTS

First of all, I am grateful to almighty allah, who gave me the ability and courage to undertake and complete this project successfully.

I wish my heartiest thanks to my family, especially my parents whose bold commitments and ever increasing appreciations helped me a lot in achieving my ambitions.

I wish to my thanks to my supervisor Mr.Asad Ali Qureshi, who provided valuable advice through out this project.His help greatly facilitated me in accomplishing the task. His criticism and valuable discussions with him has improved the file design, screen designs, i/o messages and documentation of this project.

I am also thank Dr. Afzal Bhatti, who encouraged me to take this project.

Acknowledgements are expressed to all my teachers, especially Dr. Masud Ahmad Malik, Dr. Saeed Akhter Bhatti, Mr. Naeem Akhter Bhatti and all other teachers for their co-operation, encouragement and moral support during my academic career at Q.A.U.

I extend my thanks to Dr. Sakhawat Shah, Provost of hostels, and all other hostel staff for providing me necessary information and help.

I would like to thank Naeem Ahmad, Ayyaz Mehmood Ali, Safdar Ali, Javid Abid Bhatti, M. Saeed Amer and all my class fellows for their companionship and moral support during my stay at Q.A.U.

Munir Hussain

November 1992, Islamabad.

PREFACE

This dissertation is concerned with the design and implementation of hostel room allocation, keeping student record and account for Quaid-i-Azam University hostels. The entire work has been presented in seven chapters followed by some appendices.

CHAPTER 1 gives an introduction to Q.A.U. and university hostels.
CHAPTER 2 describes existing system of Q.A.U. hostels.
CHAPTER 3 describes proposed system and objectives of the proposed system.
CHAPTER 4 describes inputs, outputs and file designing of the proposed system.
CHAPTER 5 describes the procedures for system development.
CHAPTER 6 gives system implementation techniques, system testing and evaluation.
CHAPTER 7 gives user guide.
APPENDICES includes input screens, sample reports, sample hostel forms and system flow charts.
BIBLIOGRAPHY is also given at the end.

CONTENTS

CHAPTER 1
INTRODUCTION TO ORGANIZATION

1.1 INTRODUCTION

Quaid-i-Azam University was established in 1965 as a residential unitary institution devoted to Post Graduate studies and research. The foundation stone of the University was laid by its first chancellor Field Marshal M. Ayub Khan in June 1967 and a month later the Act of University was passed by the National Assembly.

Pakistan needs a large number of experts and specialists in various branches of knowledge and different fields of scientific and technological disciplines to staff its colleges, institutes, research laboratories, professionals and technical departments of Government, and the continually expanding sphere of trade and industry. All our national plan and schemes for economic development depend on the availability of a large number of men of requisite qualifications and competence.

In the past, the country has been depending largely upon foreign countries for its programs of higher training but it is obvious that this arrangement cannot continue indefinitely. Taking stock of the whole situation, the Government of Pakistan felt concerned about the production of trained manpower and standard of education. So at the end of 1964, the government of Pakistan decided to establish University in Islamabad.

The University started functioning with Post Graduate studies and research in Mathematic, Physics, Chemistry, Economics and Modern Languages in temporary building in Rawalpindi pending construction of the permanent campus. In 1970, the University moved to its present campus. This University is the first institution established by the Federal Government to produce scholars and specialists providing leadership on education and science in competition with the best international standards.

In 1976, in the occasion of centenary celebrations of the Father of the Nation, the University was renamed after the founder of Pakistan. At present this premier institution of the country provides excellent teaching and research facilities and awards M.Sc., M.Phil. and Ph.D. Degree in many disciplines. The University maintains high academic and research standard and its degrees are accepted by leading Universities all over the world.

1.2 SPECIAL FEATURES OF Q.A.U.

Quaid-i-Azam University is operating as a Federal University for the overall benefit of all regions of Pakistan. The University of Islamabad (renamed as Quai-i-Azam University in 1976) was constituted under the University of Islamabad, National Assembly Act No.XIV of 1967 and has the following important features.

1) The Quaid-i-Azam University is a federal University devoted to teaching/research at Master's, M.Phil and Ph.D. level and to post-doctoral research.

2) It's main function is to concentrate on research and the advancement of knowledge and to produce scholars and experts of the highest calibre and does not offer any under-graduate programs.

3) Research fellowships are awarded to young talented scholars who have completed their M.Sc. and wish to continue research activity. It thus provides an opportunity for original thinking.

4) To provide for instruction in such branches of leadership as it may deem fit, and to make provision for research and for the advancement and dissemination of knowledge in such a manner as it may determine.

5) To prescribe courses of studies to be conducted by it and the constituent colleges.

6) To hold examination and to award and confer degrees, diploma, certificates and other academic distinctions to and on persons who have been admitted to, and have passed its examination under prescribed conditions etc.

1.3 ACADEMIC ORGANIZATION AND OFFERED PROGRAMS

The academic organization is aligned to impart education, conduct research in various disciplines through different faculties, divisions and departments. At present the university consists of two faculties, its various departments, centers and affiliated institutes are offering programs as given below:

FACULTY OF NATURAL SCIENCES

** Department of Biology
M.Sc., M.Phil., Ph.D.

** Department of Chemistry
M.Sc., M.Phil., Ph.D.

** Department of Computer Science
M.Sc.

** Department of Earth Science
M.Sc., Ph.D.

** Department of Electronics
M.Sc., M.Phil., Ph.D.

** Department of Physics
M.Sc., M.Phil., Ph.D.

** Department of Mathematics

M.Sc., M.Phil., Ph.D.

FACULTY OF SOCIAL SCIENCES

** Department of Administrative Science
MBA, MPA, Ph.D.

** Department of Anthropology
M.Sc.

** Department of Defence and Strategic Studies
M.Sc.

** Department of Economics
M.Sc., M.Phil., Ph.D.

** Department of History
M.Sc., M.Phil., Ph.D.

** Department of International Relations
M.Sc., M.Phil., Ph.D.

These faculties are headed by Deans and Departments are headed by one of the senior teacher of the department called Chairperson.

Application for admission to various courses of study are invited from all over Pakistan and admission is made on the basis of quota/merit for M.Sc. and merit only for M.Phil. and Ph.D. Foreign students seeking admission to this University are required to submit their applications through the Ministry of Education, Government of Pakistan. A limited number of seats are determined by the academic council, shall be reserved for students from backward areas.

Academic year at Quaid-i-Azam University starts in February and lasts till the middle of January in the following year. Academic year is divided into two semesters Spring semester (February to June) and fall semester (September to January). University is closed to teaching for summer break in July and August.

1.4 INTRODUCTION TO UNIVERSITY HOSTELS

Students come from out of station for study in Quaid-i-Azam University Islamabad need to accommodate in nearest most place to the university campus. Like other Universities in Pakistan, Q.A.U. has a popular hostel and flat system for residency of those student to far territories of Pakistan.

University hostels consists of five blocks, each block named from hostel 1 to 5. All of these are double story and consist of 102 rooms except hostel-5, which has 116 rooms. All rooms are for couple of student. Hostel-1, hostel-3, hostel-4 are reserved for male students of M.Sc. Hostel-2 is reserved for Junior Research Assistants (M.Phil.) and Senior Research Assistants (Ph.D.). Hostel-5 is reserved for girl students.

Two new hostels are under construction. One for girls, which is in the area of hostel-5, consists of 28 rooms and one for boys, that is in the boundary of boy hostels, consists of 42 rooms. All these rooms are biseater.

For accommodation procedures, hostel management and maintenance, there is a full fledged staff consisting of officers and workers. All these people works under a top person call Provost, which is one of the professor of Q.A.U.,Islamabad. Each hostel is organized by a senior warden and a resident warden, who are responsible to provide hostel accommodation and have to remove all problems about hostel that are faced by student.Each hostel has a warden flat, a guest-room, a mess-room, a T.V. room and two common-rooms.

About 400 students who come to Q.A.U., Islamabad for study, need residence in hostel or apply for hostel residency. After proper hostel allotment procedure these are accommodated.

CHAPTER 2

EXISTING SYSTEM

2.1 INTRODUCTION

At present all the work is done manually. A student who wants to reside in the hostel, has to fill a form for admission in the hostel. The student will be ineligible for admission if he/she is from Rawalpindi/Islamabad. So for this purpose domicile certificate is required.

After this, confirmation from the chairperson of the department is required. Then the student will pay hostel dues in Habib Bank Limited, Quaid-i-Azam University branch. Then the procedure for allotment begins. Female students are sent to Hostel-5, JRAs and SRAs are sent to Hostel-2, while male students of M.Sc. are allocated the rooms in Hostel-1, Hostel-3 or Hostel-4, where the seat is vacant.

2.2 APPLICATION PROCEDURE

Since a limited number of seats is available in the hostel excluding the residents of Rawalpindi/Islamabad. So the seats are allocated on first come, first serve basis. The student should apply for hostel as soon as he/she is admitted to the University. The application procedure is simple. The student can get a form from the hostel office and fill it. Domicile certificate and two passport size photographs (optional in case of female) will be attached with the application.

Confirmation from the chairperson of the department is also required, that the applicant is a student of the department. Sample of application form is provided in appendix-c.

2.3 ALLOTMENT PROCEDURE

After submission of form the student is entered on the allotment register. After allocating the room,the form is put in the student record file, a, separate file for each room. Then it is entered in the hostel register. Further details are given below:

2.3.1 ALLOTMENT REGISTER

This register contains temporary record of applicant. When the student submits the form, the student is entered on allotment register, whether he/she is allocated a room or not.

The following information is kept in it:

- Form no
- Date of submission of application form
- Name of the applicant
- Father's name

- Department

- Room/hostel

Where Room/Hostel field is filled when the room is allocated to the applicant. This register is just for initial entry, the permanent record is kept in the Hostel-Register.

2.3.2 STUDENT RECORD FILE

After submission of form, the form is put in the student record file. This file is roomwise i.e. for each room of each hostel, there is a student record file.

A copy of the domicile certificate will be attached to the admission form to see whether the student is from Rawalpindi/Islamabad, because the students from Rawalpindi/Islamabad are ineligible for admission in the hostel. A copy of the challan number, on which the hostel dues are paid is also attached with the application form. The hostel dues will be paid in the Habib Bank Limited, Quaid-i-Azam University branch.

This file contains the forms of the students who reside in this room of this hostel from 1978. In other words this file contains the history of the room. Once a new-comer is allocated the room, his/her form will remain in the file of this room. In case of change of room, the new hostel and room are identified on the form, but

the form will still remain in this file.

Since Hostel-1, Hostel-2, Hostel-3 and Hostel-4 consists of 102 rooms each and Hostel-5 consists of 116 rooms and each room is biseater, so there are 524 such files.

2.3.3 HOSTEL REGISTER

There is a separate hostel register for each hostel. Since there are five hostels, so there are five hostel registers i.e. Hostel-Register-1, Hostel-Register-2, Hostel-Register-3, Hostel-Register-4 and Hostel-Register-5. Female student's record is kept in to the Hostel-Register-5, scholar's record is kept into the Hostel-Register-2 while M.Sc. male student's record is kept in Hostel-Register-1 or Hostel-Register-3 or Hostel-Register-4.

It contains the detailed history of each room from 1978. It is roomwise. It is updated after the arrival of new student in the room.

Following information are kept in this file, roomwise:

- Name of the resident
- Father's name
- Date of joining
- Date of leaving

- Department
- Semester
- Detail of furniture
- Signature of the resident

The furniture may consists of the following items:

- Iron/wooden bed
- Study table
- Table bedside
- Chair study steel
- Chair easy steel
- Basket
- Curtain

2.3.4 BASIC INFORMATION SHEET

After completion of allotment, the student have to fill a form, called Basic Information Sheet. It will be filled by both the room-mates.

The sample of this sheet is given in appendix-c, it will be filled in duplicate i.e. by both the room-mates.

2.4 STUDENT ACCOUNT

To keep the account of the resident, there are two registers, Student Account file and Collection Register, both are department wise. The details are as follows:

2.4.1 STUDENT ACCOUNT FILE

Student-Account file is a department wise register. There are fourteen such registers, department wise. This register contains the record of the dues paid and payable by each student. So the following information are kept in this register:

- Name of the resident
- Father's name
- Date of joining
- Hostel number
- Room number
- Department
- Class
- Semester
- Period from
- Period to
- Dues payable

- Dues paid

- Balance

- Collection-Register-Serial-No (unique)

- Remarks (challan no/date)

2.4.2 COLLECTION REGISTER

This register contains the detail of the dues payable by the resident. It is also department wise. It contains a unique serial number for each resident. It only identifies detail of dues of the student. The rates for different semesters are different.

Following information are kept in this register:

- Serial number

- Date

- Name of resident

- Department

- Class

- Semester

- Detail of dues

Where detail of dues include:

- Accommodation Rent
- Service Charges
- Heating Charges (Nov to Feb)
- Electric Charges for Fan (Mar to Apr)
- Sui-Gas Charges
- Electric Charges for Lighting
- Medical Charges
- Common Room Charges
- Wear and Tear Charges (including bulb lighting)
- Hostel Caution Money (Refundable)

A sample of form for detail of dues for year 1991-1992 is given in appendix-c.

2.5 CHANGE OF ROOM

In case of change of room, the approval of the provost is necessary. If you want to change the room and want to shift in to the other room in which a seat is vacant, you simply inform in the office. They will allocate to you that room. This allotment will be on hostel register.

In case of mutual interchange, both the residents have to fill a form and then by the approval of the Provost, they are allowed to change the room. This entry will be in Hostel-Register. A sample of the form for mutual interchange is given in appendix-c. This form will be filled by both the residents who want to change the rooms.

2.6 CLEARANCE PROCESS

When a student leaves the hostel, he/she has to fill a form for final clearance. When he/she completes the clearance, the hostel office issues him/her clearance certificate. It is necessary for DMC and Degree.

A student who has completed his/her M.Sc./M.Phil./Ph.D., its allotment will be canceled or a student who have left the university or dropped from the roll of the university.

A list of the students who have just completed their M.Sc./M.Phil./Ph.D. or dropped from the roll of the university is sent by the examination section to the hostel office. With its help the allotment of these students is canceled.

The sample of the form for final clearance is given in appendix-c.

CHAPTER 3

PROPOSED SYSTEM

3.1 INTRODUCTION

The proposed system is computer based and has been designed after conducting the complete study of the existing system. The proposed system has been suggested keeping in mind the demands of the hostel system. The future plans and requirements of the hostel system are also taken into consideration. The proposed system is mainly designed and developed for room allocation, keeping student record and accounts.

3.2 PURPOSE OF COMPUTERIZATION

The computer center is trying to computerize a wide variety of administrative functions of the university and was interested to computerize the HOSTEL ROOM ALLOCATION of Quaid-i-Azam University, Islamabad.

Through the complete study of the existing system and structured and non-structured interviews of primary people, it was felt that the manual system had now become unreliable. The primary aim of this study is to confer computerized formation to the existing system. Possible future extensions of computerization before and during the study are also kept in mind. In the study of the system following steps are taken:

1) Analysis of the present system, gather records and analyze facts about present system. This includes objectives, input, output and resources.

2) Design of the proposed system, i.e., design new system to achieve objectives. This includes examine input, operational and output possibilities, screen designing, file designing and code designing.

3) Implementation of proposed system, i.e. new system details and implementation. This includes change over technique and instruction to users.

In the light of above stated points, this study has been carried out primarily to analyze the present system,pin point the drawbacks of the present system and to propose a new system which will be more feasible, efficient and accurate.

3.3 MAIN OBJECTIVES OF THE PROPOSED SYSTEM

It is very important and helpful to establish the objectives that the computer based system should satisfy. These objectives should reflect the total system objectives which in turn, should reflect the organization's objectives.

The general objectives of system study are met by developing new procedures or improving existing procedures so as to increase the effectiveness of operation and

if possible to bring about greater economy and reliability.

Presently the system is completely manual. Related staff has to carry out a huge amount of work by hand, which is time consuming, difficult and uneconomical. So concerned People have to face tremendous hardships to monitor the Hostel Room Allocation.

In designing the computer based system, following objectives were kept in mind:

1) To analyze the position of rooms,whether free or occupied.

2) To obtain greater speed and accuracy in the processing of data.

3) To keep the balance of the students i.e. payable dues, dues paid etc.

4) Elimination of unnecessary functions and activities.

5) Increasing reliability which is helpful in timely decision making, which can incorporate good internal control.

6) Minimizing the redundancy of the data which is frequently occurs in non-computerized representation.

7) System should be acceptable to the organization in design standards, such standards are set to ensure that the previous objectives are likely to be met.

8) System should provide online help while entering codes.Codes are used to save storage and minimizing errors.

9) System should provide restricted access to the database to ensure data security.

10) System should provide necessary checks for data entry.

11) System should store data in an optimal organized way and retrieve data without loss of information.

12) System should be menu driven.

3.4 SUMMARY OF THE PROPOSED SYSTEM

3.4.1 INPUTS AND OUTPUTS

The proposed system is mainly developed for room allocation. The input to the computer based system is made through admission forms described in the previous

chapter which will be filled in by the student. A copy of domicile certificate and receipt of dues paid will be attached to the form. Data entry in the proposed system is exceedingly flexible and the new system has built in data entry checks to ensure accuracy and reliability. Different queries and reports are produced according to the general requirements of the organization.

3.4.2 ROOM ALLOCATION

The system provides two room allocation strategies, that is, auto allocation and manual allocation. Since hostel-5 and hostel-7 are for female, hostel-2 for scholars and hostel-1, 3, 4, 6 are reserved for M.Sc male students. So in auto allocation, rooms will be allocated on first come first serve basis, and first vacant seat will be allocated to the student. In manual system user identify the hostel and room that he wants to allocate. Room allocation will be in proper organized way, that is, female will be sent to hostel-5 or hostel-7, scholars to hostel-2, while M.Sc male students will be sent to hostel-1, 3, 4, 6.

In case when no seat is vacant, a message will be displayed. And whenever user inserts new student record, the system maintains a queue on the basis of form number and first allocates rooms to the student whose record is already in the queue.

3.4.3 AMENDMENTS

The system also provides the facility of updation and deletion. In updation particular fields are allowed to update, while in deletion the whole record will be deleted.

3.4.3.1CHANGE OF ROOM

Students can change rooms mutually or non-mutually.In mutual interchange the student will apply to the provost's office. After approval of provost, they will be allowed to change rooms. In non-mutual interchange, the student is allowed to change the rooms only if that seat is vacant.

3.4.3.2NEXT SEMESTER ACCOUNT

Account will be updated when the student is promoted to the next semester. Maximum of six semesters are allowed.

3.4.3.3 DE-ALLOCATION OF ROOMS

When the student completes his degree or leaves the university hostel or dropped from the roll of university, room will be de-allocated. Student's record and account

updated. Whenever he/she applies for hostel clearance, his account will be checked. If dues are complete, then clearance certificate will be issued to him.

3.5 LANGUAGE USED

Each database is concerned with input, storage, processing and output. Input to the database is provided from the real world. Programs are used to process, store and retrieve information. In fact, the programs are the most important part of the database as they control input & output activities, storage and processing inside a data base.

Selection of the suitable language to design the software was the most crucial stage of the proposed system. After the study of the different software COBOL was considered to be the most appropriate language for the proposed system.

Following are the major features of the COBOL language:

1) It is specially designed for commercial applications.

2) It has ability to handle large amount of input/output data.

3) Provides support for database.

4) Fast processing is also made possible in this language.

5) Indexing and searching is easy.

6) Easy programming due to its English like syntax.

Due to the above features COBOL is suitable language for database.

3.6 HARDWARE USED

The hardware and operating system requirements for this system are:

- An IBM XT/AT or compatible machine with at least 640 kb of RAM
- A dot matrix printer with 80 column width paper
- A monochrome monitor
- One 20 MB hard disk
- Micro-soft Disk Operating system, version 3.0 or plus

CHAPTER 4

DESIGN OF THE PROPOSED SYSTEM

4.1 INTRODUCTION

The new system is a computer based system in which electronic data processing methods, coupled with all database techniques are used to make the system more efficient and reliable. The work involved in design of the proposed system is described in this chapter.

The new system design process includes the following:

1) Input designing

2) Output designing

3) File designing

4.2 INPUT DESIGNING

Input is the information that is required from the user for further processing by the system. Input design activity is related to design of receiving such information from the user in well format. It is the responsibility of the programmer to provide checks for correct data entry. e.g. key fields must not be duplicated and numeric fields must not accept non-numeric data.

In designing of the system's input, the data entry screens, the length and type of each field was studied. Appropriate lengths and types were allocated to each field,

keeping in mind that no time and memory is wasted. Data is checked at the input stage to prevent incorrect data to creep in. For example form number is primary key, which is composed of two digit year plus three digit serial number and must not be duplicated. Therefore, a check was provided for validation, i.e. an attempt to a duplicate form number will report an error and will be re-entered. Samples of input screens and forms are given in appendices.

4.3 OUTPUT DESIGNING

Output phase of a system is of key importance in the system design. The format of the queries and reports should be decided in the beginning of the system design. Reports generated by any computerized system should be good looking and complete in all respects. So, a considerable amount of time and effort should be devoted in designing the reports which may be beneficial both to the user and to the management. In simple words, we can say that, output design is the final product that comes out of the system.

After careful study of the existing system, the outputs which were required by the user and management in the form of queries and reports are as follows:

4.3.1 QUERIES

1) To display the list of vacant rooms hostelwise.

2) To display the list of those rooms in which one seat is vacant hostelwise.

3) To display the detail of hostel rates for each semester.

4) To display the list of distt/country codes and names.

5) To display the list of department codes and names.

6) To display a list of the students of a given distt/country.

7) To display a list of the students of a given department.

8) To display a list of the students of given name.

9) To display a list of the students of given room of a given hostel.

10) To display the detail of furniture in each room hostelwise.

11) To display a detailed report of rooms for each hostel.

12) To display the record of the hostel administration.

13) To display the list of students semesterwise.

14) To display the list of hostel students whose dues are not complete.

15) To display the list of those ex-hostel students who have completed their degree and whose dues are not complete.

16) To display the list of those students who have been dropped from the roll of the university.

17) To display complete report of a student, whether hostel student or ex-hostel student.

4.3.2 REPORTS

1) To print the list of distt/country codes and names.

2) To print the list of department codes and names.

3) To print the complete report of a student.

4) To print the detail of hostel rates for each semester.

5) To print a departmentwise list of hostel students whose dues are not complete.

6) To print a list of those students who have completed their degree and their dues are not complete.

7) To print a list of those students who have been dropped in a particular year.

8) To issue a dues clearance certificate to a hostel student.

9) To issue a final clearance certificate to a student who have been completed his degree.

10) To issue a residential certificate to a hostel student.

4.4 FILE DESIGNING

The input to the system forms the data to be processed. However this data first must

be organized in some logical arrangement in the form of files. The entire system depends upon the file design. A well designed file always results in substantial saving of the storage. It always produce results

in minimum processing time and reduces the need for future revision. While designing the files not only the required output, but also the projected outputs are kept in mind.

Following points were considered during the file designing phase of the system:

1) Data redundancy should be minimized.

2) The records of the files can easily be modified if necessary.

3) The files should provide fast retrieval of information which is the prime goal of designing a database.

The system consists of nine files. All these files are indexed sequential. This file organization is most suitable because direct access is required to a particular record most of the times. Two types of files are used for hostel system that are code files and other data files. The description of these files is given below:

4.4.1 CODE FILES

A code can be defined as a brief combination of characters to represent the actual data and occupies little space. When data are too large to be handled or probability of entering the incorrect data is greater, codes are used to represent actual data. Codes may be alphabetic, numeric or alphanumeric. Codes play an important roll in the designing of a system because:

1) Codes save computer storage as they take much less memory space as compared to actual values.

2) Codes reduce the chances of errors. The user has to enter codes only, instead of the values for a field and hence user is less liable to commit mistakes.

3) Codes are easier to enter and takes less time, thus makes data entry quick and easy, contributing a lot to system user friendly. These codes are later decoded in the program and the decoded information is displayed on the output device. To reduce disk storage and improve efficiency of the system, suitable codes are designed for the system.

Following are the codes used in the proposed system:

1) District/Country codes

2) Department codes

DISTRICT/COUNTRY CODE FILE

This file contains information about the place of domicile of a student. For Pakistanis distt. of domicile while country for foreigners. This file is linked with other files through ddistt-cod.

FILE NAME : distt-file DATA FILE NAME : distt.dat

PRIMARY KEY: ddistt-cod RECORD LENGTH : 28 bytes

RECORD LAY OUT

LEVEL	DESCRIPTION	FIELD NAME	TYPE	LENGTH
02	distt/country code	ddistt-cod	alphanumeric	3
02	distt/country name	ddistt-name	alphanumeric	25

DEPARTMENT CODE FILE

This file contains department codes and names. This file is linked with other files through ddept-cod.

FILE NAME : dept-file DATA FILE NAME : dept.dat

PRIMARY KEY : ddept-cod RECORD LENGTH : 37 bytes

RECORD LAY OUT

LEVEL	DESCRIPTION	FIELD NAME	TYPE	LENGTH
02	department code	ddept-cod	alphanumeric	2
02	department name	ddept-name	alphanumeric	35

4.3.2 OTHER FILES

STUDENT FILE

This file is used to keep student record. It has a composite primary key form number, which is composed of two fields, two digit year and three digit serial number.

FILE NAME : s-file DATA FILE NAME : student.dat

PRIMARY KEY : sf-no RECORD LENGTH : 208 bytes

RECORD LAY OUT

LEVEL	DESCRIPTION	FIELD NAME	TYPE	LENGTH
02	form no	sf-no		
03	year	syear	numeric	2
03	serial no	ss-no	numeric	3
02	student name	s-name	alphanumeric	25
02	father name	f-name	alphanumeric	25
02	distt/country code	sdistt-cod	alphanumeric	3
02	sex	sex	alphanumeric	1
02	emergency phone	phon	numeric	8
02	department code	sdept-cod	alphanumeric	2
02	class	clas	alphanumeric	1
02	semester	ssem	numeric	1
02	temporary address	adr1	alphanumeric	60
02	permanent address	adr2	alphanumeric	60
02	date of joining	doj		
03	date	sd1	numeric	2
03	month	sm1	numeric	2
03	year	sy1	numeric	4
02	date of leaving	dol		
03	date	sd2	numeric	2

03	month	sm2	numeric	2
03	year	sy2	numeric	4
02	status	st	alphanumeric	1

ACCOUNT FILE

This file is used to keep student account. It has a composite primary key form number, which is composed of two digit year and three digit serial number.

FILE NAME : acc-file DATA FILE NAME : acc.dat

PRIMARY KEY : af-no RECORD LENGTH : 29 bytes

RECORD LAY OUT

LEVEL	DESCRIPTION	FIELD NAME	TYPE	LENGTH
02	form no	af-no		
03	year	ayear	numeric	2
03	serial no	ss-no	numeric	3
02	deposit	deposit	numeric	6
02	date of deposit	dod		
03	date	ad	numeric	2
03	month	am	numeric	2

03	year	ay	numeric	4
02	challan no	ch-no	numeric	4
02	arrear	erear	numeric	6

RATES FILE

This file contains the detail of hostel rates for each semester. This file is linked to other files through primary key semester.

FILE NAME : dues-file DATA FILE NAME : dues.dat

PRIMARY KEY : dsem RECORD LENGTH : 46 bytes

RECORD LAYOUT

LEVEL	DESCRIPTION	FIELD NAME	TYPE	LENGTH
02	semester	dsem	numeric	1
02	accommodation rent ar		numeric	5
02	service charges	sc	numeric	5
02	heating charges	hfc	numeric	5
02	sui-gas charges	sgc	numeric	5
02	lighting charges	lc	numeric	5
02	medical charges	mc	numeric	5

02	common-room chgs	crc	numeric	5
02	w & t charges	wtc	numeric	5
02	hostel security	hc	numeric	5

ROOM FILE

This file keeps the form number and room number of the resident. It has composite primary key form number, which is composed of two fields, two digit year and three digit serial number. This file is updated after each arrival or when student change the room.

FILE NAME : room-file DATA FILE NAME : room.dat

PRIMARY KEY : rf-no RECORD LENGTH : 9 bytes

RECORD LAY OUT

LEVEL	DESCRIPTION	FIELD NAME	TYPE	LENGTH
02	form no	rf-no		
03	year	ryear	numeric	2
03	serial no	ss-no	numeric	3
02	room no	rroom-no		
03	hostel no	rh-no	numeric	1
03	room no	rr-no	numeric	3

ROOM-STATUS FILE

This file is used to maintain room status and helps in room allocation and de-allocation. It also counts that how many students are in a room and restricts to allow more than two students in a room. It has a composite primary key room number, which is further composed of hostel number and room number. This file is updated when the room is allocated or de-allocated to a student, or when the student changes the room non-mutually.

FILE NAME : status-file DATA FILE NAME : status.dat

PRIMARY KEY : sroom-no RECORD LENGTH : 5 bytes

RECORD LAY OUT

LEVEL	DESCRIPTION	FIELD NAME	TYPE	LENGTH
02	room no	sroom-no		
03	hostel no	sh-no	numeric	1
03	room no	sr-no	numeric	3
02	room status	sst	numeric	1

FURNITURE FILE

This file contains the details of furniture for each room. It has a composite primary key room number, which is further composed of hostel number and room number.

FILE NAME : fur-file DATA FILE NAME : fur.dat

PRIMARY KEY : froom-no RECORD LENGTH : 10 bytes

RECORD LAY OUT

LEVEL	DESCRIPTION	FIELD NAME	TYPE	LENGTH
02	room no	froom-no		
03	hostel no	fh-no	numeric	1
03	room no	fr-no	numeric	3
02	iron/wooden bed	iwb	numeric	1
02	easy chair	ec	numeric	1
02	study chair	sc	numeric	1
02	study table	st	numeric	1
02	table bedside	tb	numeric	1
02	curtain	c	numeric	1

ADMINISTRATION FILE

This file is used to keep the record of hostel administrators, that is, provost, senior wardens, resident wardens. It has a composite primary key designation, which is composed of designation and serial number.

FILE NAME : admin-file DATA FILE NAME : admin.dat

PRIMARY KEY : adesig RECORD LENGTH : 155 bytes

RECORD LAY OUT

LEVEL	DESCRIPTION	FIELD NAME	TYPE	LENGTH
02	designation	adesig		
03	designation	ades	alphanumeric	1
03	hostel no	ah-no	alphanumeric	1
02	name	aname	alphanumeric	25
02	emergency phone	aphone	numeric	8
02	temporary address	adr1	alphanumeric	60
02	permanent address	adr2	alphanumeric	60

CHAPTER 5

SOFTWARE DEVELOPMENT

5.1 INTRODUCTION

The system study, system analysis and design are the primary functions of the system analyst. Software development is basically the responsibility of the programmer. For developing programs number of steps are involved which will be discussed in this chapter.

The programming is not quite a science, there is a touch of art involved in it. Thus, the purpose of programming is to code, debug and test each program before and after integrating these modules.

The development of the modules is the most complicated and time consuming stage of the system development. Each module has to do its job properly according to the input and output requirements of the system.

The choice of the source language is very important and it depends upon the problem under consideration. As the problem under consideration is such that it involves storage and processing of large amount of data, so RM/COBOL-85 is the most appropriate language for this purpose. It's features are discussed in chapter-3.

5.2 SYSTEM COMPONENTS

The developed system is a database package named Quaid-i-Azam University Hostel Room Allocation. It consists of a number of modules. Each module fulfills the needs of the system. These modules can be categorized as follows:

1) Initialization modules

2) Insertion modules

3) Updation modules

4) Deletion modules

5) Queries modules

6) Report generation modules

5.2.1 INITIALIZATION MODULES

All the database files or a single file can be initialized in this program. Since initialization of a file erases the stored data in the data file, a password is used to restrict initialization. Whenever user wants to initialize a data file, the system asks

for a password. If password is correct then user has a menu, where the user can initialize a single file or all the files. A message is displayed before initialization "All the data will be erased, proceed (Y/N)?"

When user wants to initialize all the files, following warning message is displayed

"The data will be erased from all the files, proceed (Y/N)?"

If the password is wrong then the user can try three times. If each time wrong password is entered, then the control exit to the DOS. The program that is written for this purpose is INT-MENU.CBL.

5.2.2 INSERTION MODULES

Programs for data entry are the most important part of the system. There are several programs written for data entry in different files, major programs are listed below:

NEW.CBL

This program is used to insert new student record , student account and room allocation. Room allocation may be manual or auto allocation. In case when no seat is vacant , a message is displayed and when ever a seat is created , it is allocated to the student whose record is already in the queue. The system makes the queue

on the basis of form number and this will be auto allocation.

CT.CBL

Inserts distt/country code and its name.

DT.CBL

Inserts department code and its name.

AD.CBL

Used to insert administration record.

FR.CBL

This program is used to insert the data in furniture file.

DU.CBL

This program is used to insert hostel rates for each semester.

OLD.CBL

This program is used to insert old student record and account.

5.2.3 DELETION MODULES

The programs that deletes a particular record from a particular file are listed below:

DEL-CT.CBL

Deletes a disst/country code

DEL-DT.CBL

Deletes a department code.

If the code has been used in the student file , then following message is displayed: "This code has been used in the student record file, it cannot be deleted , press any key to continue"

DEL-AD.CBL

Deletes administration record

DEL-ALOC.CBL

This program is used to de-allocate room to hostel student. Following message is displayed before deleting the record.

"Is student has been dropped (Y/N)".

A message is displayed before deleting the record as

"ARE YOU SOUR (Y/N)?".

5.2.4 UPDATION MODULES

Following are the programs used to modify the record:

UP-AC.CBL

This program is used to update next semester account for hostel student .

UP-RM.CBL

This program is used for change of room either mutual or non-mutual.

UP-FR.CBL

Update furniture for a given room of a given hostel

UP-DU.CBL

Is used to update hostel rates

UP-AD.CBL

Updates administration record

UP-RD.CBL

Is used to deposit remaining dues.

UP-STD.CBL

This program updates student record.

To modify a particular record of particular file, primary key of that file is specified and user is asked to enter the primary key, the record is displayed on the screen, a message is also displayed on the bottom of the screen in reverse video mode:

"press <enter> key for no change"

User simply presses <enter> key for no change, change otherwise.

In this way you can modify the desired field. The primary key can not be modified.

5.2.5 QUERIES MODULES

There are seventeen major queries . Programs that produce queries are listed below with their description:

Q-DU.CBL

This program is used to display detail of hostel rates for each semester.

Q-RM.CBL

This program is used to display the detailed report of room of all the hostels. This includes vacant rooms, vacant seats , total seats etc.

Q-CT.CBL

This program is used to display the list of disst/country codes with their names pagewise.

Q-DT-CBL

This program is used to display the list of department codes with their names pagewise.

Q-AD.CBL

This program is used to display the record of hostel administration i.e. provost , senior warden and resident warden.

Q-FR.CBL

This program is used to display the detail of furniture for each room hostelwise.

Q-VR.CBL

This program is used to display the list of vacant rooms page wise.

Q-VS.CBL

This program is used to display the list of those rooms in which one seat is vacant.

Q-GCT.CBL

This program is used to display the list of students of a given disst/country and necessary information about those students pagewise.

Q-GDT.CBL

This program is used to display the list of students of a given department and necessary information about those students pagewise.

Q-GNAM.CBL

This program is used to display the list of the students of given name and necessary information about those students page wise.

Q-GRM.CBL

This program is used to display the list of the students of a given room of a given hostel and necessary information about those students.

Q-SEM.CBL

This program is used to display a list of students of each semester and necessary information pagewise.

Q-HNC.CBL

This program is used to display a list of those hostel students , whose dues are not complete and necessary information about those students.

Q-PNC.CBL

This program is used to display a list of those students who have completed their degree and whose dues are not complete. Necessary information of those students are also displayed.

Q-DNC.CBL

This program is used to display a list of those students who have been dropped from the roll of the university and whose dues are not complete. Necessary information of those students are also displayed.

Q-CR.CBL

This program is used to display a complete report of student, that is, all the information about a student.

5.2.6 REPORT GENERATION MODULES

Ten programs are written for report generation. User can select any one to produce a report. The programs and their description is given below:

REP-CT.CBL

This program prints a list of distt/country codes with their names pagewise.

REP-DT.CBL

This program prints a list of department codes with their names pagewise.

REP-HNC.CBL

This program prints a list of those hostel students whose dues are not complete , and necessary information about those students of a given department.

REP-PNC.CBL

This program prints a pagewise list of those ex-hostel students who have completed their degree and their dues are not complete . Necessary information about those students will also be printed.

REP-DNC.CBL

This program is used to print a pagewise list of those students who have been

dropped from the roll of the university for a given year. Necessary information about those students will also be printed.

REP-HCL.CBL

This program issues a dues clearance certificate to a hostel student.

REP-FCL.CBL

This program issues final clearance certificate.

REP-CR.CBL

This program is used to print a complete report of a student, whether hostel student or ex-student.

REP-DU.CBL

This program is used to print a detail of hostel rates for each semester.

REP-RC.CBL

This program is used to issue a residential certificate to a hostel student.

5.3 FEATURES OF THESE PROGRAMS

Some common features of the above programs are given below:

1) To insert a record maximum length for a field is underlined.

2) F1 key is used to start insertion , deletion , updation, query or report.

3) While entering the data user can exit any where by pressing the function key F10 , except some exceptional conditions.

4) After entering record , following message on the bottom of the screen is displayed in reverse video mode:

"Confirmation about data , correct (Y/N)"

Then a message "Enter more (Y/N)?" is displayed.

5) Different messages are displayed on the bottom of the screen according to

the situation to make the data entry task easy.

6) On line help is provided during the data entry. Codes and names are displayed in the form of a window. New codes and names can also be inserted.

7) In some cases , a small window appears, user can select by arrow keys and then press <enter> key. The field will be entered into the file and also displayed on the screen. This reduces the chances of errors.

8) Possible edit checks are provided, that makes the system reliable .

9) Case sensitivities are ignored. Upper and lower case letters are treated as same while entering or retrieving the data.

CHAPTER 6

SYSTEM IMPLEMENTATION AND EVALUATION

6.1 INTRODUCTION

After the software development, the next phase of the system life cycle is system implementation and evaluation. This chapter describes various system implementation techniques. The system is then evaluated and recommended for future requirements.

6.2 SYSTEM IMPLEMENTATION

Implementation includes all those activities that take place to convert from the old system to the new. The new system may be totally new, replacing an existing or it may be a major modification to an existing system. In either case, proper implementation is essential to provide a reliable system to meet organization's requirements.

We discuss two major aspects of the system implementation including system testing and system conversion.

6.2.1 SYSTEM TESTING

Once the system has been designed, the phase of the system life cycle is the system

testing and implementation. Even if the system is developed using correct algorithms, its reliability remains doubtful. The validation of results is

very important to make the system acceptable. The system can not be handed over to the user until its accuracy is proved mathematically and by hand.

System testing means that all parameters which are passed between different modules were checked for any inconsistency. In order to produce a detailed test plan for the system as a whole, a listing of entire package was taken. All database inputs were verified. Input processing was cross checked with the control logic and procedural sequences mutually agreed in the functional specifications.

All programs and subroutines were confirmed for the desired results. Major consideration was laid on procedures. A reasonable amount of actual data was given to the system to check the control logic of newly developed system.

All subsystems were tested to a satisfactory level, their interfaces were tested and combined results were compared with the manual results. Every effort was made to make sure that system doesn't fail under any condition.

During this process all programming bugs and minor designed faults were removed. Necessary changes were made in design and structure, special care was taken not

to change the actual logic of the system.

6.2.2 SYSTEM CONVERSION

After the system has been tested, preparation can be made for actually converting from old system to the new system.

6.2.2.1 CONVERSION APPROACHES

There are four basic conversion methods to implement a system:

a) Direct conversion

b) Phase in conversion

c) Pilot conversion

d) Parallel conversion

DIRECT CONVERSION APPROACH

In this approach, the existing system is dropped and the new system becomes completely operational. No matter how does it perform in the long run. In case of

the new system failure there is no alternate, and the loss of data may pose several difficulties to the management. There is no backup of the old system, which is the major drawback of this type of conversion. This conversion method may be named as direct cutover.

PARALLEL CONVERSION APPROACH

Parallel conversion is probably the most common technique. In this approach, both the old and new system will be run simultaneously for a short period of time. At the end of parallel run period, if the new system is proved on the basis of the results produced, the old system will be dropped and system will continue from there onward.

PHASE-IN CONVERSION APPROACH

The phase-in method is used when it is not possible to install a new system through an organization all at once, that is, the system will be brought-in gradually. In this type of conversion long phase-in periods creates difficulties.

PILOT CONVERSION APPROACH

In pilot conversion approach, new system is introduced in a part of the organization.

The system is implemented in the whole organization only when it is proved that the system is giving the required results. Since the system is working as an integrating environment, so pilot conversion is not acceptable.

6.2.2.2 PROPOSED SYSTEM CONVERSION

The most feasible conversion technique in our case is, the parallel conversion approach. This approach is selected mainly because it provides an opportunity to compare the results of the existing system with those of the developed system. An other advantage of this approach is that the risk of failure is recovered. Although this implementation approach is more expensive and involves additional work load, the old system will be safe and the procedure will be followed for some time until it is confirmed that the newly designed system is working satisfactory.

6.3 SYSTEM EVALUATION

System evaluation is an important activity for developing a system. Because it seems, really, necessary to judge whether the system meets the objectives set out and satisfies need of organization. The system description is reviewed and evaluated with respect to its completion, consistency, reliability, correctness and efficiency. Major features of the developed system are :

6.3.1 ACCURACY

By accuracy we means that the outputs are sufficiently precise for their desired purpose. The new system is very accurate. However there is a probability of incorrect data as a user may input wrong spellings and wrong figures.

6.3.2 EFFICIENCY

The new system is very time effective. To increase system's efficiency, codes have been used for distt/country and department. This reduces the chances of errors by data entry operators and space needed to store the data. If a user provides data in correct format, either it will not be accepted or error messages will be displayed, in some cases online help make data entry task easy.

6.3.3 SECURITY

The system can be entered only by giving correct user password and also needs passwords for initialization of files. This makes the system protective from improper user.

6.3.4 MODULARITY

The system is divided into number of modules integrated together to fulfill user's requirements. These modules are independent of each other. An other advantage of modularity is the ease of modification and extension of the developed system.

6.3.5 SUITABILITY

The system is designed so as to be very much suitable for non-professional users, as the users of this system will not be computer scientists.

6.3.6 EASE OF USE

The developed system is menu driven and is very easy to use, for even a user with a little knowledge of data processing. A lot of effort was made to make the system easy to use by providing on-line help, proper error and information messages, single key commands, easy data editing etc.

All the objectives mentioned in beginning of this project have been achieved successfully.

CHAPTER 7

USER GUIDE

7.1 INTRODUCTION

This chapter is supposed to be comprehensive enough to provide knowledge about the developed software that can make a user able to use the software. So this chapter explains the working of the system so that the user can operate it without any difficulty. The figures in this chapter are the actual copies of the displays which appear on the screen. In fact, this guide is not really essential because the system is menu-driven and user friendly. Appropriate messages are displayed for user convenience.

7.2 GETTING STARTED

Here we shall discuss following topics:

1) How to install the system on the hard disk.

2) How to use the system.

7.2.1 INSTALLING THE SYSTEM ON THE HARD DISK

Before loading the system onto hard disk, it is suggested that a new directory should

be created on the hard disk to store the system files. Let us call this directory QAUHRA. At the root directory type

C>MD QAUHRA

and press <enter> key. Now change directory to new created

one, QAUHRA, by typing

C>CD QAUHRA

and then press <enter> key.

Now insert the diskette containing system files into drive A and then type

C>COPY A:*.*

and press <enter> key. PC will start copying system files from the diskette to the newly created directory QAUHRA. When it is finished,remove the diskette from the drive A. The system now has been installed on the PC in the directory QAUHRA.

7.2.2 USING THE SYSTEM

Make sure the current directory contains the system files. Then type

C>QAU

and press <enter> key. First of all a well designed screen as shown in fig.0 displays a message

"WELL-COME"

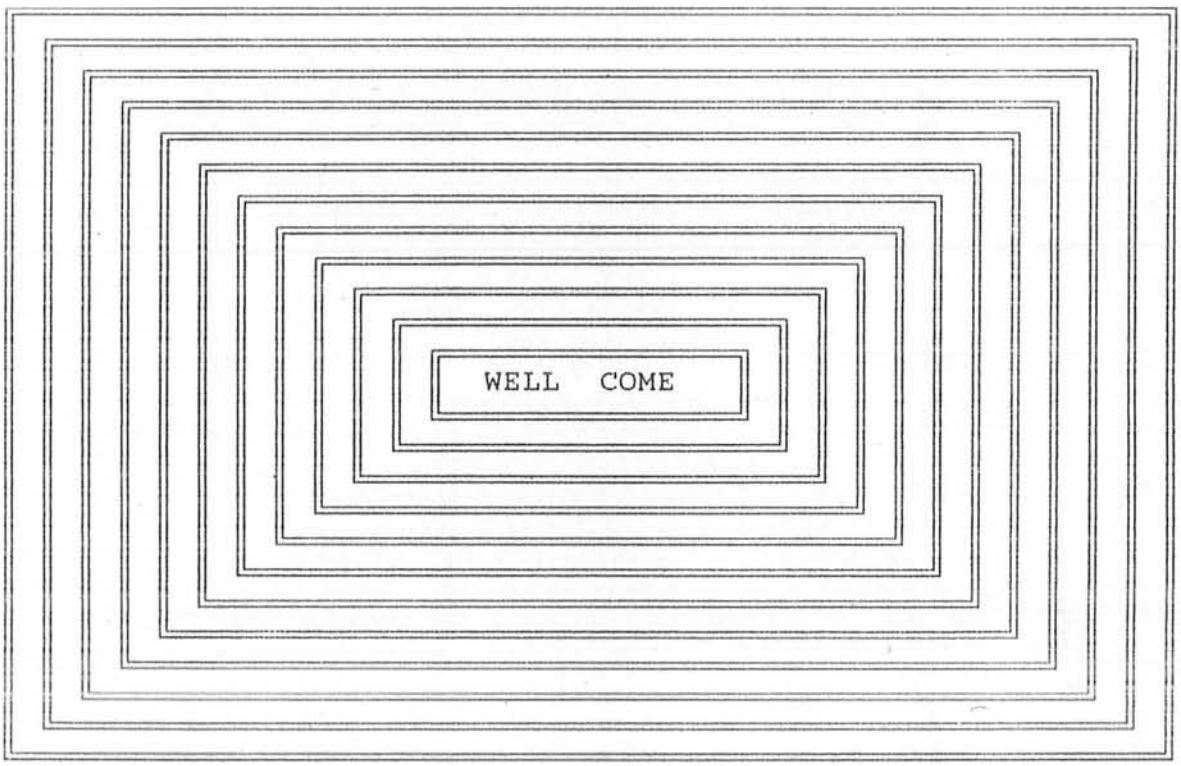
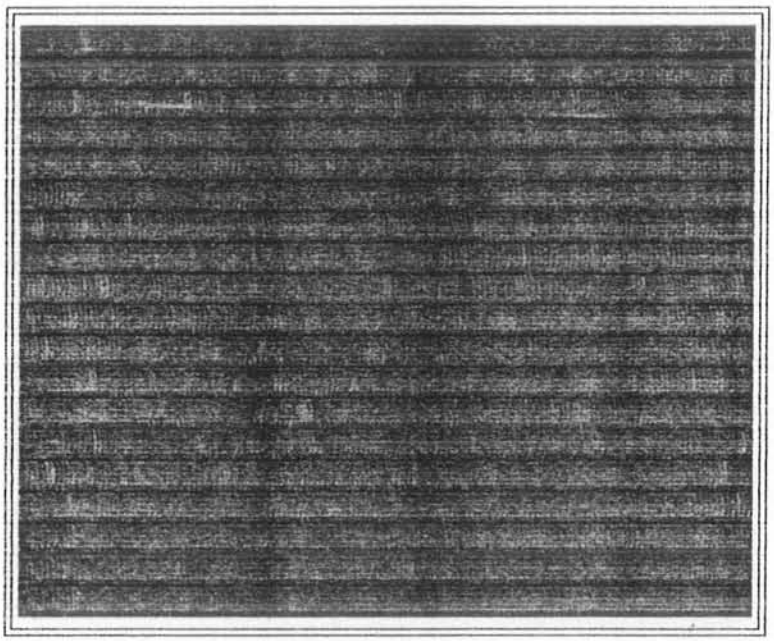


Fig.o



ENTER PASSWORD [ ]

Fig.1

then a shaded screen appears like a closed gate as shown in fig.1 and system will ask for password. The password to load the database is 0712. The system allow the user to enter password three times, if all the times wrong password is entered,control is transferred to DOS. If the password is correct then a gate opens and a main-menu is displayed as shown if fig.2. There are four options in this menu which are:

- Insertion menu

- Retrieval menu

- Amendments menu

- Exit to DOS

User can select any option by using arrow keys and then press <enter> key when the lighted bar is on user's selected choice.

7.3 INSERTION MENU

The first option in the main menu is the insertion menu. This menu contains nine options as shown in fig.3. User can select any option from this menu to insert the record. All the files in the proposed system are indexed sequential, so every record

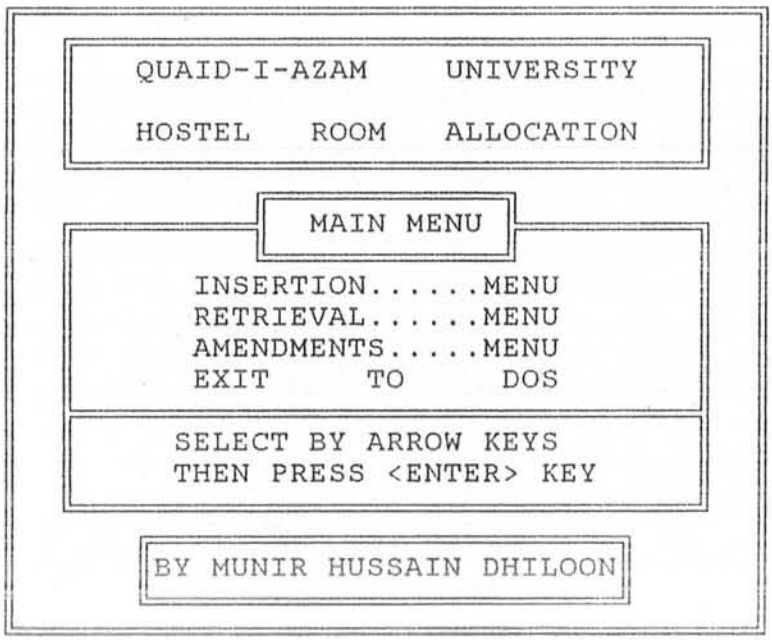

QUAID-I-AZAM UNIVERSITY
HOSTEL ROOM ALLOCATION
MAIN MENU
INSERTION.....MENU
RETRIEVAL.....MENU
AMENDMENTS.....MENU
EXIT TO DOS
SELECT BY ARROW KEYS
THEN PRESS <ENTER> KEY
BY MUNIR HUSSAIN DHILOON

Fig. 2

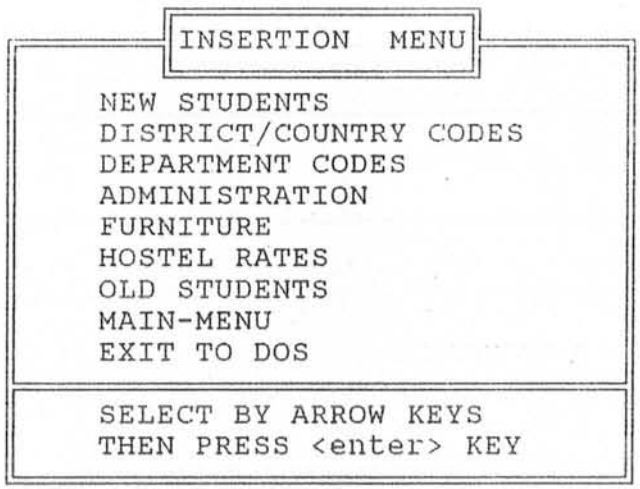

INSERTION MENU
NEW STUDENTS
DISTRICT/COUNTRY CODES
DEPARTMENT CODES
ADMINISTRATION
FURNITURE
HOSTEL RATES
OLD STUDENTS
MAIN-MENU
EXIT TO DOS
SELECT BY ARROW KEYS
THEN PRESS <enter> KEY

Fig. 3

have a unique identification called the 'Primary key' of that record. So for adding a new record we need to give value of key. If we enter a key which is already existing, then the following message is displayed on the screen:

"Duplicate key, enter again (Y/N)?"

An other message on the bottom of the screen is displayed as: "F1 -> TO INSERT RECORD F10 ->EXIT"

It depends upon the user that which option he/she selects by pressing only function keys F1 & F10.

The option "NEW STUDENTS" is used to insert the record of new-comer. The option "OLD STUDENTS" is used to insert the record of a student who is living in the hostel or is an ex-hostel student. Following message is displayed on the screen "Is student is ex-hostel student (Y/N)?"

If the option is 'Y' then following message is displayed

"Is student has been dropped (Y/N)?"

Rooms will not be allocated to ex-hostel students, allocated otherwise.

7.4 RETRIEVAL MENU

This menu is second option of the main menu and it contains four different options as shown in fig.4 which are:

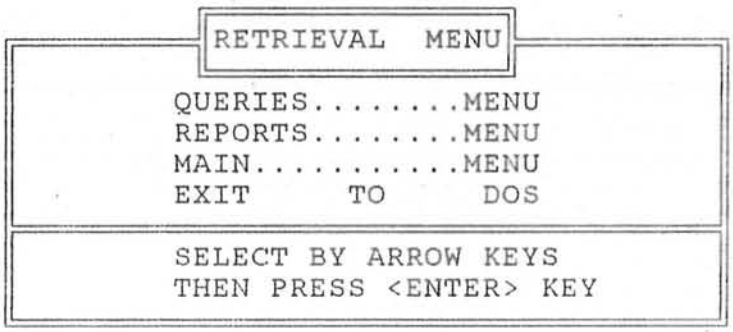

RETRIEVAL MENU
QUERIES.....MENU
REPORTS.....MENU
MAIN.....MENU
EXIT TO DOS
SELECT BY ARROW KEYS
THEN PRESS <ENTER> KEY

Fig. 4

- Queries menu

- Reports menu

- Exit to main menu

- Exit to DOS

User can select any option by using arrow keys to move the lighted bar and then press <enter> key.

7.4.1 QUERIES MENU

This menu is the first option in the retrieval menu and it contains twenty options as shown in the fig.5. At first the lighted bar is on the Query#1 and its description is displayed at the bottom of the screen. As bar moves on different queries, corresponding description at the bottom window changes as well. User can select queries one at a time.

7.4.2 REPORTS MENU

If the user select 'Report menu' option from the retrieval menu, then a report menu

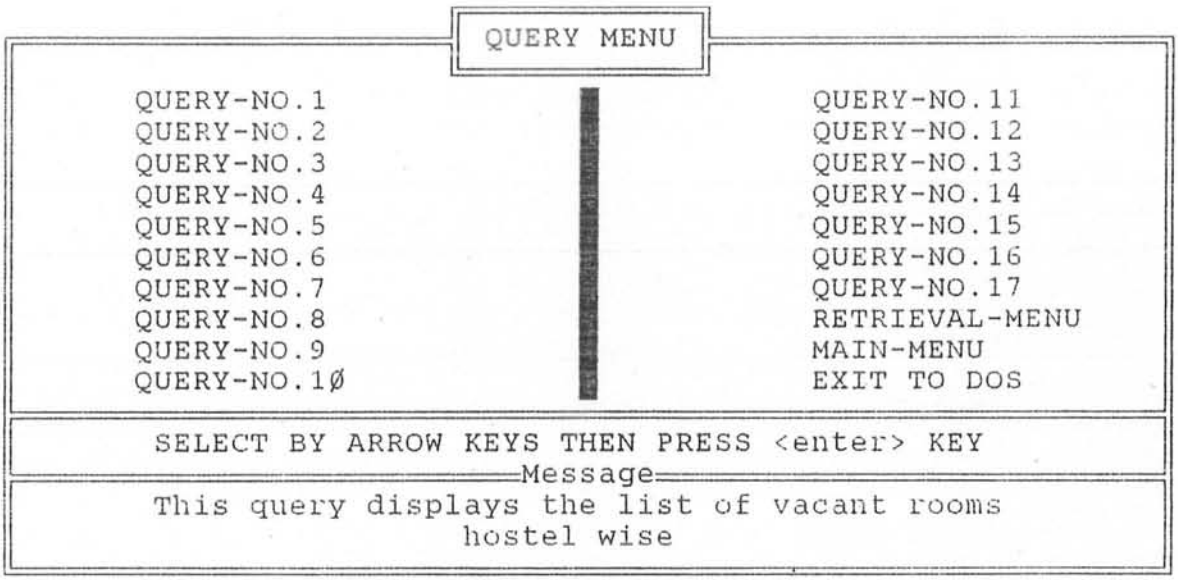

QUERY MENU
QUERY-NO.1
QUERY-NO.2
QUERY-NO.3
QUERY-NO.4
QUERY-NO.5
QUERY-NO.6
QUERY-NO.7
QUERY-NO.8
QUERY-NO.9
QUERY-NO.1Ø
QUERY-NO.11
QUERY-NO.12
QUERY-NO.13
QUERY-NO.14
QUERY-NO.15
QUERY-NO.16
QUERY-NO.17
RETRIEVAL-MENU
MAIN-MENU
EXIT TO DOS
SELECT BY ARROW KEYS THEN PRESS <enter> KEY
Message
This query displays the list of vacant rooms hostel wise

Fig.5

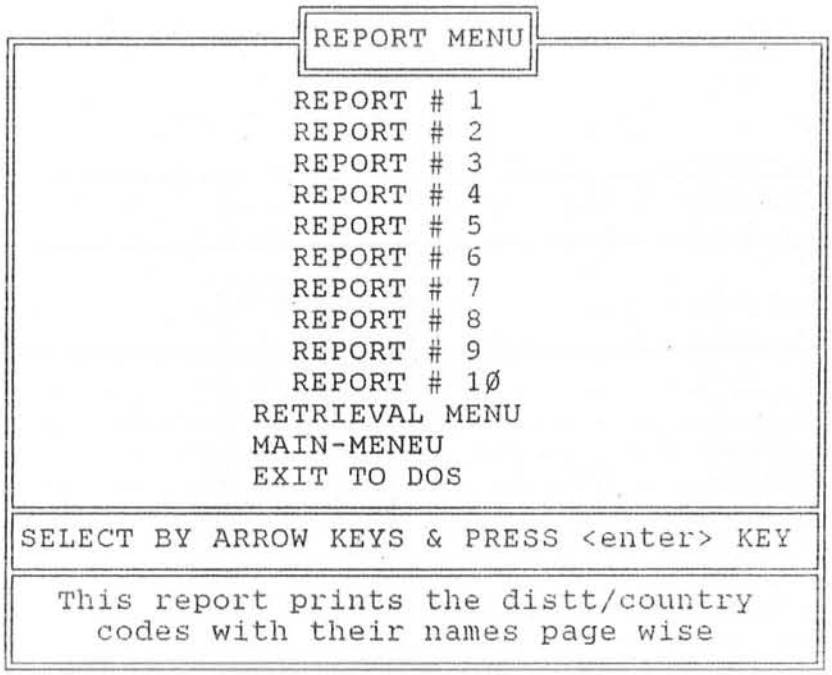

REPORT MENU
REPORT # 1
REPORT # 2
REPORT # 3
REPORT # 4
REPORT # 5
REPORT # 6
REPORT # 7
REPORT # 8
REPORT # 9
REPORT # 1Ø
RETRIEVAL MENU
MAIN-MENEU
EXIT TO DOS
SELECT BY ARROW KEYS & PRESS <enter> KEY
This report prints the distt/country codes with their names page wise

Fig.6

with a different options of reports is displayed on the screen as shown in the fig.6. At first the lighted bar is on the Report#1 and its description is displayed at the bottom window. As bar moves on different reports, description at the bottom changes as well. User can select reports one at a time. When user select any report to print, a message is displayed as

"PRESS ANY KEY WHEN PRINTER IS READY"

User should check that printer is attached and ready to print, otherwise data file may be damaged with abnormal termination.

7.5 AMENDMENTS MENU

It is the third option in the main menu. On selecting this option, amendments menu appears with four options as shown in fig.7. These options are:

- Updation menu

- Deletion menu

- Exit to main menu

- Exit to DOS

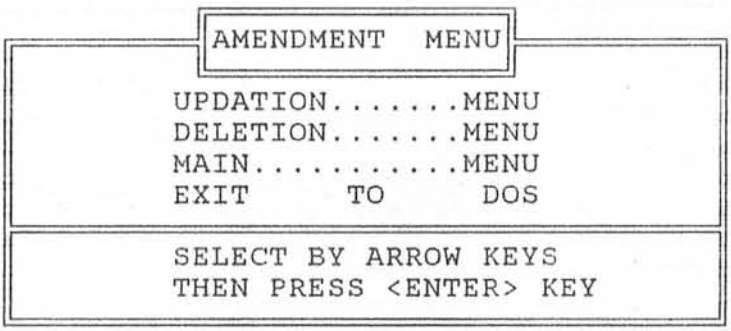

AMENDMENT MENU
UPDATION.....MENU
DELETION.....MENU
MAIN.....MENU
EXIT TO DOS
SELECT BY ARROW KEYS
THEN PRESS <ENTER> KEY

Fig-7

7.5.1 UPDATION MENU

There are ten options in this menu as shown in fig.8.After selecting any option from this menu user can modify an already existing record of a particular file. Modification is one of the most common process in storing the data. It is required to change the record or it is known that the record is incorrect entered, then modification of record is required.

Different routines are incorporated in the system which can modify the records. When user enters primary key of the record to be modified, specified record is displayed on the screen along with a message at

the bottom

"Press <enter> key for no change"

If the specified record is not found then a message is displayed

"Record not found"

The option "Next semester account" is used when the student is promoted to the next semester and he/she comes to deposit his/her dues. Similarly the option "Remaining dues" is used when the student come to pay his remaining dues. The option "Change of room" is used when the student(s) are required to change the room mutually or non-mutually.

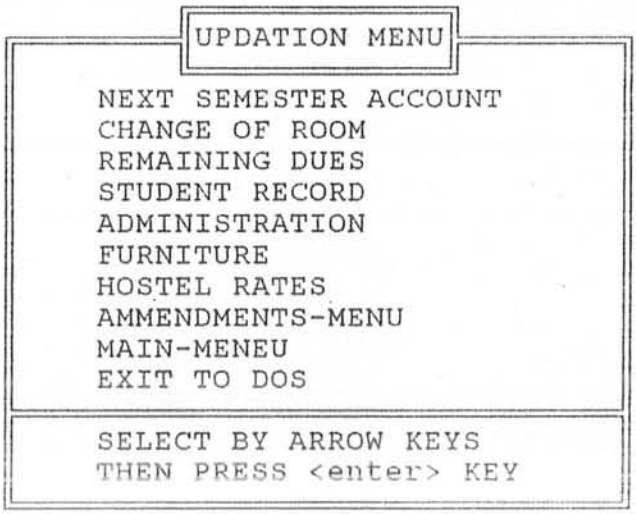

UPDATION MENU
NEXT SEMESTER ACCOUNT
CHANGE OF ROOM
REMAINING DUES
STUDENT RECORD
ADMINISTRATION
FURNITURE
HOSTEL RATES
AMMENDMENTS-MENU
MAIN-MENEU
EXIT TO DOS
SELECT BY ARROW KEYS
THEN PRESS <enter> KEY

Fig. 8

7.5.2 DELETION MENU

This menu contains seven different options as shown in fig.9.If a record in a file is not need any more it can be removed from this file.

A message before deleting is displayed:

"ARE YOU SURE (Y/N)?"

If 'N' then record is not deleted, if 'Y' then record is deleted. User can exit from any whereby pressing the function key F10.

7.6 INITIALIZATION MENU

It is a separate program. It is not the part of the main menu. When the system is being setup, initialization of all the files is required, and when the system is running it is required to initialize a particular file. These initialization are provided by the initialization menu.

Password for this menu is 0571. First of all type

C>INT

and press <enter> key, the system will ask for password. If the password is incorrect then the system will asks password three times. If each time wrong password is entered then the control is transferred to DOS, otherwise a menu shown in fig.10 is displayed.

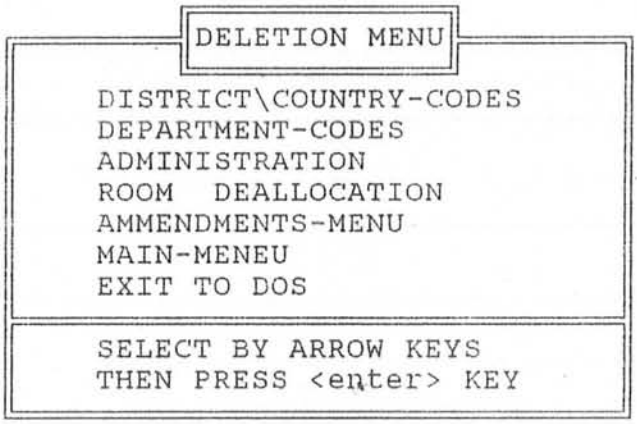

DELETION MENU
DISTRICT\COUNTRY-CODES
DEPARTMENT-CODES
ADMINISTRATION
ROOM DEALLOCATION
AMMENDMENTS-MENU
MAIN-MENEU
EXIT TO DOS
SELECT BY ARROW KEYS
THEN PRESS <enter> KEY

Fig.9

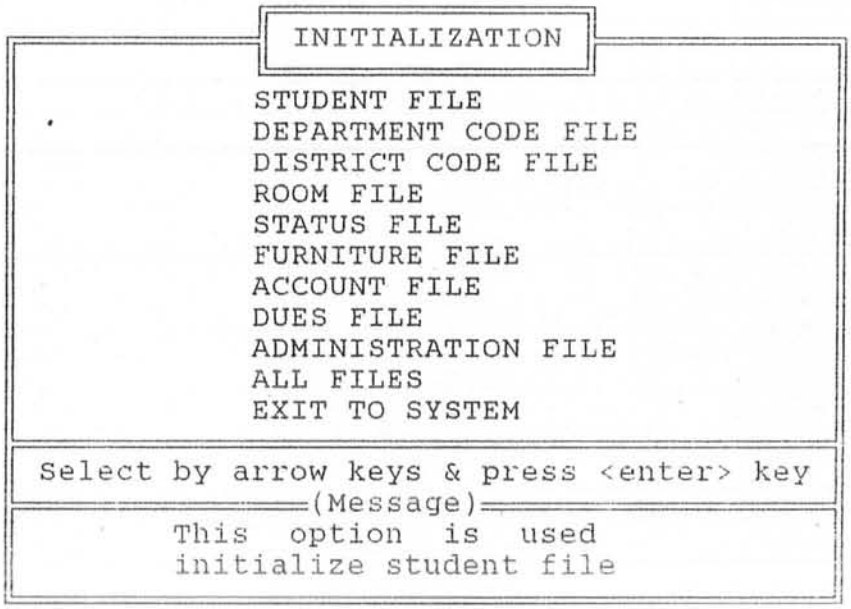

INITIALIZATION
STUDENT FILE
DEPARTMENT CODE FILE
DISTRICT CODE FILE
ROOM FILE
STATUS FILE
FURNITURE FILE
ACCOUNT FILE
DUES FILE
ADMINISTRATION FILE
ALL FILES
EXIT TO SYSTEM
Select by arrow keys & press <enter> key
(Message)
This option is used
initialize student file

Fig.10

This menu contains eleven options. After selecting any option a warning message is displayed at the bottom window as:

"All the data will be erased, proceed (Y/N)?"

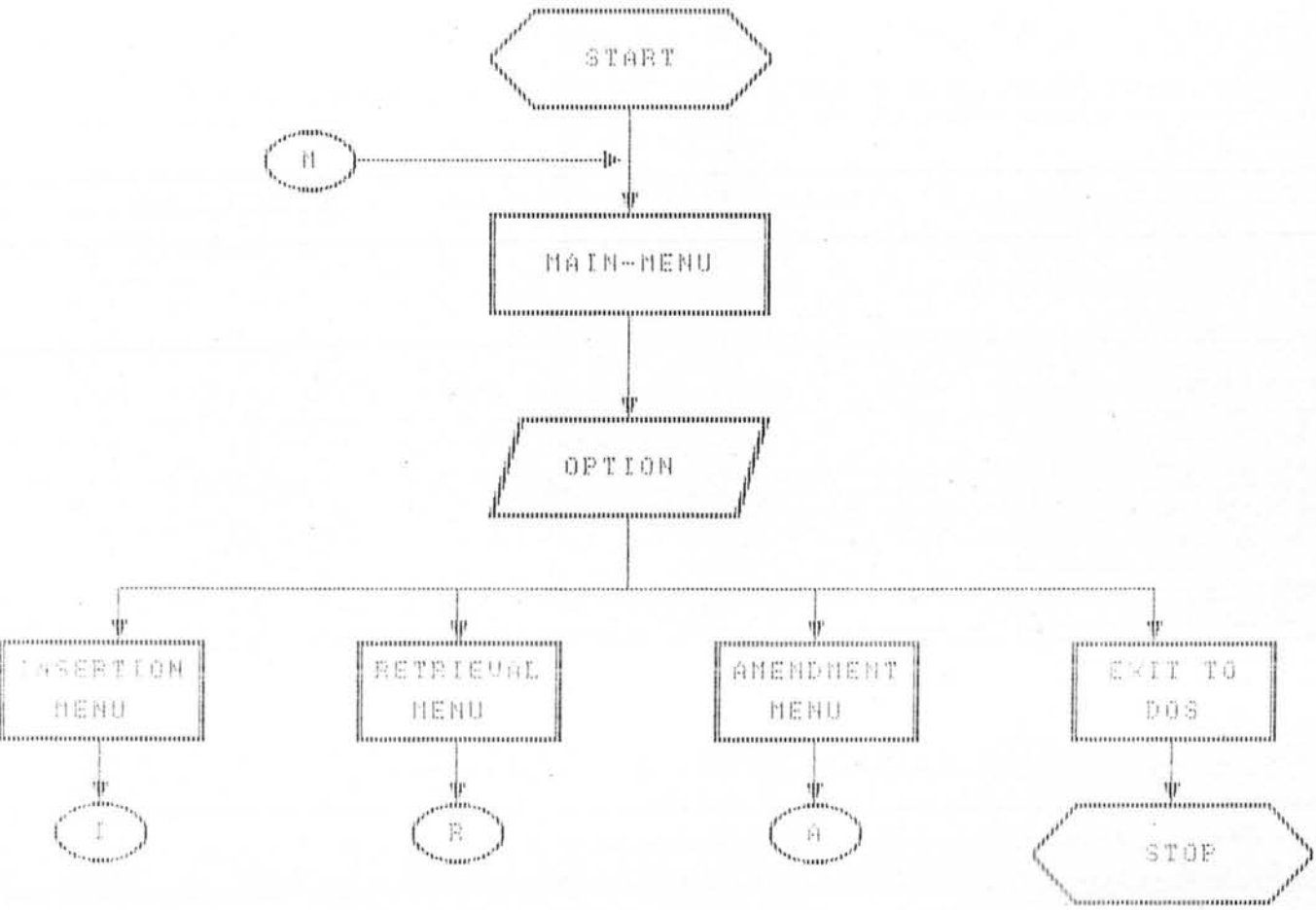
If user press's 'Y' then the file will be initialized,

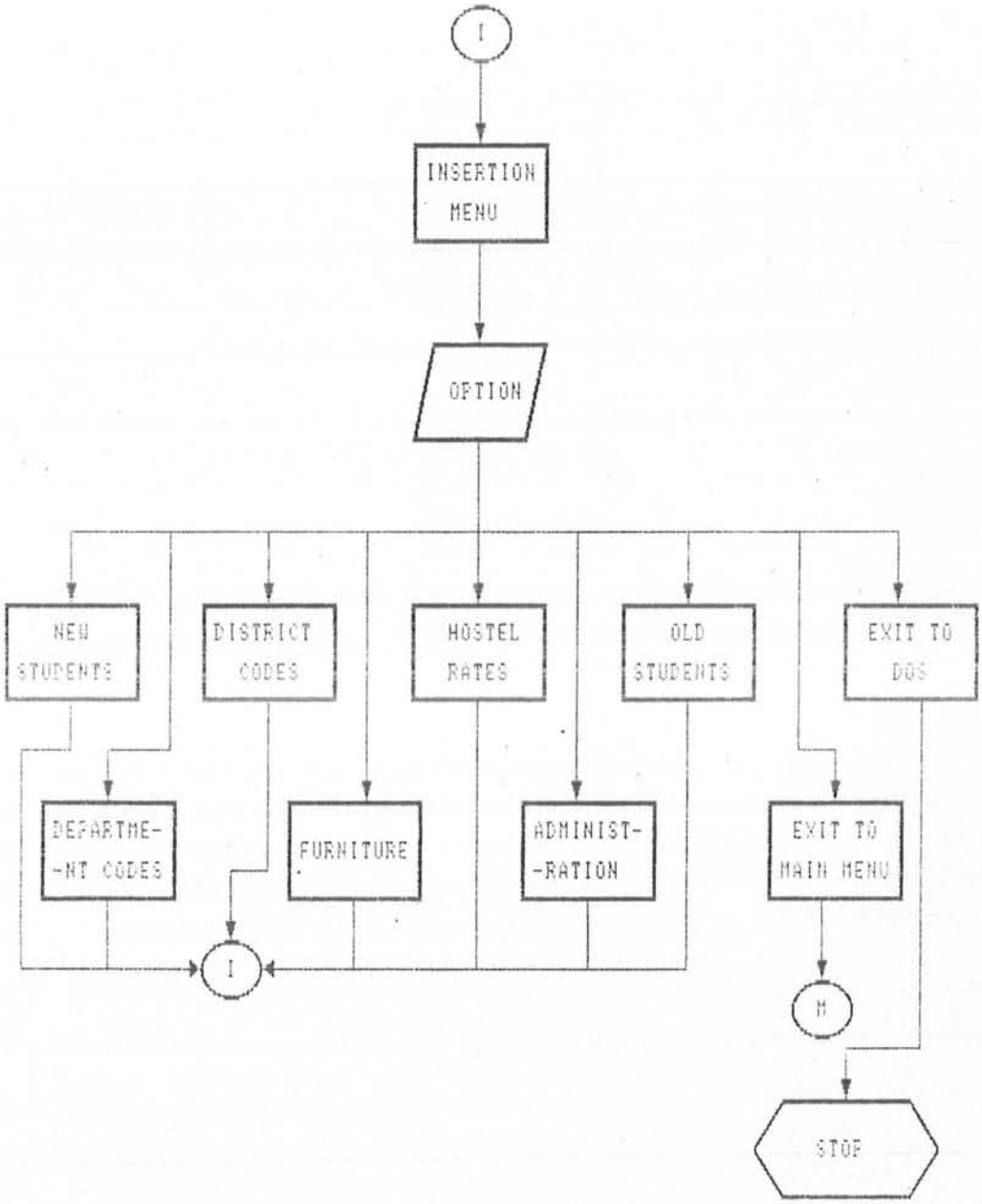
not otherwise.

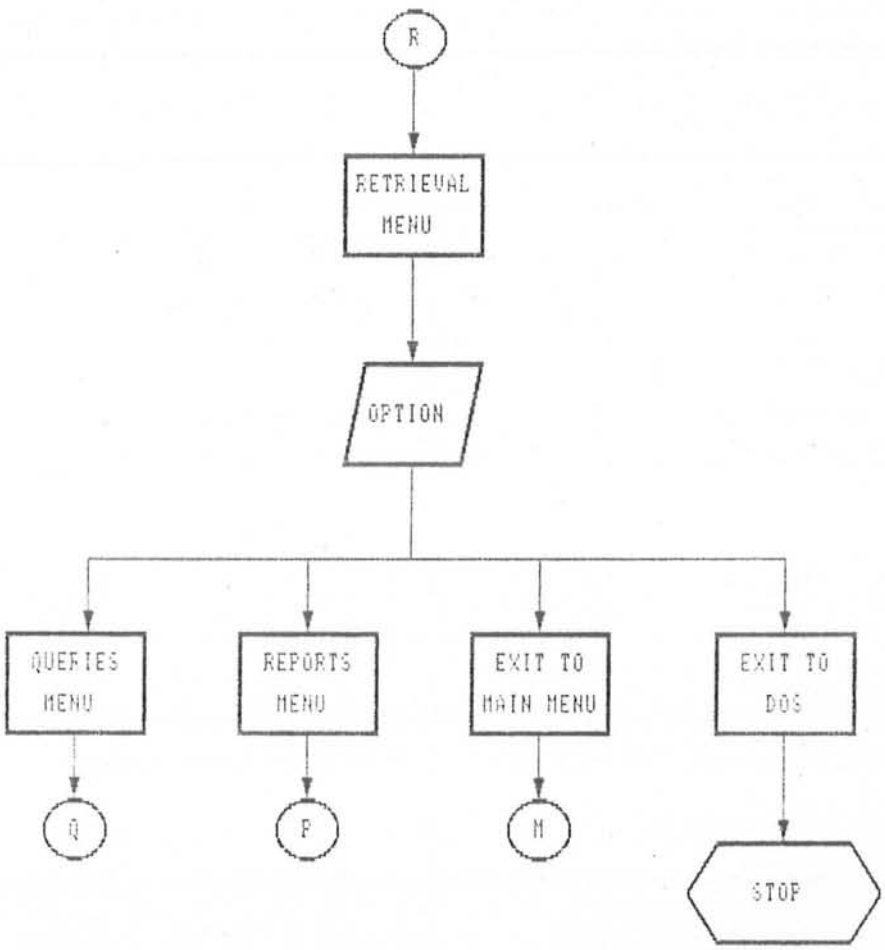
From any menu it is possible for the user to exit to DOS or return to all its major menus. I/O screens are shown in the appendices.

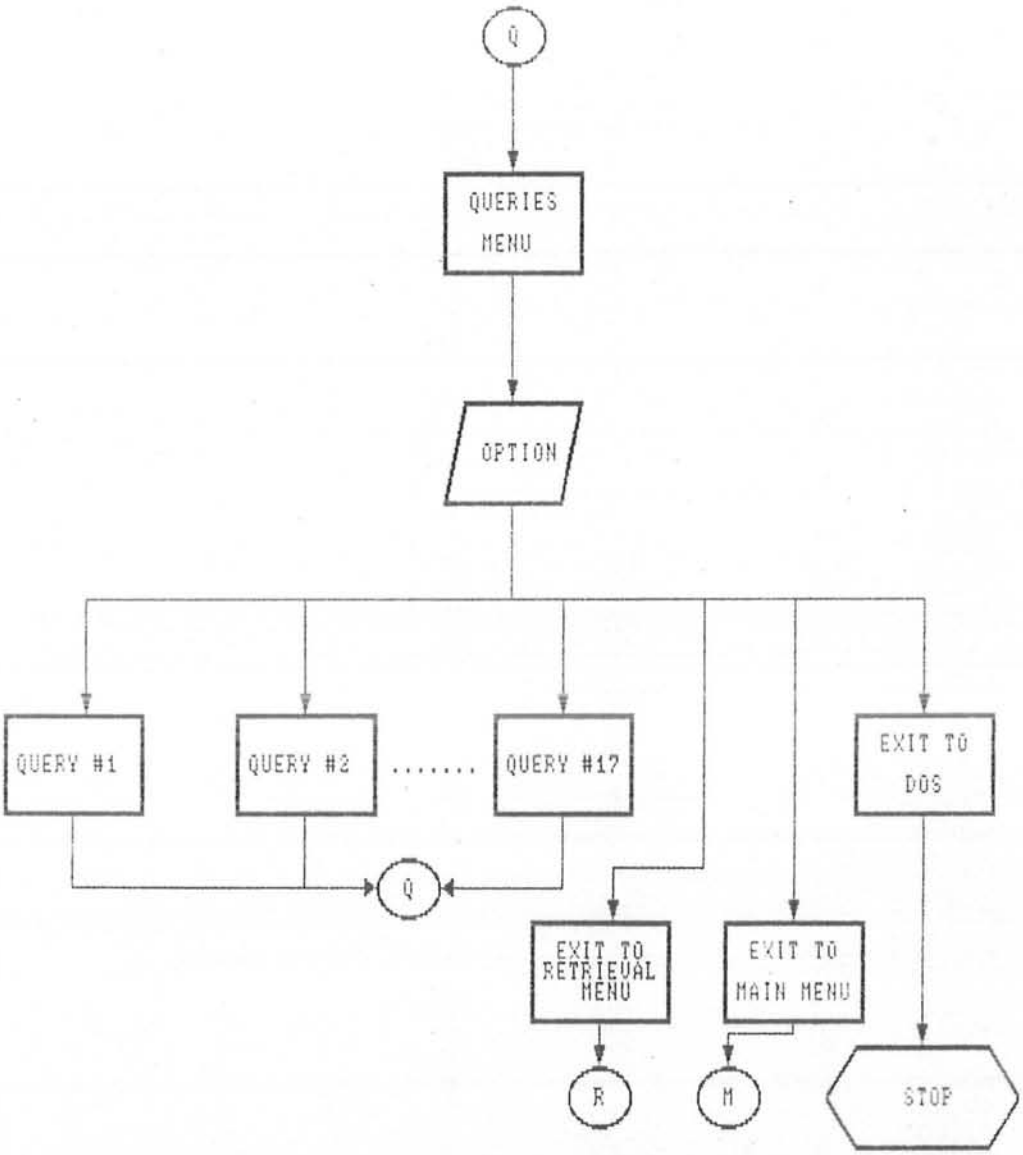
APPENDIX-A

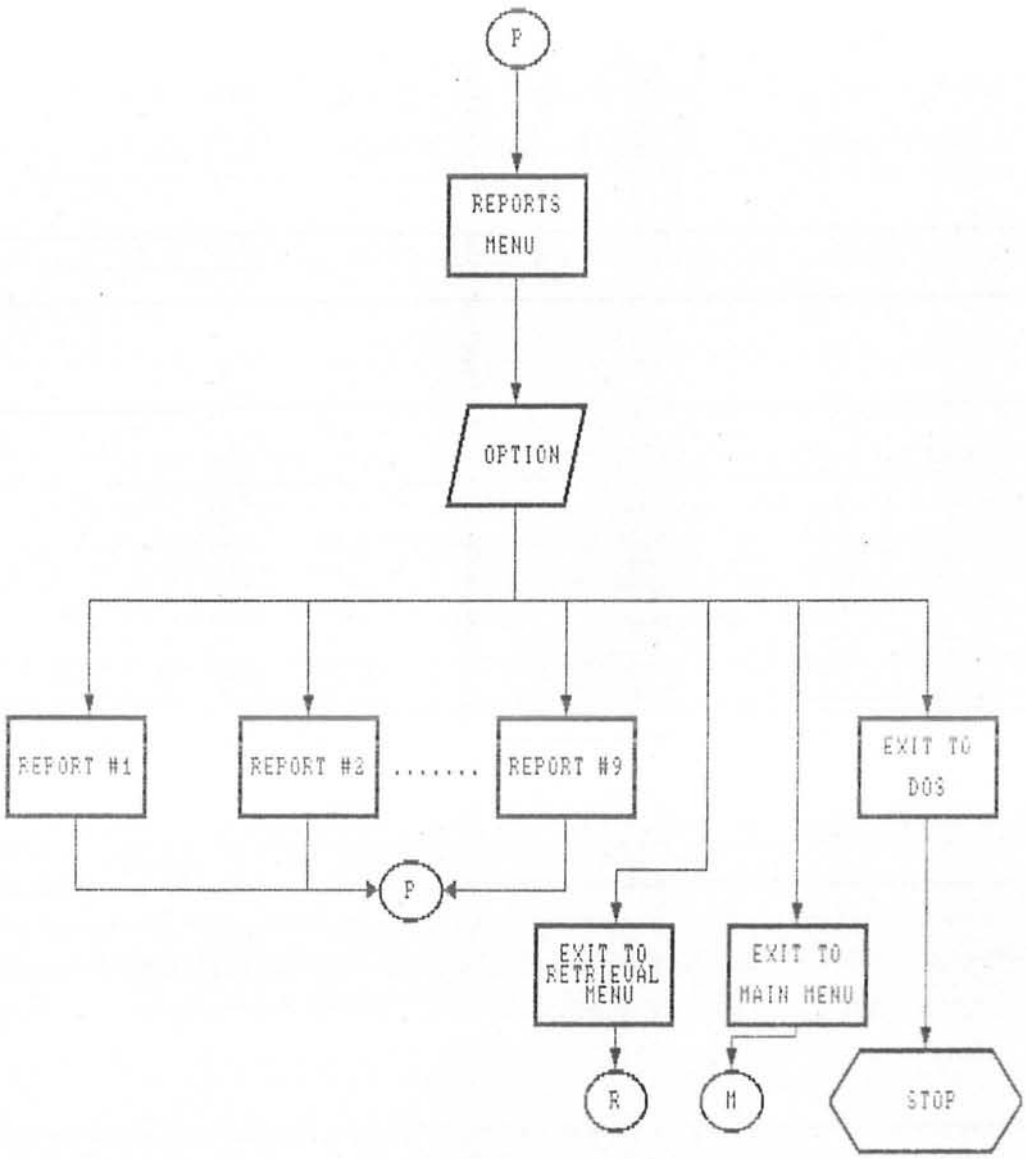
SYSTEM FLOWCHARTS

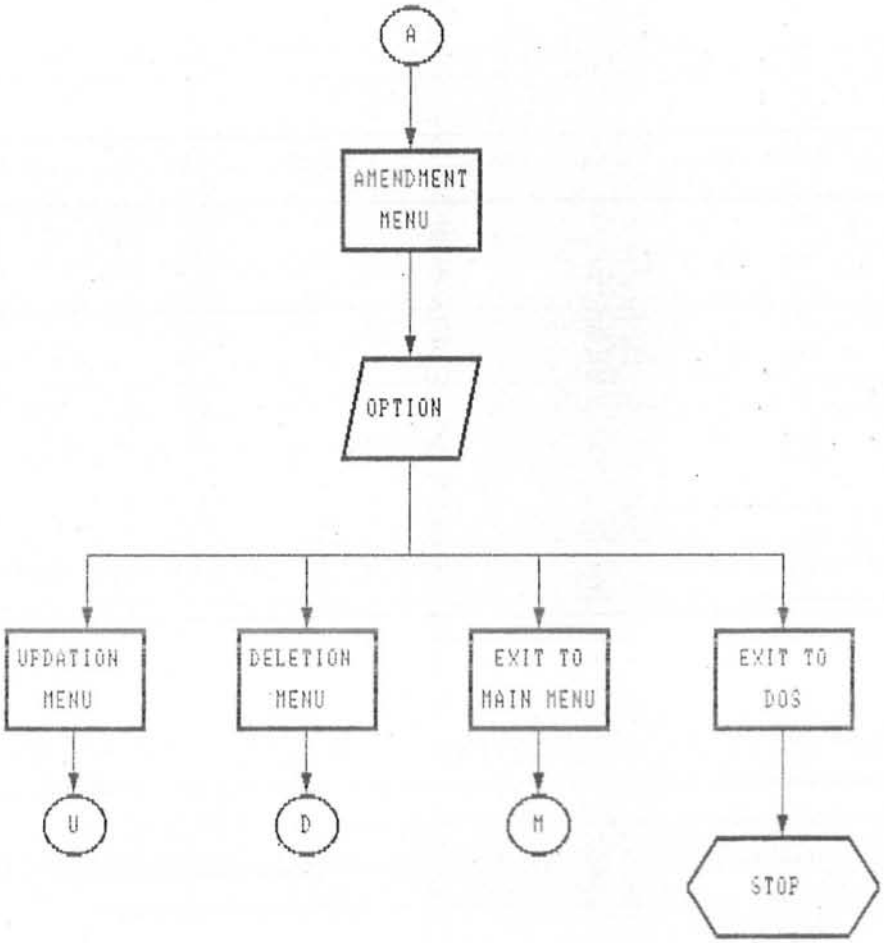

START
M
MAIN-MENU
OPTION
INSERTION MENU
RETRIEVAL MENU
AMENDMENT MENU
EXIT TO DOS
I
R
A
STOP

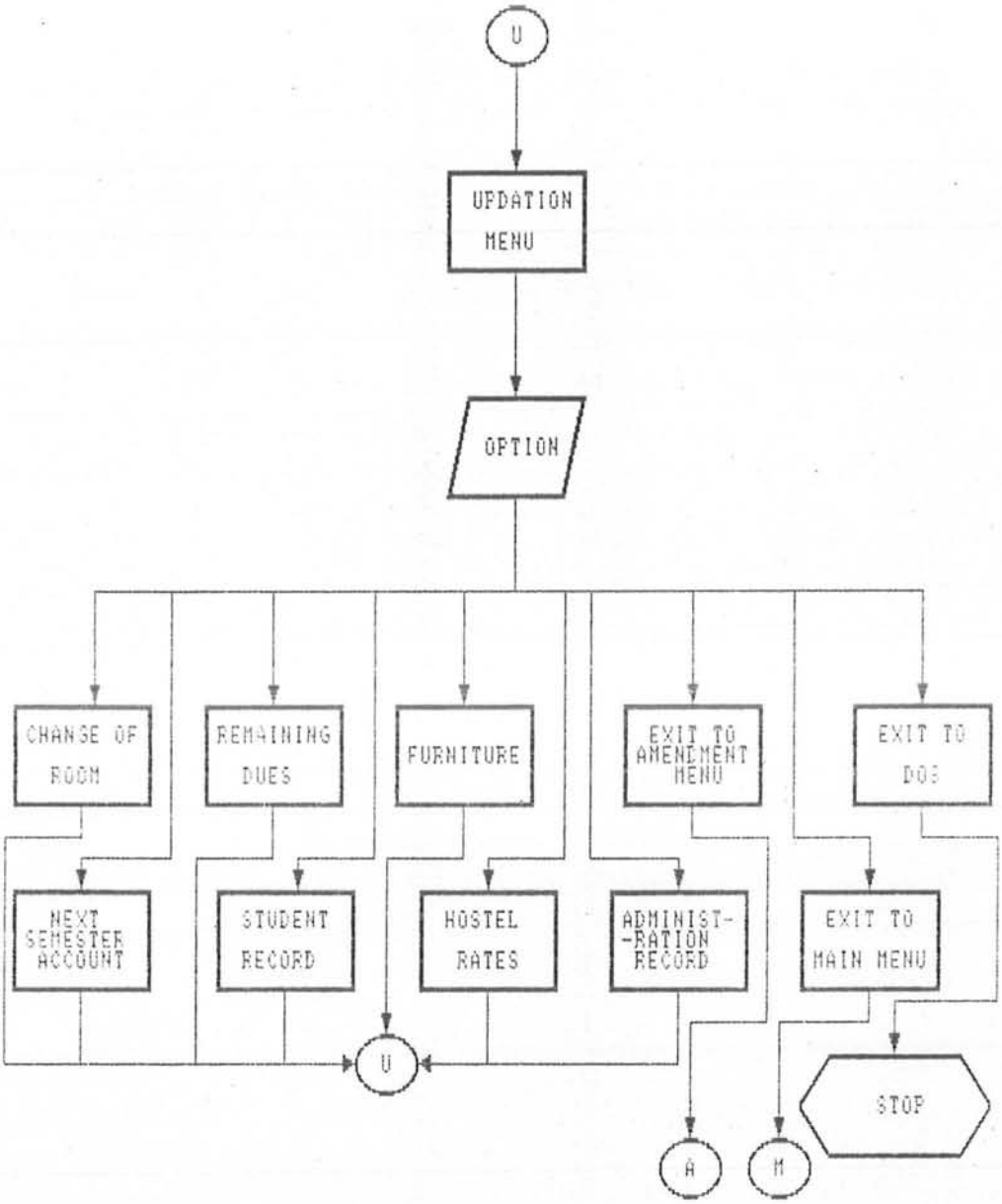

I
INSERTION MENU
OPTION
NEW STUDENTS
DISTRICT CODES
HOSTEL RATES
OLD STUDENTS
EXIT TO DOS
DEPARTME--NT CODES
FURNITURE
ADMINIST--RATION
EXIT TO MAIN MENU
I
M
STOP

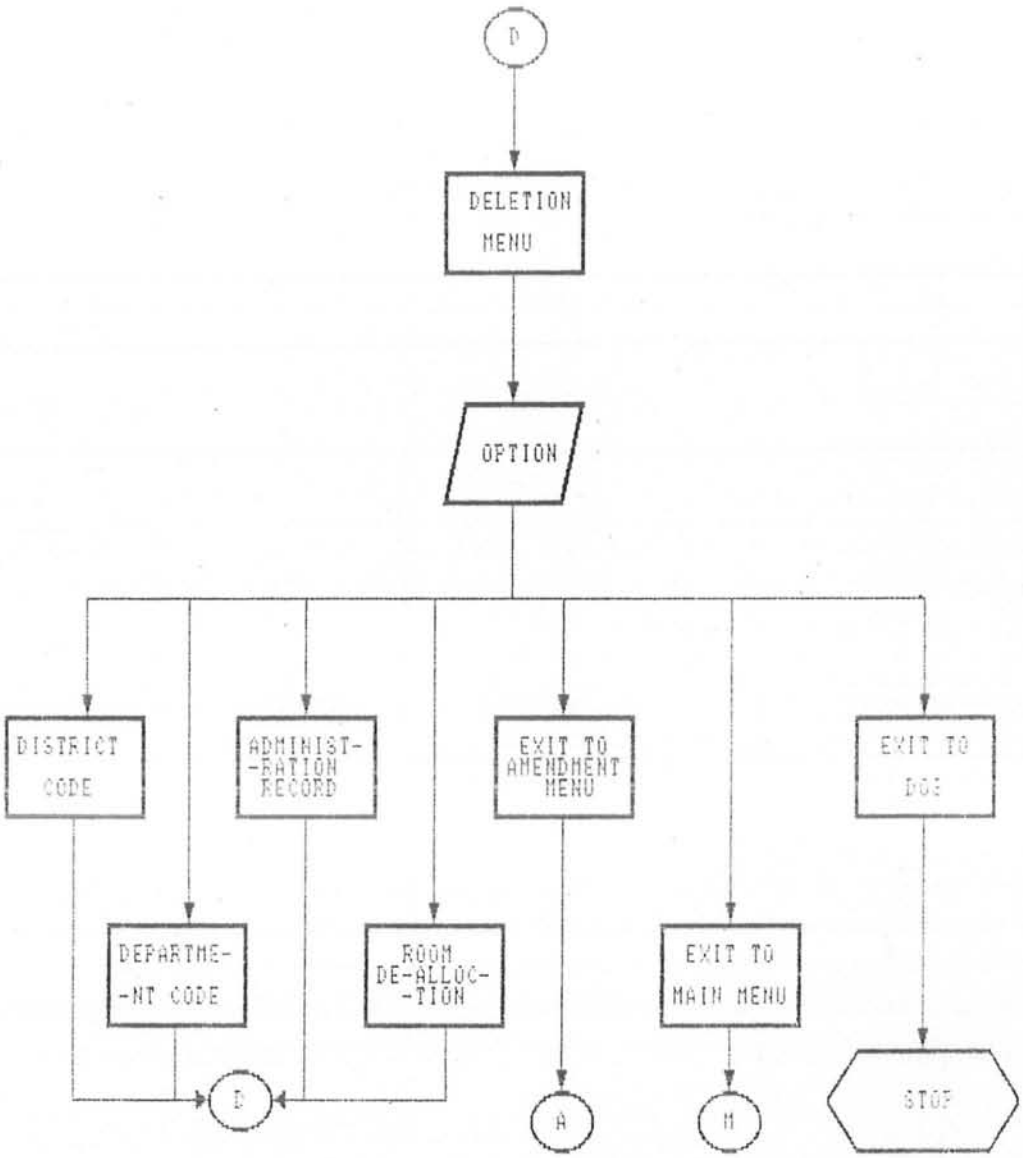

R
RETRIEVAL MENU
OPTION
QUERIES MENU
REPORTS MENU
EXIT TO MAIN MENU
EXIT TO DOS
Q
P
M
STOP

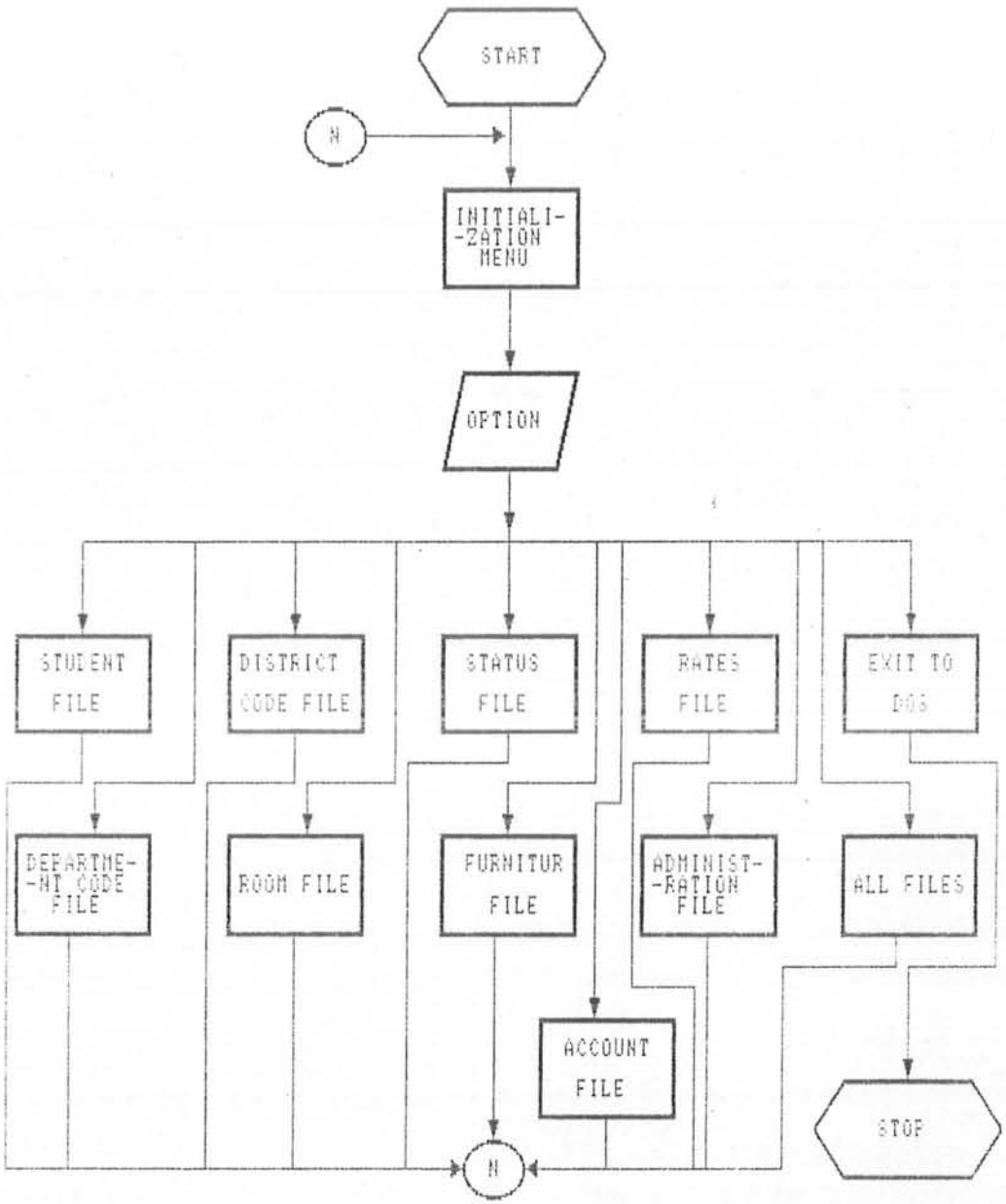

Q
QUERIES MENU
OPTION
QUERY #1
QUERY #2
.....
QUERY #17
EXIT TO DOS
Q
EXIT TO RETRIEVAL MENU
EXIT TO MAIN MENU
R
M
STOP


P
REPORTS MENU
OPTION
REPORT #1
REPORT #2
.....
REPORT #9
EXIT TO DOS
P
EXIT TO RETRIEVAL MENU
EXIT TO MAIN MENU
R
M
STOP


A
AMENDMENT MENU
OPTION
UPDATION MENU
DELETION MENU
EXIT TO MAIN MENU
EXIT TO DOS
U
D
M
STOP


U
UPDATION MENU
OPTION
CHANGE OF ROOM
REMAINING DUES
FURNITURE
EXIT TO AMENDMENT MENU
EXIT TO DOS
NEXT SEMESTER ACCOUNT
STUDENT RECORD
HOSTEL RATES
ADMINIST-RATION RECORD
EXIT TO MAIN MENU
U
STOP
A
M


D
DELETION MENU
OPTION
DISTRICT CODE
ADMINIST--RATION RECORD
EXIT TO AMENDMENT MENU
EXIT TO DOS
DEPARTME--NT CODE
ROOM DE-ALLOC--TION
EXIT TO MAIN MENU
D
A
M
STOP


START
N
INITIALI-
-ZATION
MENU
OPTION
STUDENT
FILE
DISTRICT
CODE FILE
STATUS
FILE
RATES
FILE
EXIT TO
DOS
DEPARTME-
-NT CODE
FILE
ROOM FILE
FURNITUR
FILE
ADMINIST-
-RATION
FILE
ALL FILES
ACCOUNT
FILE
STOP
N

APPENDIX-B
INPUT SCREENS

I N S E R T I O N

Year:9Ø Student Name: MUHAMMAD SADDIQUE

Serial No:124 Father Name: MOHAMMAD ALI

Distt-Code (for Pakistanies)/Country-Code (for foriegners): RYK

Degree: M.Sc. Department (code): CS

Sex (f/m):M Semester: 4

Date of Joining : 24/Ø2/1992 Emergency Phone: 1434____

Present Address: CHAK NO. 34/P, TEH:R.Y. KHAN__
DISTT:RAHIM YAR KHAN_____

Permanent Address: CHAK NO. 34/P, TEH:R.Y. KHAN
DISTT:RAHIM YAR KHAN

Message

Confirmation about data, Correct (Y/N)?

F1 -> ENTER RECORD F1Ø -> EXIT

I N S E R T I O N

Year:9Ø Student Name: MUHAMMAD SADDIQUE

Serial No:124 Father Name: MOHAMMAD ALI

Distt-Code (for Pakistanies)/Country-Code (for foriegners): RYK

Degree: M.Sc. Department (code): CS

Sex (f/m):M Semester: 4

Date of Joining : 24/Ø2/1992 Emergency Phone: 1434____

Present Address: CHAK NO. 34/P, TEH:R.Y. KHAN__
DISTT:RAHIM YAR KHAN_____

Permanent Address: CHAK NO. 34/P, TEH:R.Y. KHAN
DISTT:RAHIM YAR KHAN

Message

Press <enter> key, to enter the account of the student

F1 -> ENTER RECORD F1Ø -> EXIT

STUDENT ACCOUNT

YEAR: 9Ø SEARIAL-NO: 124

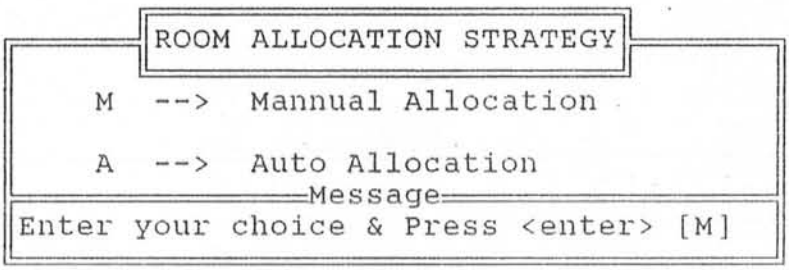
SEMESTER: 4 TOTAL FEE (Rs): Ø672.ØØ

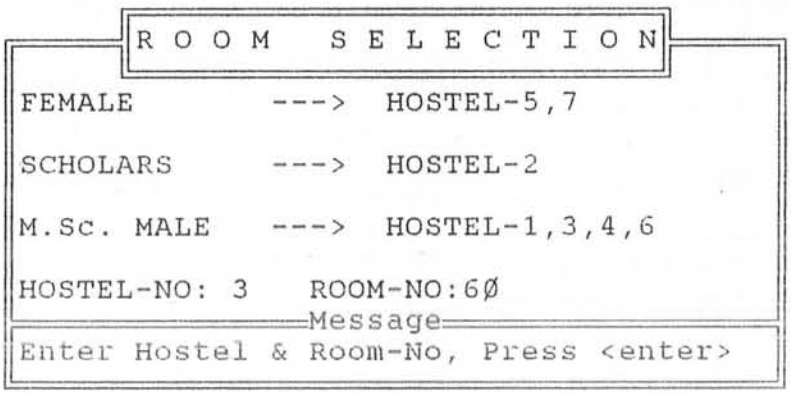
DEPOSIT (Rs): 672 CHALLAN-NO: 4356

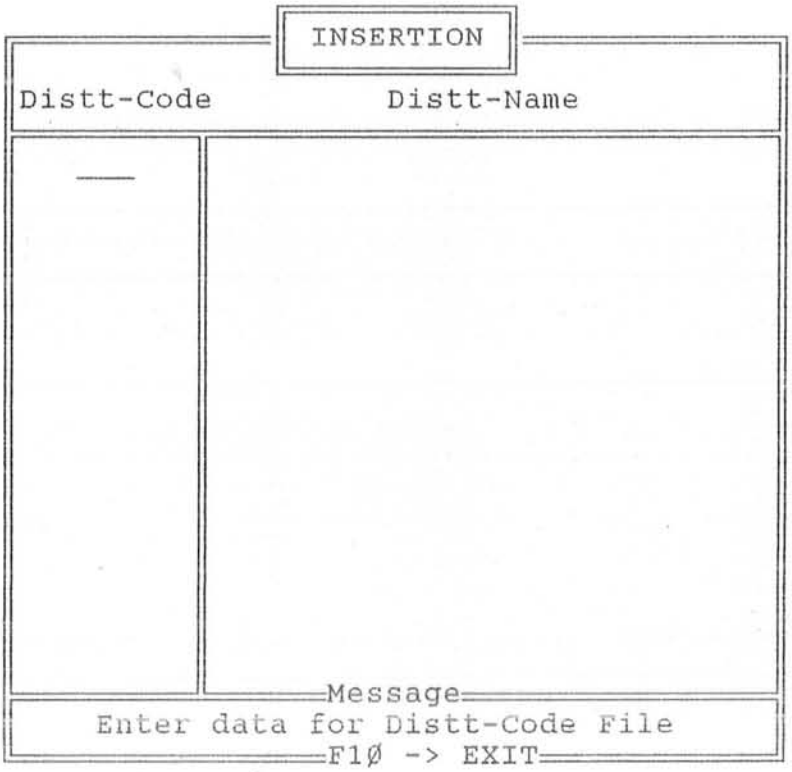
DATE OF DEPOSIT: 24/Ø2/1992 AREAR (Rs): ØØØØ.ØØ

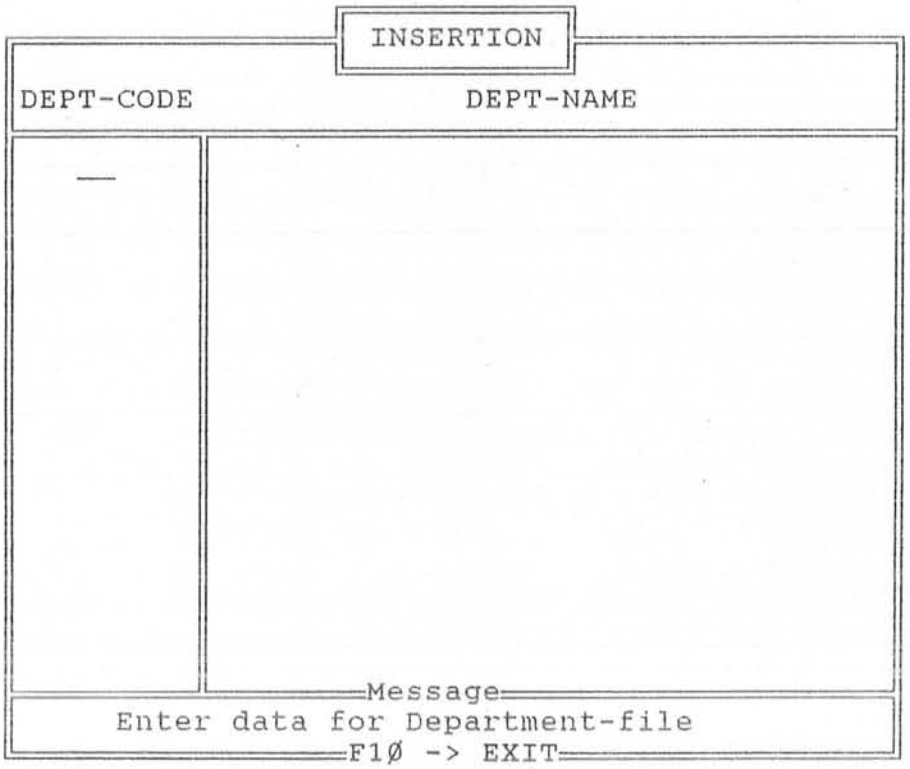
Message

Confirm about data, Correct (Y/N)?


ROOM ALLOCATION STRATEGY
M --> Mannual Allocation
A --> Auto Allocation
Message
Enter your choice & Press <enter> [M]


R O O M S E L E C T I O N
FEMALE ---> HOSTEL-5,7
SCHOLARS ---> HOSTEL-2
M.Sc. MALE ---> HOSTEL-1,3,4,6
HOSTEL-NO: 3 ROOM-NO:6Ø
Message
Enter Hostel & Room-No, Press <enter>


INSERTION
Distt-Code
Distt-Name
Message
Enter data for Distt-Code File
F1Ø -> EXIT


INSERTION
DEPT-CODE
DEPT-NAME
Message
Enter data for Department-file
F1Ø -> EXIT

I N S E R T I O N

Semester:

Accomudation Rent (Rs):

Service Charges (Rs):

Heating/Fan Charges (Rs):

Sui-Gas Charges (Rs):

Lighting Charges (Rs):

Medical Charges (Rs):

Common Room Charges (Rs):

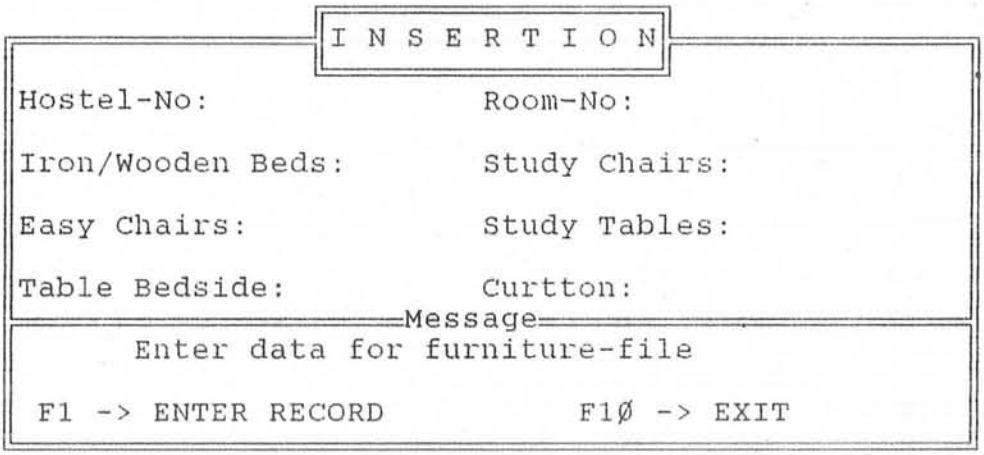
Wear & Tear Charges (Rs):

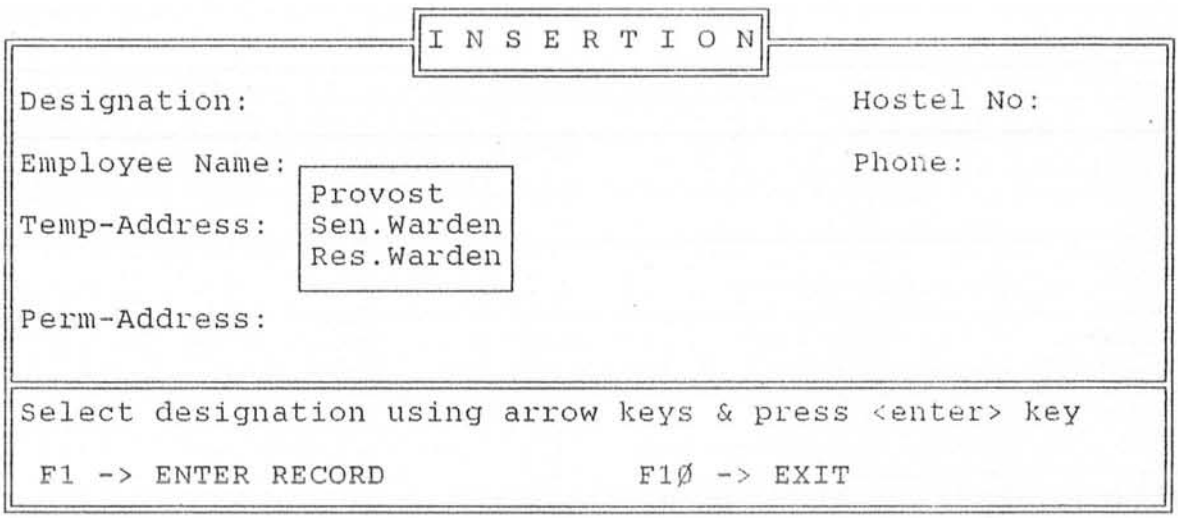
Hostel Security (Rs):

(Message)

Enter data for dues-file

F1Ø -> EXIT


I N S E R T I O N
Hostel-No:
Room-No:
Iron/Wooden Beds:
Study Chairs:
Easy Chairs:
Study Tables:
Table Bedside:
Curtton:
Message
Enter data for furniture-file
F1 -> ENTER RECORD
F1Ø -> EXIT


I N S E R T I O N
Designation:
Hostel No:
Employee Name:
Phone:
Temp-Address:
Provost
Sen.Warden
Res.Warden
Perm-Address:
Select designation using arrow keys & press <enter> key
F1 -> ENTER RECORD
F1Ø -> EXIT

APPENDIX-C
SAMPLE HOSTEL FORMS

OFFICE OF THE PROVOST
QUAID-I-AZAM UNIVERSITY
I S L A M A B A D

APPLICATION FORM FOR HOSTEL ADMISSION

Name _____

Father's Name & Occupation _____

Department _____ Class _____ Semester _____

Permanent Address _____

_____

Present Address _____

For Emergency contact give Tele. No. _____ & Address _____

_____

I hereby promise to abide by the hostel rules of this University, which are enforced from time to time a copy of which, I have received from the Provost Office. I further undertake to abide by such rules/ orders/instructions, issued by the University/Hostel authorities from time to time.

I, undertake that I would apply for hostel clearance and clear all the dues before leaving the hostel. I would properly hand over the room to the Provost Office and will inform departure in writing.

NOTE:- Two Copies of Passport Size Photographs and One Copy of Domicile Certificate duly attested by the Chairman concerned be supplied to Provost Office alongwith this application form at the time of admission in the hostel.

(SIGNATURE OF STUDENT)

Chairman:- For Recommendation.

Accommodation of Seat/Room is available in hostel no. ____ room no. ____

(SIGNATURE OF CLERK)

The above mention seat/room is allotted to the applicant subject to the clearance of hostel dues as per rules.

(RESIDENT WARDEN)

Certified that a sum of Rs.1002/- (Inwords) One Thousand & Two only, has been deposited by him/her the Provost's Account No. 495-43 with Habib Bank Ltd. Campus Branch Bank Challon No. _____ dt. _____

C L E R K

(RESIDENT WARDEN)

Provost:- For approval please.

ABBASI

CHANGE OF ROOMS

I/we the undersigned hereby request the permission of the Provost to shift from H/Room No. _____ to _____

Signature _____
Name of Resident _____
Deptt/Class/Semester _____
Hostel / Room No. _____

Signature _____
Name of Resident _____
Deptt/Class/Semester _____
Hostel / Room No. _____

BASIC INFORMATION SHEET

Name _____ Father's Name _____

Permanent Address _____

_____

Telephone No. _____ Deptt., Class/Semester _____

Hostel No. _____ Room No. _____

_____
Signature of Resident

QUAID-I-AZAM UNIVERSITY
(OFFICE OF THE PROVOST)
****

No.QAU/H/46/90- Dated:_____

Subject:- RECOVERY OF DUES IN CONNECTION WITH FINAL CLEARANCE.

Mr./Miss_____ who was the student of _____ Deptt. of_____ Quaid-i-Azam University and had been the resident of Hostel___ Room No.____ has left the Hostel w.e.f._____.

Kindly recover from him/her the under-mentioned dues.

1. Hostel period from_____to_____.

(Sign. of Hostel Clerk)

2. All statements already sent to Accounts Section for recovery.

Local Calls _____

Trunck Calls_____

(Sign. of Exchange Supervisor)

Hostel dues from_____to_____are paid/cleared.

(Sign. of Clark)

Recovered the dues as per serial 1,2 above.

(Sign. of Accounts Supdt.

_____ (Sign. of Mess Secretary Hostel No.1) (Sign. of Mess Secretary Hostel No.2)

(Sign. of Mess Secretary Hostel No.3) (Sign. of Mess Secretary Hostel No.4)

Recovered the dues hostel Canteen (Sign of Canteen Contractor)

Recovered the dues Washer-man. (Sign. of Washer Man)

Please refund the Hostel Security to the resident as he/she cleared his/her out-standing dues as mentioned above.

(Sign. of Hostel Clerk)

(RESIDENT WARDEN)

Rs.10,02/- paid vide Bank Challan No._____ Dated _____

Dated:_____. (SIGN. OF HOSTEL CLERK)

QUAID-I-AZAM UNIVERSITY
(OFFICE OF THE PROVOST)

RATES OF HOSTEL FEES/DUES.

Hostel Fees	Revised Rates (Rupees)	1st Semester (Rupees)	2nd Semester (Rupees)	3rd Semester (Rupees)	4th Semester (Rupees)	5th Semester (Rupees)
1. Rent for Accommodation.	20/- P.M.	120/-	120/-	120/-	120/-	120/-
2. Service Charges	30/- P.M.	180/-	180/-	180/-	180/-	180/-
3. Heating Charges(Nov.-Feb.)	20/- P.M.)	120/-	120/-	120/-	120/-	120/-
4. Electric Charges for Fan (March - October).	20/- P.M.)					
5. Sui-Gas Charges	10/- P.M.	60/-	60/-	60/-	60/-	60/-
6. Electric Charges for Lighting	20/- P.M.	120/-	120/-	120/-	120/-	120/-
7. Medical Charges	12/- P.M.	72/-	72/-	72/-	72/-	72/-
8. Common Room Charges	10/- Per Annum.	10/-	-	10/-	-	10/-
9. Annual Wear & Tear charges (including Bulb lighting)	50/- Per Annum.	50/-	-	50/-	-	50/-
10. Hostel Caution Money (Refundable)	150/-	150/-	-	-	-	-
Total.		882/-	672/-	732/-	672/-	732/-

1st Semester Rs. 882/-
2nd " Rs. 672/-
3rd " Rs. 732/-
4th " Rs. 672/-
5th " Rs. 732/-
6th " Rs. 672/-

APPENDIX-D

SAMPLE REPORTS

QUAID-I-AZAM UNIVERSITY HOSTEL ROOM ALLOCATION

LIST OF DISTT/COUNTRY CODES

DISTT/COUNTRY CODE	DISTT/COUNTRY NAME
ABD	ABBOT ABAD
AK	ATTACK
BDN	BADIN
BKR	BHAKKAR
BNR	BUNIR
BNU	BANNU
BR	BAHAWAL PUR
CL	CHAKWAL
CSA	CHARSADDA
DIK	DERA ISMAIL KHAN
FD	FAISAL ABAD
GA	GUJRANWALA
GLT	GILGIT
GT	GUJRAT
HD	HYDER ABAD
JD	JAFAR ABAD
JG	JHANG
JM	JEHLUM
KB	KHOSHAB
KI	KARACHI
KL	KHANEWAL
KPM	KHAIR PUR MIRS
KSR	KASUR

QUAID-I-AZAM UNIVERSITY HOSTEL ROOM ALLOCATION

LIST OF DEPARTMENT CODES

DEPARTMENT CODE	DEPARTMENT NAME
AR	AREA STUDY
AS	ADMINISTRATIVE SCIENCES
BI	BIOLOGY
CH	CHEMISTRY
CS	COMPUTER SCIENCE
DS	DEFENCE AND STRATEGIC STUDIES
EC	ECONOMICS
EL	ELECTRONICS
GP	GEO PHYSICS
HI	HISTORY
IR	INTERNATIONAL RELATIONS
MA	MATHEMATICS
PH	PHYSICS
PS	PAKISTAN STUDIES

** END OF REPORT **

OFFICE OF THE PROVOST

QUAID-I-AZAM UNIVERSITY

ISLAMABAD

COMPLETE REPORT OF A STUDENT

Form No: 92Ø32 Student Name: MUBASHAR IQBAL

Distt/Country of domicile: GUJRAT

Department: CHEMISTRY Semester: 2

Class: M.Sc. Emergency Phone: ØØØØØØØØ

Dues Paid: 1674.ØØ Dues Payable: ØØØØ.ØØ

Date of joining: 16/Ø1/1992

Hostel No: 3 Room No: Ø34

Temporary address: P/O:KOTLA ARBAB ALI KHAN,SYRIA ROAD, ST-1,H-NO-1,TEH:KHARIAN

Permanent address: P/O:KOTLA ARBAB ALI KHAN,SYRIA ROAD, ST-1,H-NO-1,TEH:KHARIAN

** END OF REPORT **

OFFICE OF THE PROVOST

QUAID-I-AZAM UNIVERSITY

ISLAMABAD

COMPLETE REPORT OF A STUDENT

Form No: 9ØØ96 Student Name: ATEEQ UR REHMAN

Distt/Country of domicile: PESHAWAR

Department: ECONOMICS Semester: 5

Class: M.Sc. Emergency Phone: ØØØØØØØØ

Dues Paid: 1ØØ5.ØØ Dues Payable: ØØØØ.ØØ

Date of joining: Ø4/Ø2/199Ø Date of leaving: Ø2/Ø5/1992

Temporary address: VIL & P/O:CHERAT CANTT
TEH:NOSHEHRA,DISTT:PESHAWAR

Permanent address: VIL & P/O:CHERAT CANTT
TEH:NOSHEHRA,DISTT:PESHAWAR

** END OF REPORT **

OFFICE OF THE PROVOST

QUAID-I-AZAM UNIVERSITY

DETAIL OF HOSTEL RATES

Semesterwise Detail of Rates	First	Second	Third	Fourth	Fifth	Sixth
Rent for accomodation (Rs)	12Ø.ØØ	12Ø.ØØ	12Ø.ØØ	12Ø.ØØ	12Ø.ØØ	12Ø.Ø
Service Charges (Rs)	18Ø.ØØ	18Ø.ØØ	18Ø.ØØ	18Ø.ØØ	18Ø.ØØ	18Ø.Ø
Heating/Fan Charges (Rs)	12Ø.ØØ	12Ø.ØØ	12Ø.ØØ	12Ø.ØØ	12Ø.ØØ	12Ø.Ø
Sui-Gas Charges (Rs)	Ø6Ø.ØØ	Ø6Ø.ØØ	Ø6Ø.ØØ	Ø6Ø.ØØ	Ø6Ø.ØØ	Ø6Ø.Ø
Lighting Charges (Rs)	12Ø.ØØ	12Ø.ØØ	12Ø.ØØ	12Ø.ØØ	12Ø.ØØ	12Ø.Ø
Medical Charges (Rs)	Ø72.ØØ	Ø72.ØØ	Ø72.ØØ	Ø72.ØØ	Ø72.ØØ	Ø72.Ø
Common Room Charges (Rs)	Ø1Ø.ØØ	ØØØ.ØØ	Ø1Ø.ØØ	ØØØ.ØØ	Ø1Ø.ØØ	ØØØ.Ø
Annul Wear & Tear Charges (Rs)	Ø5Ø.ØØ	ØØØ.ØØ	Ø5Ø.ØØ	ØØØ.ØØ	Ø5Ø.ØØ	ØØØ.Ø
Hostel Security (Rs)	15Ø.ØØ	ØØØ.ØØ	ØØØ.ØØ	ØØØ.ØØ	ØØØ.ØØ	ØØØ.Ø
Total (Rs):	882.ØØ	672.ØØ	732.ØØ	672.ØØ	732.ØØ	672.Ø

** END OF REPORT **

OFFICE OF THE PROVOST

QUAID-I-AZAM UNIVERSITY

ISLAMABAD

No. QAU/H/ 92Ø22 Dated: 23/11/92

Subject: CLEARANCE OF HOSTEL DUES

Please issue necessary certificates to Mr. FARUKH NADEEM Department of ELECTRONICS who has been resident of Hostel No: 3 Room No: Ø29 at Quaid-i-Azam University hostel complex as he has cleared his outstanding dues.

P R O V O S T

The chairman

Department of ELECTRONICS

QUAID-I-AZAM UNIVERSITY
(OFFICE OF THE PROVOST)

No. QAU/H/ 9ØØ96 Dated: 23/11/92

Subject: RECOVERY OF DUES IN CONNECTION WITH FINAL CLEARANCE.

Mr. ATEEQ UR REHMAN who has the student of M.Sc. department of ECONOMICS Quaid-i-Azam University & had been the resident of hostel has left the hostel with effect from Ø4/Ø2/199Ø

Kindly recover from him under-mentioned dues.

1. Hostel dues from Ø4/Ø2/199Ø to Ø2/Ø5/1992

(SIG. OF HOSTEL CLERK)

2. All statements already sent to Account section for recovery

Local calls --------

Trunck calls -------- (SIG. OF EXCHANGE SUPPERVISOR)

Hostel dues from Ø4/Ø2/199Ø to Ø2/Ø5/1992 are paid/cleared.

(SIG. OF CLERK)

Recovered the dues as per serial 1, 2, above.

_____

(SIG. OF ACCOUNTS SUPDT.)

_____ _____

(SIG. OF MESS SEC. HOSTEL NO.1) (SIG. OF MESS SEC. HOSTEL NO.2)

_____ _____

(SIG. OF MESS SEC. HOSTEL NO.3) (SIG. OF MESS SEC. HOSTEL NO.4)

Recovered the dues hostel canteen (SIG. CANTEEN CONTRECTOR)

Recovered the dues washer-man (SIG. OF WASHER MAN)

Please refund the hostel security to the resident as he has cleared his out-standing dues as mentioned above.

(SIG. OF HOSTEL CLERK)

(RESIDENT WARDEN)

OFFICE OF THE PROVOST

QUAID-I-AZAM UNIVERSITY

ISLAMABAD

A LIST OF HOSTEL STUDENTS WHOSE DUES ARE NOT COMPLETE

Department: PHYSICS

Form No	Student Name	Class	Semester	Dues Payable	Room
9ØØ38	ABDUL RAZAQ	M.Sc.	6	1944.ØØ	ØØ1/4
92Ø1Ø	TARIQ JAVID BAIG	M.Phil.	2	Ø672.ØØ	Ø87/2
92Ø12	KHALID PERVIZ	M.Sc.	2	Ø472.ØØ	ØØ5/4
92Ø31	IMRAN AHMAD	M.Phil.	2	Ø476.ØØ	Ø5Ø/2
92Ø36	SAEED AHMAD MIRZA	M.Phil.	2	Ø472.ØØ	Ø25/2

** END OF REPORT **

BIBLIOGRAPHY

BIBLIOGRAPHY

1) Bradely, James
INTRODUCTION TO DATABASE MANAGEMENT IN BUSINESS, 1983
CBS College Publishing, Holt, Rinehart & Winston,
The Dryden Press Saunders College Publishing, Japan.

2) Date, C.J.
AN INTRODUCTION TO DATABASE SYSTEMS, 1987
Vol 1, 4th edition by Addison-Wesley Publishing Co, USA.

3) McFarland, R.
RM-COBOL/85: USER'S GUIDE, 1989
Rayan McFarland Corporation.

4) McFarland, R.
RM-COBOL/85: LANGUAGE REFERENCE MANUAL, 1989
Rayan McFarland Corporation.

5) Philippakis, A.S.
Kazmir,J.Leonard
STRUCTURED COBOL,1986
McGRAW-HILL BOOK COMPANY.

6) James,A.Senn
ANALYSIS AND DESIGN OF INFORMATION SYSTEMS, 1987
McGRAW-HILL BOOK COMPANY.