RMIT STUDENT DATA BASE

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The Student Data Base and its peripheral systems were developed and introduced by staff of the Royal Melbourne Institute of Technology. The project was supervised by Mr. N.F. Riedl, Data Base Administrator and E. de Graauw, Senior Systems Analyst.

1. DESIGN OBJECTIVES FOR THE RMIT STUDENT DATA BASE

The RMIT Student Data Base was designed to satisfy the following basic requirements.

1. The recording, in on-line mode, of the Academic progress of 12,000 students.

2. The capacity to enrol most of these students over a three week period.

3. The production of examination lists covering all intermediate and final examinations.

4. The retention of a complete academic history for each student.

5. To provide a basis for resources planning.

2. OVERVIEW OF THE RMIT STUDENT DATA BASE

2.1 Description (See Appendix I for DB Diagram)

The name RMIT Student Data Base describes both a data base containing academic and student information, as well as the systems that operate on this data base.

Day to day maintenance of data on the Student Data Base is performed using two major programs which allow on-line, real-time, processing of student

information and academic information respectively.

Additional programs are available to process bulk information, such as examination results, in batch mode and to produce a large variety of reports.

Student information held on the data base provides a complete profile of current and historical, academic and personal details, for each student who attended courses during the past years. Once a students' most recent records reach a certain age, all of his information is archived (unloaded to tape and, possibly, microfiche) and only an extract of his original record, including a microfiche reference, is kept on-line for further use.

Academic information describes course structures, including past and future courses.

Subjects are recorded as part of course years and stages and full details are available as to how subjects may be taken, who may take the subjects and study periods involved. Provision is made for sub division of subjects into units, with similar information being recorded for units as for subjects. Examination details which may be recorded for subjects and units include such items as intervals at which intermediate examinations are due and number of papers per examination.

2.2 Technical Aspects

The Student Data Base was set up using the HP Image data base package.

Because most of the information on the data base is subject to various conditions and relationships, special access modules were designed and written by RMIT staff, which incorporate the logic needed to take these requirements into account. As a result RMIT programmers can concentrate on processing the data without the need to get involved in basic data collection techniques. The following is an example of the technique used:-

In any semester most students are studying only for some of the subjects they enrolled for at the beginning of the academic year. Those subjects have been defined in the Student Data Base as "current" for that semester. Whether a subject is current depends on the starting year, starting semester and duration of the subject. Maximum duration was set at four semesters.

Data Base access modules have been developed which will extract, for a given student, the subjects that were current in any semester or year for a specified course.

Another example is the use of special modules to extract "current" academic information from the historical course data.

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Course information is retained after courses have been phased out, because student records on file may still refer to these courses. This necessitates data base course structures which can represent the various stages of course development.

Thus users may set up details of future courses without enrolments taking place in these courses.

Or a gradual phasing in or out of course years and stages may be represented.

And, finally, courses may be phased out entirely so that no enrolments can take place, although full course details are available for reporting purposes.

All of this is controlled by a dating system which defines the total period over which a course, course year, stage, subject or unit is available as well as the periods over which different versions of the same are in use.

3. INFORMATION ON THE STUDENT DATA BASE

3.1 Student Data

Student Data is recorded under different headings to assist with the access and maintenance of information on file. The groups of data are listed below.

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Personal Details	- Name, addresses, etc.
Historical addresses	- Recorded as a result of address changes.
Statistical details	- Employment, residential and educational status.
Financial details	- Annual record of fees due and paid.
Award details	- Historic record of all awards presented.
Prize details	- Historic records of prizes obtained by students.
Course details	- One set of details for each year for each course enrolment per student, containing details such as course code, study mode, study load, enrolment year, etc.
Subject details	- One set of details for each subject enrolment per student containing details such as subject number, course code, enrolment year and semester, study mode and result.
Unit details	- One set of details for each unit enrolment per student containing details such as unit number, subject number, enrolment year and semester, study mode and result.

3.2 Course Data (See Appendix II)

The academic data structures in the Student Data Base permit a true representation of course structures as defined in the RMIT calendar, complete with elective structures in use in different course. This information is linked to academic data recorded for individual students, thus making possible the production of various academically oriented reports such as examination stationery.

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A structure of academic data groups, similar to student details, provides for economic and versatile processing facilities.

The main data groups are listed below.

Course details	- These are distributed over several groups which provide historical details, basic course details such as course description and structural details which link subjects to relevant years and stages.
Subject details	- These are distributed over several groups which provide historical details, basic subject details, such as name of subject, structural details, which lists units that belong to a subject, and examination details which indicate the number of examinations and timing of examinations per subject.
Unit details	- These are distributed over several groups which provide information similar to that available for subjects as outlined above.

4. DATA STATUS CONCEPTS

4.1 General Description

Information on the Student Data Base is in a state of flux. From the moment a student enrols, his enrolment details determine where he fits into the student profile. Depending on wether he is an internal or external student, doing Course A or Course Z, full time or part time mode, etc., etc., his name may or may not appear on various reports, notices, examination stationery, etc.

Every change to his status, such as a subject cancellation, receipt of results, re-enrolment, leave

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of absence, etc., may affect the way the next process (report, update, etc.) treats his records. It is therefore important to be aware of the major status conditions that may occur and their effects.

4.2 Student Status

This is a major indicator which determines the overall standing of a student. It takes the following values.

- Current

This is a student who is currently attending classes. The student may be enrolled in several courses at once, in which case cancellation of one course will not affect his current status. Depending on further sub classifications this student will appear on most standard printouts. Other status possibilities are

- Concessional (Enrolment at RMIT subsidiary to enrolment elsewhere).

- Leave of Absence

- Unsatisfactory

- Inactive

- Deleted

- Archived

4.3 Enrolment Status

This status is based on how a student is currently enrolled in a course or each of several courses.

Enrolment status determines the following:-

- Year of enrolment (used to identify current and historical enrolment).
- Year or Stage of Course
- Study Mode (Internal, External, Mixed)
- Study Load (Full Time, Part Time, Single Subject).

4.4 Subject/Unit Currency per student (See Appendix III)

Subject/Unit Currency is a definition that was developed to enable identification of Subjects and Units that have reached a certain stage of completion.

The information on which this currency is based is for each Subject or Unit:

- The year of enrolment
- The starting semester
- The duration in semesters.

Using the above information it is possible to define which Subjects/Units are, or were, current at any point in time. In practice it was found that two

types of currency stood out as a basis for further refinement.

Thus, to extract all Subjects and Units that a student is (or was) enrolled in any year, we use:

Year Currency "A Subject or Unit is current in any given year if the study period for the Subject or Unit takes in at least one semester in that year".

For the purpose of selecting Subjects and Units that may be due for examination in a particular semester, we use:

Semester Currency "A Subject or Unit is current in a given semester if part or all of the study period for the Subject or Unit coincides with that Semester".

To further determine whether an examination is due for a particular Subject or Unit enrolment, the examination details include an item called EXAM-SEMESTERS, which specifies the number of semesters required to be completed in the Subject or Unit beofre the examination is due. This permits users of the system to define intermediate examinations. A number of formulae have been developed which are used to determine enrolment currency, exam currency, re-enrolment currency, etc., using the above criteria.

4.5 Currency of Academic Data (See Appendix II)

Due to the historical nature of the academic data on file, it is necessary to ascertain that student details are related to academic data for corresponding periods.

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The following definitions of currency apply.

- Academic Definitions of Current Course

  This is a Course which includes the year specified as 'current' in its period of currency.

- Academic Definitions of Current Subject

  This is a Subject which includes the year specified as 'current' in its period of currency.

- Academic Definition of Current Unit

  This is a Unit which includes the year specified as 'current' in its period of currency.

Note that in the above definitions current year may be any year specified for this purpose.

4.6 Example of Student Data Currency

The last page in this chapter contains a typical academic student data structure, representing schematically the type of structure that exists on the Student Data Base.

From this structure the following information may be extracted.

a. This student has attempted three courses.

b. He is currently (1980) studying subjects in Courses B and C.

c. This year (1980) he is enrolled for Subjects CBS2 (Unitized Subject)
   CBS3
   CCS5
   CCS6
   CCS7

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and units CBS2U1
CBS2U2
CBS2U3
CCS7U1
CCS7U2
CCS7U3
CCS7U4

b. This semester (Semester 2, 1980) he is engaged in the following Subjects and Units (Note: 1/2 means starting semester is 1 and duration is 2 semester):

Subjects CBS3/1/2
CCS4/2/2
CCS5/1/2
CCS6/2/1
CCS7/0/0 (Unitized Subject)

Units CCS7U2/2/1
CCS7U3/2/2
CCS7U4/1/2

Note in the last example that if CCS3/1/1 had been recorded as CCS3/2/3, this subject would have been current in semester 2, 1980.

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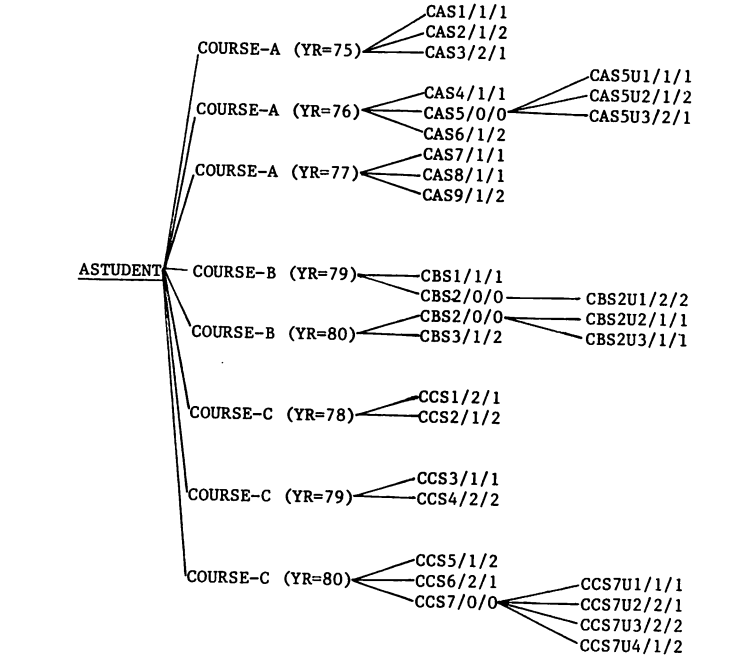
TYPICAL ACADEMIC STUDENT DATA STRUCTURE



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5. ENROLMENTS

5.1 Enrolment Data Base (See Appendix IV)

The enrolment system reduces input data handling to a minimum.

This is achieved through the use of an enrolment data base. The enrolment data base contains copies of data which was printed on enrolment forms for new and returning students. For new students the enrolment information consists of data transferred from applications processed by the Admissions System and academic details extracted from the Student Data Base.

For returning students the enrolment information is taken from their records on the Student Data Base.

The data in the enrolment data base is used to speed up on-line enrolments as explained in a later chapter. (5.4)

Students who are not shown on any of the enrolment files may be enrolled by overriding the normal data checks. This procedure permits the enrolment of students who enrol before the addition data has been processed or who do not enrol via the Admissions system.

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5.2 Enrolment Forms

Details printed on enrolment forms include Subjects and Units that new students are expected to study in the first year or stage of their course.
Preprinting of subjects and Units can be valuable for the following reasons:
Reduction in Keying - if the preprinted subject and unit details are correct, they need not be keyed again.

Early Enrolment Statistics - Any saving in processing time will speed up the production of enrolment statistics.

Fewer Errors - If less data is transcribed manually, fewer errors will occur.

For returning students the selection of Subjects and Units for preprinting poses serious problems at RMIT, as a result of loosely defined course structures, insufficient knowledge of Subjects and Units completed at printing time and the large number of students who "straddle" course years and stages.

Although the system is capable of preprinting most Subjects and Units for returning students, due to the above problems this facility is currently not used.

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The only Subjects and Units that are preprinted for returning students are those that they have started in the preceding year and have not yet completed in terms of the total duration of these Subjects and Units.

5.3 Data Priorities

The enrolment process is designed to satisfy the following requirements:

While enrolments are in progress, the Academic departments and Planning Branch need information on total numbers of students enrolled to-date in various categories.

The enrolment details required for this are treated as high priority data, to be processed on-line. (PART I)

The remainder is processed in batch mode (PART II). Note, that PART I details may be batched if necessary.

5.4 On-Line

A specially designed enrolment form is in use which clearly identifies the on-line and batch input data areas.

When a student hands in a completed enrolment form, the keyboard operator enters the Student Number shown on the form, or, if the student is a new student, the Application Number.

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Depending on the type of number submitted, the system will access either the admission data or the returning student data on the enrolment data base and display all of the information that was printed earlier on the enrolment form.

The operator modifies the details shown on the screen as required and adds any missing PART I details from the form. This tends to involve mainly Subject information.

The system then checks the data and reports on errors found. When the data has been corrected to a satisfactory extent, and provided the data is not rejected entirely, due to serious errors, the operator indicates that the data is to be processed.

5.5 NORMAL and FAST Modes

To provide for greater flexibility in the on-line process, the system allows operators to specify "FAST MODE" incase of peak loads.

In NORMAL mode the system updates the Student Data Base directly with data received from the key board operator.

In FAST mode the data submitted by the operator is stored in a holding file and used to update the Data Base in batch mode at a later stage, when demands on the computer are less.

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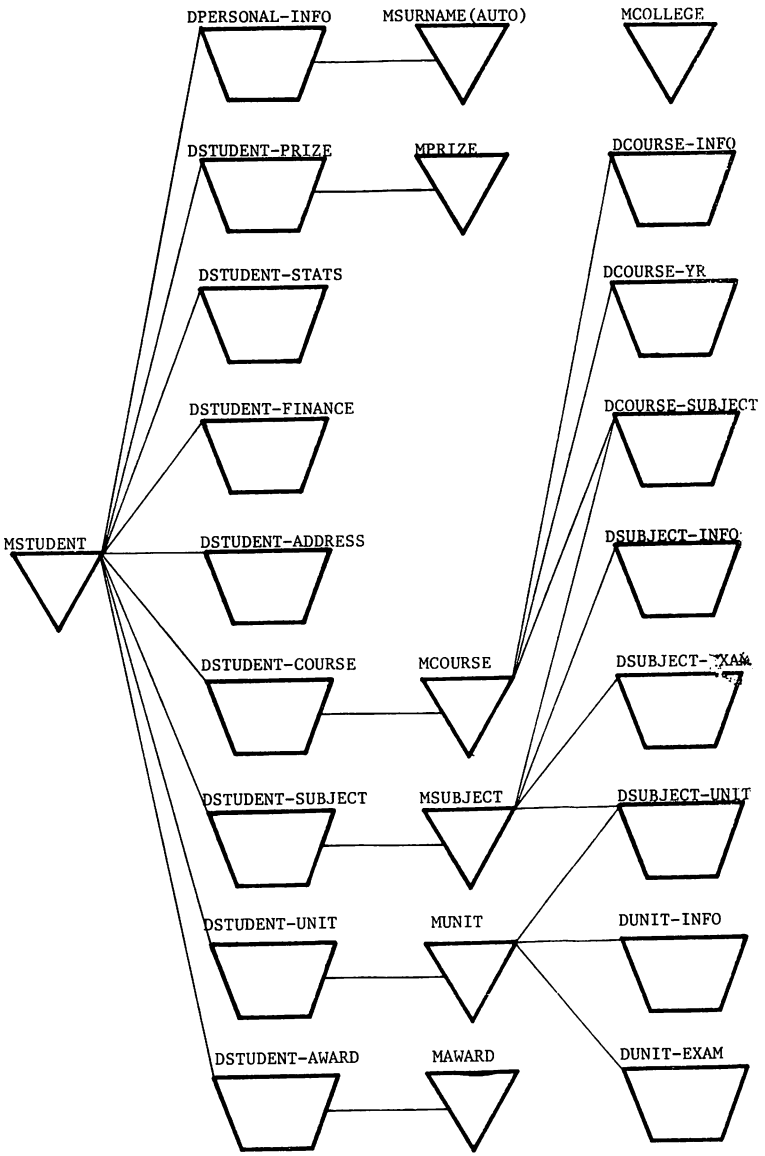
When a number of operators are keying enrolment information simultaneously, any number of them may be using one or other of the input modes described above.

RMIT STUDENT DATA BASE DIAGRAM

APPENDIX I



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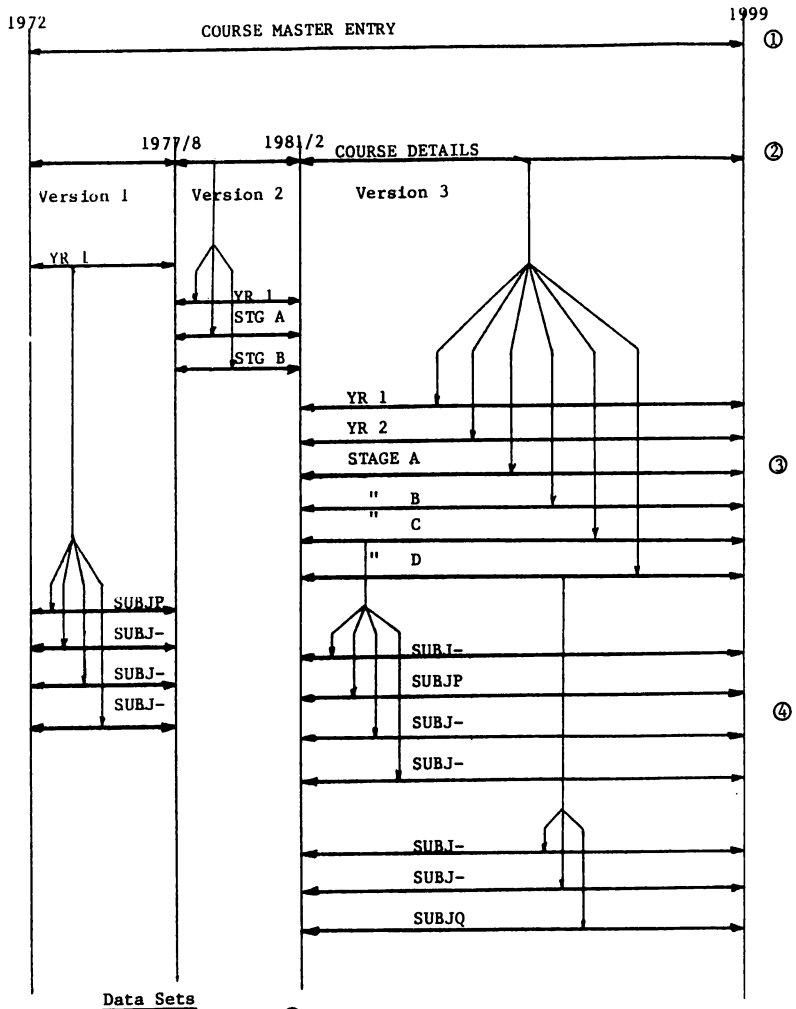
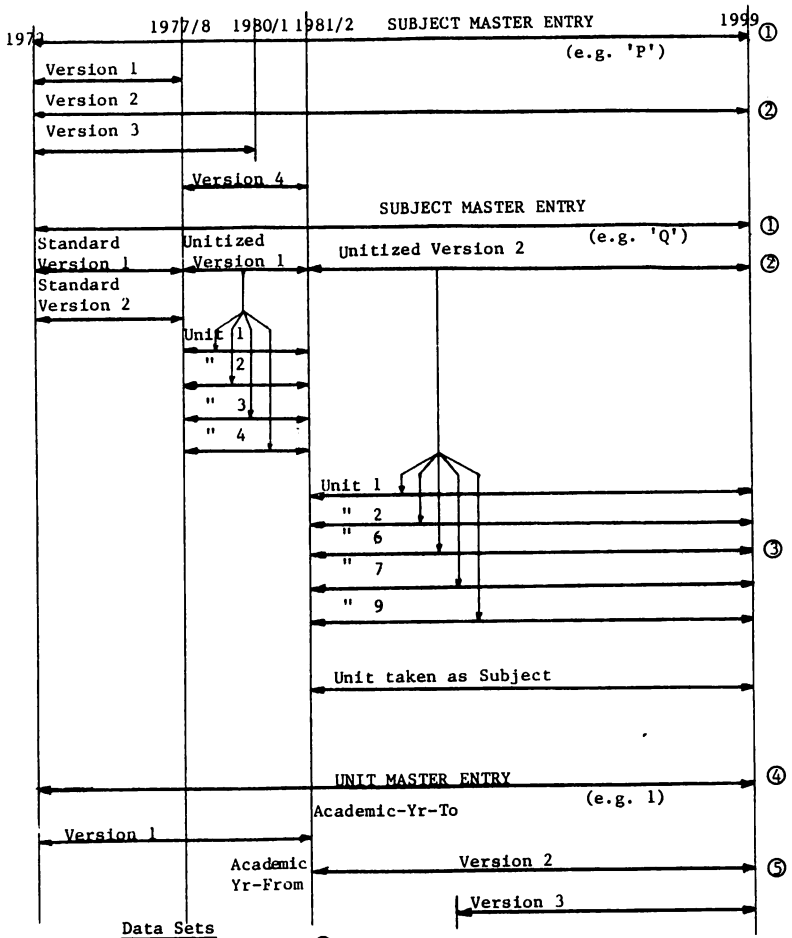
STUDENT DATA BASE COURSE STRUCTURES



Data Sets
① = MCOURSE
② = DCOURSE-INFO
③ = DCOURSE-YR
④ = DCOURSE-SUBJECT

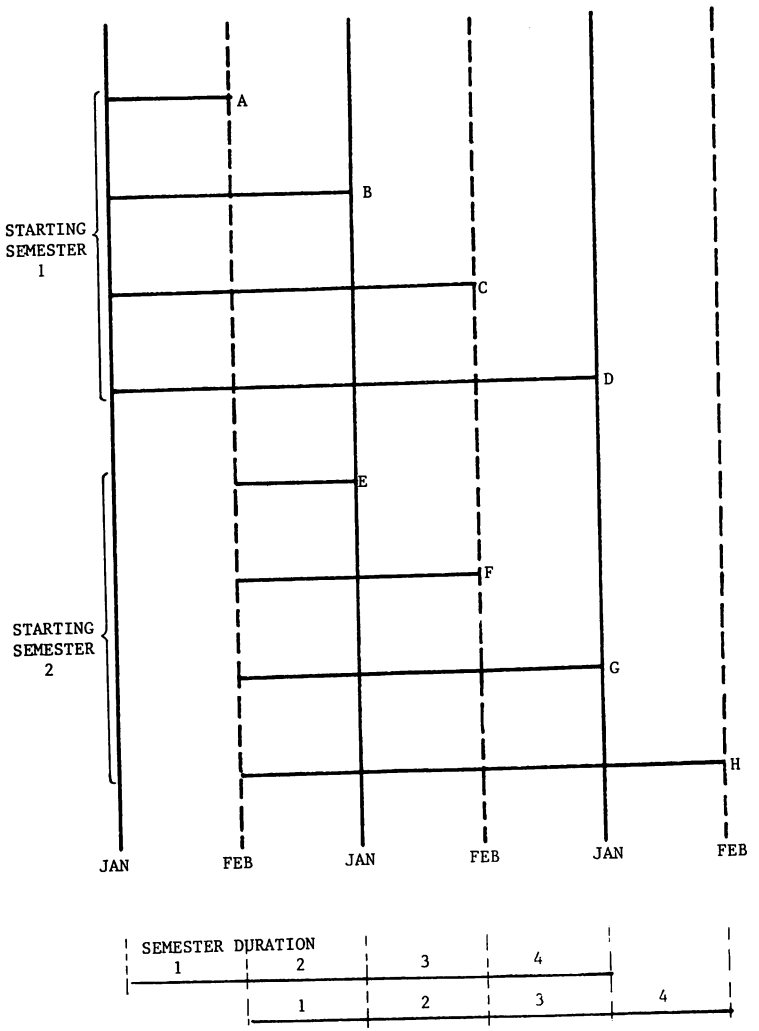
STUDENT DATA BASE SUBJECT STRUCTURES



Data Sets
① = MSUBJECT
② = DSUBJECT-INFO
③ = DSUBJECT-UNIT
④ = MUNIT
⑤ = DUNIT-INFO

APPENDIX III

SUBJECT CURRENCY RANGES



APPENDIX IV

RMIT ENROLMENT FLOW DIAGRAM