TECHNICAL MANUAL NUMBER 1

GENERAL INFORMATION MANUAL

UNIVERSITY OF QUEENSLAND
COMPUTER CENTRE

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MNT-1
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This manual has been authorized by
the Director of the Computer Centre.

PURPOSE

The purpose of this manual is to provide an overview of the services and facilities offered by the University of Queensland Computer Centre and the administrative arrangements necessary to make use of the Centre. Intending users should consult the introductory Technical Manual MNT-2 "Using the U.Q. PDP-10 System" and other detailed reference manuals referred to in this publication.

CONTENTS

1.   INTRODUCTION

The Computer Centre of the University of Queensland is a central support department for the University of Queensland and Griffith University. It provides a timeshared batch and interactive computing service at prescribed rates based on a PDP-10 computer. The Centre assists teaching, research and administrative work throughout the universities by the provision of specialised programming and consulting services, the survey and development of general use programs, the development of specific programs on behalf of users (at prescribed charges), the provision within budget constraints of state-of-art hardware facilities and the development of apt communications facilities. The centre offers a data preparation service as well as engineering support services for departmentally owned computing equipment. The centre also provides services to external clients, mainly other educational institutions, state and commonwealth departments.

2.   LOCATION

The Centre is located at the east end of Hawken Building on Circular Drive, St. Lucia and may be entered from the main entrance of the building.

A public client area is located on the ground floor to the right of the main entrance. It is equipped with public terminals, punched-card machines for program correction, and documentation of the program library.

The computer room and centre staff are located in the basement of the building. All enquiries, receipt and dispatch of work and program consulting advice take place in this area.

3.   HOURS OF OPERATION

Computer services are available from 8 a.m. Monday to Friday inclusive with the exception of public holidays. Service to remote terminals, job receipt and dispatch and availability of the public client room ceases at midnight.

Although the system is operating at acceptable levels of reliability, there will be periods when it will be unavailable due to hardware or software faults. Advice on the expected period of unavailability is provided by way of the Computer System Status recorded telephone message.

Depending on systems load, weekend operation may be provided during busy periods of the year.

4. USER INFORMATION

The Centre provides various sources of information for users. The Computer System Status provides details of computer operations and times for system availability. The Bulletin, the Newsletter and NOTICE.TXT provide notification of services and difficulties. A wide variety of technical manuals are available describing use of the Centre's facilities.

4.1 Computer System Status Service

The Computer System Status Service is a recorded telephone answering service giving users details of times for interactive or batch processing, new facilities and services as they become available, and the state of the system in the event of a malfunction. The telephone number is Extension 6101 in the University or 70 6101 direct.

While the Centre will attempt to keep to the published times of operation, these times can only be regarded as approximate. The Computer System Status is the fastest way of notifying users of any changes in the timetable, any system malfunctions, and in the event of any malfunction the expected time for resumption of service.

4.2 Bulletin

The Bulletin is the formal publication of the Centre. It is distributed by mail to various organisations and private users. Any organisation or person wishing to receive the Bulletin on a regular basis should contact the Operations Supervisor at the Centre. The Bulletin's mailing list is arranged so that all subscribers (organisations and individual readers) must reapply at the end of each year if they wish to continue receiving the Bulletin. An application form is always included with the last edition of the year.

The Bulletin is the official publication of the Centre and is authorised by the Director of the Centre. All official announcments relating to the services and facilities provided by the Centre, as well as information on programming and other technical matters are published in the Bulletin. The Bulletin also contains a summary of the preceding Newsletters and a summary of systems performance.

The Centre is keen to receive contributed articles for inclusion in the Bulletin.

4.3 Newsletter

The Newsletter is a less formal publication aimed at providing more frequent communication of information between Bulletin publication dates. The Newsletter is mailed to the head of each University section and nominated liason staff. Copies are also available from the foyer of the Centre and the Client room.

4.4 NOTICE.TXT

This is automatically printed on the users terminal during the LOGIN procedure. It provides brief summaries of important announcements.

4.5 Manuals

The Centre provides a number of manuals detailing the various facilities offered. Although some of these are standard Digital DECsystem10 Handbooks, the Centre also publishes its own internally produced manuals for those features peculiar to the U.Q. system, for elaboration and explanation in areas where the Digital manuals are felt to be deficient, and for locally developed systems and packages.

All Centre manuals are kept as up to date as possible by the production of error-correction sheets, reprints of sections or new editions. A complete list of all manuals available from the Centre and their prices follows.
Please note that these prices are correct at the time of publication and may change at any later time.

4.5.1 External Publications

Digital
    DECsystem10 Handbooks: COBOL Language $6.00
                           COBOL Users Guide $9.00
    DECsystem10 - Getting Started with Timesharing $0.60
                  Beginners Guide to MPB $1.50
                  FORTRAN IV Programmers Reference Manual $1.50
                  System Reference Cards
                    BASIC, Operating System   each $0.40

Monash University
    Introduction to Computer Programming (Miditran) $4.00

4.5.2 Internal Publications

MNT-1	General Information	Free
MNT-2	Using the U.Q. PDP-10 System	$1.50
MNT-3	Statistical Packages on the U.Q. PDP-10	(to be advised)
MNT-6	Editor Manual	$0.80
MNT-10	Aid	$3.00
MNT-11	Plotting	$4.00
MNT-12	DDT/Overlay Loader	$1.30
MNT-14	Runoff	$1.50
MNT-15	Snobol 3	$0.50
MNT-16	PDP-10 System Commands	$1.00
	EVAL Instruction Manual	$1.00

5. COURSES & SEMINARS

The Centre periodically conducts short courses on the various facilities available on its systems, as well as introductory Fortran programming courses.

Seminars on new items of hardware and software or on topics of specific interest are held during the year.

Details of forthcoming courses and seminars are circulated to all user departments and organizations and are published in the Newsletter and Bulletin.

6. PROGRAMMING AND SYSTEMS SUPPORT

Subject to the availability of suitable programmer resources, the Centre will undertake programming work for users on a paid contract basis. Users interested in having programs written for them should contact the Systems Analyst (User Services) for further details and quotation.

7. CONSULTING

The Centre is keen to assist users in the effective use of computers and offers a consulting service for programming and systems work. No charge is levied for short consultations but a charge may be applied to very lengthy consultations carried out on a users behalf. It is of course of benefit to the Centre and all users if suspected faults in software are brought to attention as quickly as possible.

The following arrangements apply to consultations on programming difficulties:

(a)   Students must take all programming problems to their academic supervisor.

(b)   Duty Programmer(s) will be scheduled at locations and during periods specified from time to time in the Computer Centre Newsletter and displayed in the foyer of the Computer Centre.

(c)   If a user is unable to detect a fault in his program, he should report the problem to the centre by completing an appropriate 'Problem Specification' form. (NOTE: No advice will be given on programming difficulties unless a Problem Specification has been properly completed).

(d)   If a user is unable to attend personally during the scheduled hours of the duty programmer, the problem will still be worked on, and a written reply made available as for normal line-printer output. In this case, the user should provide, on the specification form, a telephone number and most convenient time when contact can be made for additional information or discussion if required.

(e)   As all problems cannot be solved immediately it may be necessary to leave a problem with the Duty Programmer. In this case the problem solution can be collected at some later date as for normal line-printer output.

It may be of interest that the Centre analyses the completed problem specification forms to assist it in developing improvements to the system and to provide indication of the need for training courses or improved documentation.

8.   DATA PREPARATION

The Centre offers a data preparation service covering keypunching, verifying and interpreting of data at prescribed charges. Material for keypunching must be submitted on standard Centre coding forms accompanied by a 'Requisition for Data Preparation' form. Coding forms can be purchased from the Centre, Bookshop or the Stationery stores; Requisition forms are obtainable from the Centre.

Data preparation work is handed in or collected from the Receipt/Dispatch areas.

The Data Preparation service exists either on a 'first come first served' basis or by advance bookings (for keypunching only). The Centre cannot guarantee that work submitted under the 'first come

first served' basis will be completed by a specified time.

Reservations for advance bookings will be accepted under the following conditions:

(a)   The minimum time which can be booked is 15 minutes.

(b)   Bookings should be made with the Operations Supervisor at least 24 hours in advance of the desired time although the availability of time cannot be guaranteed.

(c)   Cancellations must also be made at least 24 hours in advance of the allocated booking, otherwise a charge is made for the period booked.

(d)   If the work involved exceeds the time booked, then the work will be terminated whether it is completed or not. Arrangements can be made subsequently for the completion of the work.

The main card code used on the PDP-10 is a standard card code based on USASCII standards. The card punches at the Centre are IBM-029 modified machines. Unless a user specifies otherwise on his Requisition form the standard code will be used for all data preparation work submitted to the Centre.

The Centre recognizes that the punching of cards is a problem in many University applications so an optical mark card reader has been operational since early 1974. The Miditran system, widely used by students, involves marked-card operation. There are many applications where it is thought that marked-cards would have an advantage (e.g. survey data, examinations) and users intending to use this mode of input are advised to consult the Centre for further details.

9.   PUBLIC CLIENT AREAS

A public client area is located at the ground floor of the Hawken Building at the University of Queensland. During early 1975, further client areas will be established at the Level 2 floor of the U.Q. Commerce Building and at Griffith University. The dates when these new areas will be available for use will be advertised in the Computer Centre Newsletter. These areas have terminals and card punching machines installed for the use of registered users of the Centre. Control cards and tables are provided to enable batch decks to be assembled and a microfiche reader is installed for viewing program library material.

Client areas have been established for the benefit of users and it is hoped that all will cooperate to maintain them as pleasant work areas.

The Centre will:

(a)   maintain the card-supply for hoppers of the card punches.

(b)   check and refill terminal paper rolls.

(c)   have the areas cleaned daily. The cleaners cannot be expected to know whether cards or other paper left lying about is wanted or not. Their instructions are to remove every card, piece of paper etc. from the room.

We ask users to observe the following points:

(a)   NO SMOKING in the Client areas.

(b)   No food or drink to be taken into the areas.

(c)   Please keep the level of noise to the minimum necessary to do your work. We have a responsibility to ensure there is no interruption to lectures and seminars conducted in the immediate vicinity.

(d)   Our machines are covered by maintenance contract. DO NOT attempt to repair them yourselves. Report all faults to the Operations Supervisor of the Centre.

(e)   We ask all users to cooperate with each other to ensure that all have a fair share of the machines. The key punches are provided primarily for corrections and users should limit themselves to approximately 5 minutes. Terminal use should be limited to approximately 15 minutes unless there is no one waiting.

(f)   When you have finished your work:

   (i)   place all your used cards, paper and other rubbish in the bins provided.

   (ii) leave quietly so that others may get on with their work.

10. MACHINE SYSTEM & SOFTWARE

The PDP-10 computer is a dual processor configuration with 240
Kwords of core memory and on-line disk storage of 360 million
characters. Eighty remote terminals are now connected with
further extensions planned. In addition to the usual peripherals
some other hardware items of interest to users are two plotters
(an 11" and a 36" with 3 pens) and an optical mark card reader.
Details of the configuration are provided in Section 10.1. Two
nine track magnetic tape drives have been ordered for
installation on the system. The major future development will be
the installation of remote batch and terminal concentration
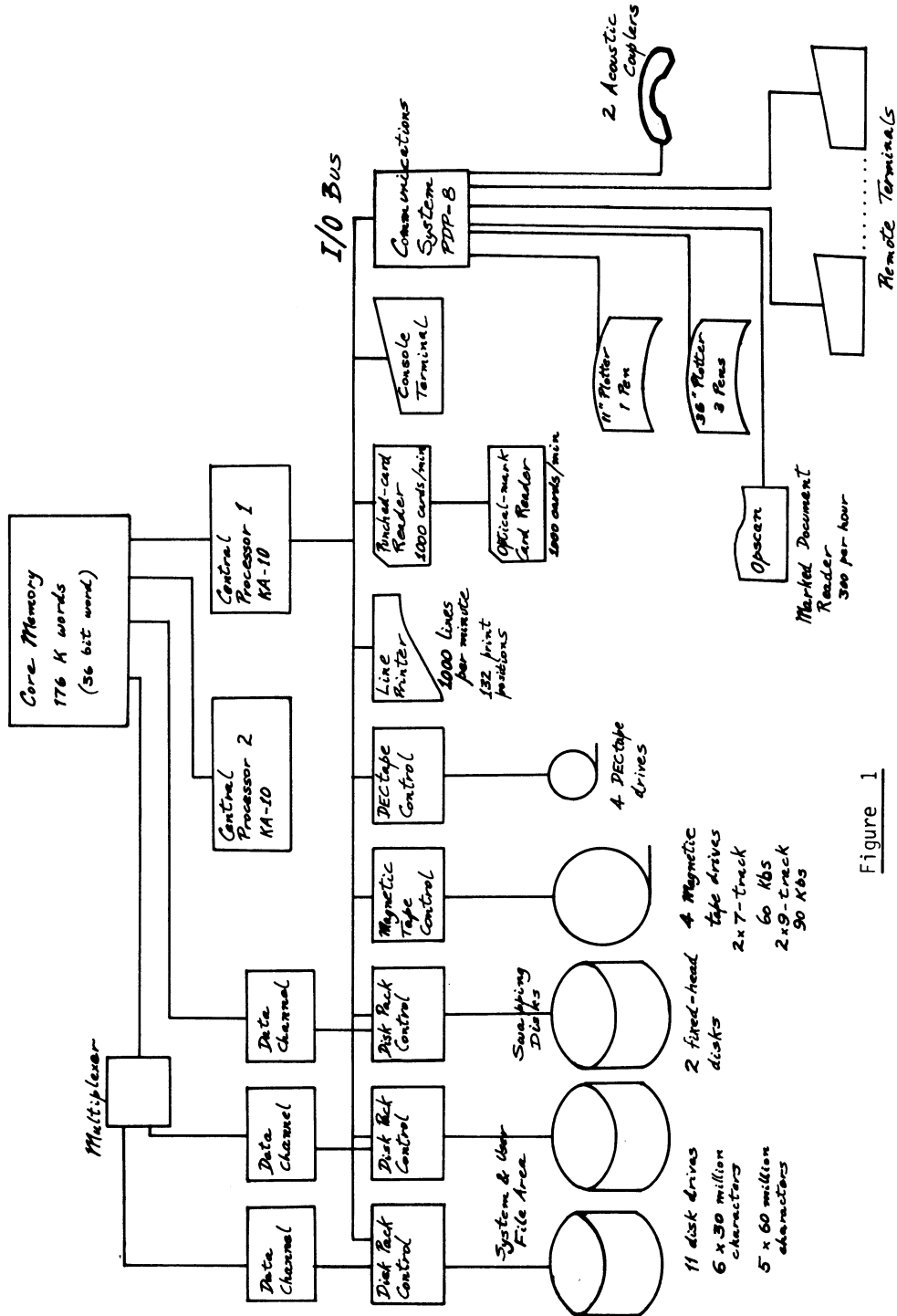facilities.

10.1 Equipment Facilities

Figure 1

Hardware Configuration of the PDP-10 Computer System

10.1.1   Core Storage Availability

The amount of core storage available to individual user programs
varies with time of day:

    0800 - 1800 hrs ... 32K
    1800 - 2400 hrs ... 64K

Users having need of core beyond 64K should first discuss
requirements with the Director of the Centre.

10.1.2   Disk File Allocation

The public file area must be shared by all users.

A limited amount of on-line file storage is available to each
user, and a virtually unlimited amount of off-line storage,
accessible via the File Migration System.

10.1.3   Private Secondary Storage

As well as the allocation from the public file storage area,
users may hire private disk packs, magnetic tapes and DECtapes
for their own use. Details on how to use these facilities are
contained in relevant technical manuals (e.g. RESOURCE, MOUNT
and DISMOUNT commands - refer DECsystem10 Users Handbook).
General information and administrative arrangements regarding
these devices are as follows:

(a)   Private Disk Packs

A disk pack has a total capacity of approximately 30 million
characters. Directories may be established for one or several
projects under the control of a particular user. Packs may be
hired at $20 per month. Alternatively on payment of a capital
contribution of $400 a private disk pack will be made available
to a user for a period of three years. Disk packs remain the
property of the Centre and cannot be taken from the Computer
room. The Centre accepts liability to replace faulty packs and
will be responsible for storage. No pack from another
installation will be processed at the Centre. As well as the
hire charges for packs there are also charges for mounting of
disks and disk drive occupancy time. Normal file input/output
charges apply but there is no charge for file storage.

The Centre has two drives normally available for the private disk
pack service. Use of these drives for the mounting of packs may
be booked in advance through the Operations Supervisor. A 1 hour
limit applies to all such bookings. Requests should indicate the

pack identification and the project for which the pack is required. Requests for immediate mounting of a pack will be honoured if possible, although this will depend on the availability of the drives. Twenty-four hours notice of cancellation of a booking should be given, in which case no charge will be made. If less than 24 hours notice is given, the user is liable for the occcupancy charge to cover the period of the booking. In the case of the system not being available, the user will be charged only for the time during which the system was available. It will not be possible to extend the period of a booking that has been interrupted by a system crash if other users have booked the drive for use after the period in question.

(b)   Magnetic Tapes

Currently the Centre has two 7-track magnetic tape drives. The use of these tape drives may be booked in advance under the same conditions that apply to booking disk drives. Users are warned that although bookings can be made, scheduled system functions may inhibit availabiity of these drives. It is planned to install two additional 9-track drives by mid-1975. Magnetic tapes may be bought privately or hired through the Centre. For reasons of security, some users may prefer to store tapes away from the Centre. If processing of these tapes is required, it should be noted that some authorities recommend a two day acclimatization period within the Centre's air conditioned environment before the tapes are used.

Arrangements must be made with the Centre for registration of tapes before use. An external label will be affixed to the tape and this label number is used for all future identification.

(c)   DECtapes

DECtapes have a total capacity of approximately 350K characters and up to 22 files can be stored on each reel. DECtapes are available for use either on an on-line or off-line basis (refer MOUNT and FILE commands - DECsystem10 Users Handbook). Only one DECtape will be made available to a user at any one time except by special arrangement with the Operations Supervisor. DECtapes may be purchased or hired through the Centre. Arrangements must be made with the Centre for certification and labelling of tapes before use. Charges for DECtapes are detailed in Section 17.

(d)   Limitation of Magnetic Tape and DECtape Service

It can be appreciated that with such a large number of individual users, the widespread use of magnetic tape and DECtape as a means of extending storage allocation would become operationally unwieldy and the service to all users would deteriorate.

For this reason the Centre provides a general off-line public storage area supported by a File Migration System to allow ready transfer of files between the on-line and off-line areas. Users are requested to restrict the use of magnetic and DECtapes to essential needs that cannot be met by the File Migration System. (e.g. communication with other machine systems.)

(e)   Backup

The Centre is formally excluded from liability for the loss of information from data or program files. In practice, the Centre provides backup for the public file area by copying files to magnetic tape weekly and continuously dumping files that have been changed. These backup files are kept for a period of four weeks. This system provides a high measure of reliability and is generally satisfactory for the normal processing which takes place at the Centre. However, it is not 100% foolproof and if very critical data is involved, users should make further arrangements for the security of their files. It should be particularly noted, however, that magnetic tapes, DECtapes and private disk packs are not supported by the Centre's backup procedures and users should make independent arrangements for backup. Backup of private disk structures may be arranged through the Centre at the user's cost.

10.2 Languages

The most commonly used languages together with a cross reference to the detailed reference manual are listed below. Other languages (e.g. SNOBOL) that are less frequently used are available and enquiries should be directed to the programming staff.

(a)   AID

A desk-calculator type of language. It has its own inbuilt editor and interpreter.

Reference: U.Q. MNT-9 manual

(b) **ALGOL**

An algorithmic language suitable for scientific applications.

Reference: DecSystem10 Mathematical Languages Handbook

(c) **BASIC**

A simple FORTRAN-like language specifically designed for interactive processing.   It has its own inbuilt editor and interpreter.

Reference: DecSystem10 Mathematical Languages Handbook
                  Basic Reference card

(d) **BCPL**

A highly efficient, recursive programming language particularly suited to non-numerical software programming applications.

Reference: BCPL manual (to be published)

(e) **COBOL**

A high level language particularly suited for business applications.

Reference: DECsystem10 Cobol Language Handbook
                  DECsystem10 Cobol Users Guide

(f) **FORTRAN-IV**

Especially suited for mathematical and scientific applications.   A DEC-extended version of Fortran-IV for the PDP-10, known as Fortran-10, is also available.

Reference: DecSystem10 Mathematical Languages Handbook
                  Fortran-IV Reference manual
                  Fortran-10 Language manual

(g) **MACRO**

Symbolic Assembly Language for the PDP-10.   Used mainly for system programs and writing subroutines for fortran or cobol programs.

Reference: DecSystem10 Assembly Language Handbook

10.3 Systems Software and Utilities

The operating system allows timeshared multiprogramming and dynamic resource allocation. We use a modified version of the Digital Equipment Corporation 5-Series system.

Some of the more important utilities are:

(a) CREF

A cross reference listing program to aid program debugging and modification.

Reference: DecSystem10 Assembly Language Handbook

(b) DDT & COBDDT

Enables debugging of on-line programs while they are executing.

Reference: DDT: DecSystem10 Assembly Language Handbook,
              U.Q. MNT-12 SECTION 3.
          COBDDT: DecSystem10 Cobol Language Handbook

(c) EDIT

A line oriented editor written by Mr R. Nilsson of the University of Queensland.

Reference: U.Q. MNT-6/ED2

(d) LOADER & OVERLAYS

Loads and relocates user and library relocatable programs. An overlay facility for fortran programs is also available.

Reference: LOADER: DecSystem10 Assembly Language Handbook
           Overlays: MNT-12 Section 1/ED2

(e) PLOTTING ROUTINES

These routines comprise the basic software necessary for use of the 11" and 36" plotters together with a suite of functional routines.

Reference: U.Q. MNT-11 manual

(f) TECO

A character oriented editor.

Reference: DecSystem10 Users Handbook

(g) RUNOFF

A text formatting program that assists in the preparation of documentation.

Reference: U.Q. MNT-14 manual

10.4 Scientific, Statistical and other Packages

The Centre supports a large range of scientific and statistical packages. The major ones are:

(a) Scientific Subroutine Package

This package comprises approximately 250 fortran subroutines covering many areas of mathematics and statistics.

Reference: IBM SYSTEM/360 SCIENTIFIC SUBROUTINES PACKAGE

(b) Statistical Package for the Social Sciences

This is a widely used package developed at Stanford University especially oriented towards social science data analysis.

Reference: Statistical Package for the Social Sciences, McGraw-Hill, nie Bent and Hull

(c) BioMeDical Computer Programs

A number of the more frequently used programs from this package are available on the system.

Reference: Biomedical Computer Programs, University of California Press, E. & W.J. Dixon

New users of these packages are recommended to refer to MNT-3 "Statistical Packages on the U.Q. PDP-10".

10.5 Software Classification

Software distributed by the centre is classified with one of four categories:

Type 1:   Systems software that has been subjected to normal testing by the Centre. Type 1 software is accorded support in the form of documentation, educational courses, programmer consultation and correction of

software errors.

Type 2: Applications software that has been formally tested by the Centre. Type 2 software attracts the same level of support given to Type 1 software.

Type 3: Software ofgeneral interest that has been submitted by users, DECUS etc. or obtained from other sources. These programs satisfy basic standards of testing and documentation but have not been formally tested by the Centre. Type 3 software is given some support, but this has low priority.

Type 4: Software that has been conributed for general use from a variety of sources. TheCentre has done no testing of these programs and merely distributes them for the benefit of interested users. This software attracts no support.

This classification of software covers both systems and applications and specifies the level of support provided by the Centre for various items of software.

The classification given to any item of software depends, among other factors, upon use. Thus an item of software may be reclassified as usage fluctuates.

10.6 Program Library

The aim of the program library is to make available to users as many software packages and routines as possible. Material included in the library comes from a wide variety of sources. In addition to material received from Digital Equipment Corporation, DECUS (The Digital Users Group) and other universities, users are also encouraged to conribute programs of general use. Before acceptance into the library, programs must of course meet certain installation standards. Intending conributors should consult with Centre staff.

All routines and programs available in the library are catalogued and listed in the library index. The library catalogue is updated regularly and copies can be obtained from the system by printing the file CATLOG.TXT on disk area DOC:. Copies of the catalogue can be consulted in the client areas.

Once a user has decided which program is of interest, he can obtain microfilmed documentation of the program from the Program Library to view on the microfiche reader in the client area. Microfiche cannot be taken away from the area but a copy of the microfilm or a photocopy can be obtained from the Centre at a charge.

The most frequently used library routines can be accessed from the public on-line storage area as shown in the catalogue. Less frequently used routines are held off-line but users can make requests for copies on their own disk areas.

The Centre is keen to expand the library by the addition of useful programs. Requests for additional programs to be included should be made to the Director of the Computer Centre providing full details of the programs required, name and address of institution offering the programs, the charge (if any), and any known conditions or restrictions.

The program librarian will be pleased to assist users with any difficulties.

11. USE OF THE CENTRE SYSTEM & SERVICES

11.1 Registration as a User

A form 'Authority to establish new user' available from the Centre must be completed. It must be signed by the head of a university section or responsible officer recognised by the Centre in the case of external clients. Project/programmer numbers, charge code, storage limits allowed the user and initial password are specified on this form. The user must also complete a specimen signature card.

11.2 Funding and Orders

The Centre's operations are funded almost entirely from the revenue it earns. All work associated with the processing of a user's job on the system is charged to the account on which the user has been authorised to work. University sections and other user organisations are provided with monthly statements of accounts and procedures exist to protect the centre and account orders against unauthorised expenditure.

Before any work can be processed at the Centre, therefore, the account against which the user's work is to be charged must have an authorised expenditure limit. This is arranged by completing an order form available from the Centre.

The order form must be signed by the Head of section or other person authorised to sign orders. The expenditure limit will be decreased progressively by usage charges. Subsequent orders may be placed to authorise further expenditure against an account but the limit of expenditure on the previous order will be exhausted before any subsequent order takes effect.

The order form is in triplicate. The green copy is retained by the user department for checking against the monthly statement and the other two copies should be forwarded to the Centre. One of these is retained in the centre and the other is forwarded to the university accounts section.

The information on the order form includes the department name, the name of the person responsible for the project. The official account from which funds are to be supplied and the computer centre charge code. This charge code is purely a code for computer centre accounting purposes. A project must be related to a charge code but a number of projects may be grouped on the same charge code if desired.

11.3 User Identification and Passwords

Users are identified on the system by a project/programmer number (ppn). Each project has a unique number but a number of programmers can work from the same project. Usually a project number relates to a particular section or client but some large users have more than one project number. The programmer number is unique for each individual user of the project. Project owners may allocate programmer numbers themselves within a project. If a programmer works on more than one project, it is suggested he be given the same programmer number. Supervisors of designated student projects should be given a programmer number of 100. The ppn must be used when a user logs in to the system.

As identification by means of project/programmer numbers does not provide sufficient security for a users account, further personal identification is necessary.

(a) Terminal users must use a password during the logging-in procedure. This is initially allocated at the time of registration as a user but users are recommended to change it immediately by use of the program PASSWORD. The password is then not known even to the Centre as it is encoded by means of a one way cypher. Of course, it follows that if a user forgets his password, he must request the Centre to enter a new password on his project. Users should endeavour to maintain the confidentiality of their password and it is good practice to change the password from time to time.

(b) For work submitted through batch, the user's signature on the $Sequence header card is checked against the master copy of the signature provided at the time of registration as a user.

11.4 Charging

Charges are reviewed from time to time by the Computer Centre Management Committee. The current charges for all computer centre facilities are detailed in Section 17. The charge schedule is rather complex because with a timesharing system users share systems facilities. A flat time rate for a job would not be appropriate and charges are made therefore only on actual usage of facilities.

Separate rates are defined for processor time, memory space, input and output, file storage, etc. It will be noticed that a charge is made for the length of terminal connect time. This is normal with timesharing systems and is to encourage users to make effective and economical use of terminals and not abandon them while remaining logged into the system.

Since several jobs are run almost simultaneously within the PDP-10 (each job being executed in turn for a short period of time, for example, 20 milliseconds), it would be impossible to manually record system usage of a particular job. Accounting information for processor time and on-line file usage is therefore recorded as the user job runs. Spooling charges (which may be incurred before or after the job execution) are determined at the time of spooling. These, together with charges for mounting structures and other miscellaneous charges are processed each night and reduce the authorised expenditure limit on each account for expenditure control purposes. The charging information is accumulated for monthly billing.

11.5 Expenditure Control

The balance of account figure reflects the status of the users account following its last update.

A cost limit, less than the balance of the account, must be specified for each job run.

Charges are accumulated incrementally during the run and when the limit is exceeded the job stops. At this point the interactive user has the option of extending the run limit (up to the balance of the account) and continuing. A batch job however, would normally terminate.

Limits can also be set on the amount of CPU time, line printing or plotting to be consumed by a job.

If a user does overspend his authorised amount, the charges are still payable and the system will not permit the user to log-in again on subsequent days until the account is placed in credit by a further order.

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If more specific control is required, e.g. for student assignment work, a special type of account can be established. This allows the supervisor positive control over student expenditure by setting the maximum expenditure for each run and the maximum number of runs allowed.

A large amount of first year student work is processed on the MIDITRAN system. This system has been modified by the Centre to incorporate positive control on cost limits for individual student jobs.

11.6 Analysis of Charge Information

For some users the information on the monthly bills is not sufficient for management analysis, control of assignments or distribution of charges over various internal accounts. A detailed breakdown of charges in the monthly accounts can be obtained by request to the Operations Supervisor.

11.7 Conditions of Use

As a matter of formal procedure, the Centre offers its services subject to conditions of use and liability. These are detailed in Section 18 of this manual and are also printed on tHe back of each order.

The system may only be used in the manner described in the various manuals and other documentation issued by the Centre and at the charge rates which apply. The listing of systems software is not permitted except with the approval of the Director.

The Centre recognizes that no operating system can be made proof against intelligent attack and monitoring programs are run periodically to ensure that the system is being used correctly. Should cases be found where the system is not being used in the accepted manner, this may result in the immediate withdrawal of service and, if appropriate, such further action as the University considers warranted.

These points on conditions of use are raised as a matter of formal administrative procedure. The Centre's attitude is to encourage cooperation between Centre and users so that we can assist each other in maintaining a first class computing service on the campus.

12. TERMINALS

The Centre currently supports a wide range of terminals and the following list may be of assistance in planning future departmental needs.

Terminal Categories

A.   Keyboard Send Receive (KSR) - Hard Copy Print Out

A.1   Teletype represented by STC model 33, 72 print
      positions, 10 characters per second $1600

A.2   Silent Terminal thermal printer, represented by
      Texas Instruments model KSR733, 80 print positions,
      10,15,30 characters per second $1850

A.3   Teletype wide carriage, represented by STC model 38,
      132 print positions, 10 characters per second, upper
      and lower case $1850

A.4   Silent Terminal wide carriage, represented by
      G.E. Terminet 300, 118 print positions, upper and
      lower case, 10,15,30 characters per second $3850

B.   Automatic Send Receive (ASR) - Hard Copy Print Out

B.1   As for A.1 but with paper tape input/output $1900

B.2   As for A.2 but with magnetic tape cassettes $2900

B.3   As for A.3 but with paper tape input/output $2150

B.4   As for A.4 but with magnetic tape cassette $5300

C.   Video Displays

C.1   CRT Display Terminal (character) as represented by Control
      Data 713-10, 16 lines of 80 characters, 10,15,30
      characters per second $1500
              Hard copy unit - additional $1768

C.2   Tektronix model 4023, 24 lines of 80 characters, 10 to
      960 characters per second $3150

C.3   CRT Display Terminal (character) as represented by
      Information Electronics model IE131, 12 lines of
      80 characters, 5 to 480 characters per second $3150

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C.4   Graphic Display Terminal as represented by Tektronix
       model 4010, 35 lines of 74 characters, 10 to 960
       characters per second $3430

Note: The prices quoted are approximate for planning purposes
        and include cost of communications interface equipment and
        the $150 Computer Centre overhead charge.

D.   Acoustic Terminal.

Two portable acoustic coupled terminals (Texas Instruments Silent
Model KSR733) are available for temporary connections to the
PDP-10 system. Communication between terminal and computer
system is via a normal telephone line.

The connection is made by dialling a special number at the Centre
and placing the telephone handset in a cradle on the terminal.
Thus the Centre can provide a temporary service to any point
where a telephone service exists.

The Centre is anxious that academic departments exploit the use
of the acoustic terminal for teaching purposes and, as far as
possible, preference in bookings will be given for use of the
terminal in class work.

Bookings may be made through the Operations Supervisor (ext.
6471) and it would be appreciated if advance notice of bookings
could be given.

Charge rates applying to the acoustic terminal are as follows:

        Internal users –

        (a)   normal $0.60 per hour terminal connect charge, plus
        (b)   hire rate for time the terminal is away from the
              Centre, of
              (i) $1.50 per hour or part thereof with a maximum rate
                    of $10 per 24 hour day ceasing at 0830 hours,
              (ii) an overnight rate of $5 from 1830 hours until 0830
                    hours the following morning.

        The hire rates for external users will be twice those
        applying to internal users.

No privately owned acoustic coupled devices are permitted
connection to the Centre.

13.   ORGANIZATION

The Director is the chief executive and technical officer of the Centre.   He is responsible to the Computer Centre Management Committee for the effective functioning of the Centre within prescribed policy and acts under the general direction of the Deputy Vice-Chancellor (Fabric & Finance) subject to control by the Senate of the University.

The Management Committee consists of the Deputy Vice-Chancellor (Fabric & Finance) University of Queensland, the Vice-Chancellor Griffith University (or nominee), the Chairman of the Research Committee, University of Queensland (or nominee), the Head of the Department of Computer Science, University of Queensland and the Director of the Computer Centre.

The Centre is organised under four main sections:

(a)   Operations Section

Responsible for the day to day operation of the computing and data preparation services offered by the Centre.

(b)   Engineering Services Section

Responsible for the maintenance of central computing and communications equipment, the installation of new equipment and the development of the communications network. The section also provides a maintenance service for some categories of departmental computing equipment and assists departments in interfacing computers with on-line experimental situations.

(c)   Software Programming Section

Responsible for maintaining operating software, language compilers and utility programs. Develops special general use software and systems to meet the needs of the Universities.

(d)   User Services Section

Provides a contract programming service for programs required by individual users; promotes the more efficient use of computer facilities throughout the Universities by specialised consulting assistance and the conduct of training courses; implements and maintains program packages to support the teaching and research needs of the Universities.

14. DEPARTMENT OF COMPUTER SCIENCE

The Department of Computer Science is the academic department responsible for teaching and research in computing at the University of Queensland. The head of the department is Professor G.A. Rose. Enquiries regarding formal course offerings should be directed to his secretary (telephone University of Queensland extension 6952).

15. ENQUIRIES COMPLAINTS and SUGGESTIONS

Normally all enquiries and problems should be directed to the Operations Supervisor or in his absence the Operations Manager. The Director is anxious to hear directly from users having complaints regarding the level or adequacy of service offered by the Centre. Suggestions for improvement are welcome.

16. TELEPHONE NUMBERS

	Direct	University Extension
University of Queensland	370 0111	
Director (Mr Alan W Coulter)	370 3189	189
Secretary (Miss J M Dixon)	370 3189	189
Senior Systems Analyst (Mr J D Noad)	370 6391	6391
Senior Systems Engineer (Mr E J Sokoll)	370 3187	187
Systems Analyst – Software (Mr J D Lennox)	370 6943	6943
Systems Analyst – User Services(Mr J W Barker)	370 6288	6288
Operations Manager & Service Complaints (Mr C C DeVoil)	370 6168	6168
Operations Supervisor	370 6471	6471
Purchasing Officer (Mr D R Anderson)	370 6166	6166
Operations Enquiries*	370 3188	188
Computer System Status (Recorded Message Service)*	370 6101	6101
Accoustic Coupler	371 4177	

*Also for after hours queries

17. CHARGE RATES

Throughout these tables the reference to 'internal' and 'external' users apply as follows:

(a) Internal users are Departments of the University of Queensland, Divisions of Griffith University and approved institutions associated with the Universities; other approved tertiary institutions; High Schools for batch services only.

(b) External users are all other users not included in the above classes.

17.1 PDP-10 Computer Base Rates

item	charge per	internal rates $	external rates $
1. Processor time and memory space			
processor time	minute	1.00	2.00
memory space	Kwords/min	.12	.24
2. input/output			
card reading	100 cards	.05	.10
card punching	100 cards	.30	.60
paper tape reading	metre	.10	.20
paper tape punching	metre	.20	.40
file I/O	block	.0005	.001
plotting (11" plotter)	minute	.04	.08
(36" plotter - time)	minute	.08	.16
(36" plotter - paper)	metre	1.00	1.00
line printing	page	.015	.03
use of job slot	hour connect	.60	1.20
public terminal	hour connect	.60	1.20
3. file storage			
storage (on-line)	blocks/day	.0002	.0002
(archival)	1000 blocks/day	.05	.05
4. device setup			
setup of printer for non-standard stationery		1.00	1.00
setup of digital plotter		.60	.60
mounting removable disk pack		1.00	1.00
mounting magnetic & DECtapes		.40	.40
5. device usage			
assign time for disk drive	hour assign	4.00	8.00
assign time for mag tapes	" "	3.00	6.00
assign time for DECtapes		.40	.40

access to DECtape through FILE		.40	.40

6. device rental

Private disk pack			
hire per month		20.00	20.00
capital contribution for 3 year availability		400.00	400.00
magnetic tape			
hire of 2400 ft. tape/month		2.00	2.00
hire of 1200 ft. tape/month		1.00	1.00
storage charge per month		0.50	0.50
DECtape			
hire per month		1.00	1.00
purchase and certification/tape		15.00	15.00
storage of privately owned tape/month		0.50	0.50

7. Dedicated Mode Service

Dedicated use of PDP-10	hour	150.00	300.00

The basic rates listed in the following schedule can be varied by a number of factors.

(a) **Priorities**

Batch jobs and spooling functions can be assigned a priority code in the range 0 - 62. This code determines (with other factors) the order in which the system selects jobs to be executed, jobs with higher codes being given precedence over jobs with lower codes. If no code is specified, the value 10 is assumed as standard.

The following table gives the factors by which the standard rate is multiplied, for the priorities used.

priority code	pricing factor internal	external	comment
1 - 2	.25	1.0	
3 - 4	.5	1.6	
5 - 9	.3	1.6	
10	1.0	2.0	Normal priority. (Default if priority switch omitted)
11 - 20	1.5	3.0	Default if no argument is given with "PRIORITY" switch.
21 - 40	2.0	4.0	
41 - 60	3.0	6.0	

61 -62   4.0   8.0

For terminal users priorities are applied to spooling operations only.

Note that for printing and plotting functions the 0.25 rate (or half rate external) will not apply. For these functions, the system will automatically change the pricing factor for priority codes 1 and 2 to the pricing factor for priority 3-4.

(b)   Deadlines

Some spooling functions provide a 'deadline' option which enables the user to specify the time by which a job must be completed.

This is implemented simply by the system increasing the job priority as the deadline approaches, until the priority is so high that the job is executed. Hence no exact specification of the charge for a given 'deadline' job can be given.

(c)   Time of Day

After 1800 hours terminal users will be charged at 0.8 of the normal rate for interactive work. After 2100 hours and at weekends, the rate will be 0.5 of the normal rate. (Note that the "normal" rate for external users is twice the rate which applies to internal users). Spooling is charged according to the priority the user allocates.

A summary showing the influence on charges of charge rate factors is as follows:

charge item	charge rate factor
processor time memory space job slot file I/O public terminal connect time	terminal user 0.8 of normal rate after 1800 hrs Monday to Friday
	batch users rate varies according to argument nominated in priority switch within the range 0.5 of normal to 5 times normal rate for internal users and 0.8 to 5 times normal for external users
plotter spooling line printer spooling	terminal and batch users rate varies according to argument nominated in priority switch within the range 0.5 of normal to 5 times normal rate

for internal users and 0.6 to 5
times normal for external users

card reading and punching	normal rate at all times except for connect time fee on private disk packs which is 0.5 normal rate after 1800 hrs
device setup and assignment	
consumable items	

17.2 Consultations

It has been approved that a charge be made for consultations at the rate of $12.00 per hour. This charge is levied at the discretion of the Computer Centre.

17.3 Data Preparation

	facility	charge per	internal rates $	external rates $
1	keypunching	hour	5.40	10.80
2	interpreting	hour	2.70	5.40
3	verifying	hour	4.30	8.60

Advance bookings can be made for data preparations services. Details can be found in Section 19.

17.4 Miscellaneous

Please note that these prices are correct at time of publication but may change at any later date.

	charge per	cost $
coding pads	pad	0.50
flowchart templates	each	1.00
H.S.P binders	each	1.35
*order books	pad	1.45
printer layout pad	pad	0.50
printer paper 11"X15"	1000 pages	6.40
2part	page	0.015
4part	page	0.035
special stationery	supplied at cost price	
Parastick labels	page of 11 labels	0.075
Terminet ribbons	each	3.30
Terminet paper	2000 sheets	21.75
*teletype paper	roll	1.75
*	fanfold	6.50
*teletype ribbons	each	2.75

* available to Univ. departments from Univ. Store.

17.5 Contract Programming Rates

The Centre offers a programming service to users. The service has advantage to academic sections. Rather than employ a part-time programmer, they can use the pool of professional staff at the Centre. The charge rates approved by the Computer Centre Management Committee are:

Internal:
(i) Programming and Systems work for projects involving 25 hours or less of continuous work, or for projects not of a continuous nature ... $12.00 per hour

(ii) Programming and Systems work for projects of a continuous nature greater than 25 hours ... the actual salary costs of the staff involved (based on a 230 day year) plus a 15% management fee.

External
(i) Programming and Systems work ... $20-25 per hour

(ii) Advanced Programming and Systems work ... $25-30 per hour

18. <u>CONDITIONS OF USE and LIABILITY STATEMENT</u>

Experience within the Computer Centre has shown that it is necessary for the Centre to accept orders for computing services subject to defined conditions of use and defined limits of liability in the event of a claim. This is common practice in the majority of computing centres.

The conditions of use and liability statement below, as approved by the Vice-Chancellor, conditions the acceptance of work.

1. In these conditions

    (i)   the word "client" shall mean the person, whether a member of the staff of the University or not, ordering the work and responsible for the payment therefor;

    (ii) the word "work" shall mean the work undertaken by the University in fulfilment of the order on the face hereof.

2. The University shall be under no liability for breach of contract or as to any matter or thing of whatsoever nature arising out of or in connection with its undertaking the work, save and except as provided in these conditions, and in particular and without limiting the generality of the foregoing, the University will not in any circumstances be liable for any incidental or consequential damages of any nature or kind whatsoever.

3. The client shall within fourteen days of the completion of the work notify the Director of the Computer Centre in writing of any error resulting or alleged to have resulted in incorrect or lost results. In the event of no such notification being received by the Director, the work shall be deemed to have been accurately and correctly performed.

4. Subject to the next succeeding condition, where such notification has been received and it is established that an error has caused incorrect or lost results, the Computer Centre will undertake a re-run of the work at no extra charge, provided that a re-run is possible. In the event that no re-run is possible the University will refund to the client an amount equal to the amount paid by the client to the University as the cost of the run in which the error was detected, but shall be under no other or greater liability.

5. (a) If such notification is in respect of an error which has either been reported by the Computer Centre or is attributable to failure by the client to conform with procedures of which the Computer Centre has given notice by publication in the Computer Centre's Bulletin

more than fourteen days prior to the occurrence of the error, the University and the Computer Centre will be under no liability to re-run or to make any refund in respect of that error.

(b) The University shall be under no liability to re-run or allow credit where an error in results has resulted from an error of judgement or interpretation by Computer Centre personnel.

(c) The University will be under no liability for any loss resulting from the failure of the client adequately to safeguard himself against the possibility of loss of information within the system.

6. Without limiting the effect of any of the above conditions, if any material furnished by the client is lost, destroyed or damaged as a result of neglect on the part of personnel employed in the Computer Centre or breakdown or fault in the machinery, and the client provides the Computer Centre with all source information in machine readable form necessary to restore that material, the Computer Centre will do so.

7. Nothing in the above conditions will require the University or the Computer Centre to accept any liability or undertake any re-run when incorrect results, loss of results or material, or destruction of or damage to material occur as a result of or in connection with the use by the client of other than the supported facilities or the use of supported facilities in other than the approved manner.

8. The University will instruct all personnel engaged in the Computer Centre that they must protect the confidentiality of information and material furnished by clients but shall be under no liability whatsoever in the event of any improper disclosure by such personnel.

9. The University will be under no liability for any loss or damage resulting from or in connection with delay in proceding with or completing the work.

10. The work is undertaken by the University on the condition that the client warrants that the work can be performed without the infringement of any patent or breach of any copyright and the client hereby indemnifies and forever saves harmless the University and each and every member of its staff against all actions, claims or demands for infringement of patent or breach of copyright which may be brought or made against the University or any such member of its staff arising out of or in connection with the performance of the work.

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11. The client acknowledges that no warranty, conditions or representation on the part of the University has been given or is to be implied from anything said or written between the parties or their representatives or contained in any publication of the University or the Computer Centre, and any warranty, condition or representation, including but not limited to any warranty, condition or representation as to the ability of the Computer Centre is hereby expressly excluded.