COLUMBIA UNIVERSITY IN THE  
CITY OF NEW YORK  
COLUMBIA COMPUTER CENTER  

January 2, 1963

I. Purpose:

The Computer Center is maintained by the University as a research and service facility for its faculty, research staff and students. The primary function of the Center is to provide the computing support required by the educational and academic research programs at the University.

II. Organization:

The policies which govern the activities of the Computer Center are formulated and maintained by a Policy Committee appointed by the President. The Computer Center is administered by a Director reporting to the Vice President.

III. Availability of the Equipment Administered by the Center:

The computing and related equipment at the Center is available for:

1. Projects of research under the direction of the academic staff of the University which are consistent with the purposes of the University and which are subject to financial audit by the University Administration.
2. The activities of the faculty and students of the University which are essential to, or appropriate for a degree program in the University.
3. Other activities at the University deemed by the Policy Committee to be in consonance with 1. and 2.
4. The activities of the faculty and students of other accredited universities or colleges which are in consonance with 1. and 2.

Applications for the use of the equipment must be approved by the Director and/or the Policy Committee. All questions of policy are subject to final review and decision by the Policy Committee.
IV. Charges for Computer Time:

The University wishing to encourage the widest possible use of the Computer Center for research and instruction, will make the facilities of the Center available to the activities mentioned in Section III without billing users directly for computer time. There will be no charges at hourly rates for computer service furnished to any project which falls into one of the categories enumerated in that Section.

Under a proposal pending with the U.S. Government the University expects to recover through supplements to the indirect cost allowances the respective shares of the costs of the Computer Center which are attributable to use of the Center on research projects supported by contracts with the U.S. Army, Navy, Air Force and Atomic Energy Commission. By this method every contract with one of these four agencies will contribute to the costs of the Computer Center in proportion to the salaries and wages billed to the contract and not in proportion to computer use time. The Controller will set up the necessary arrangements to block sufficient funds from each Army, Navy, Air Force and AEC contract to cover the increase in indirect costs attributable to the Computer Center.

No assessments of this kind and no charges of any other kind will be made for service furnished by the Computer Center to research projects supported by other governmental agencies such as the National Science Foundation, which has made a generous grant in support of the Center, and for the present the U.S. Public Health Service.

V. Equipment:

The data processing equipment at the Center consists of a 7090-1401 system in the Computer Room, and auxiliary punched card equipment in the EAM room. This equipment was purchased from the International Business Machines Corporation and is maintained under a service contract with the IBM Corporation. The International Business Machines Corporation has contributed a share of the normal purchase and maintenance charge for this equipment through its Educational Allowance Program. This program subjects the University to additional charges if this equipment is used by a non-university agency or if it is used extensively by the University for activities other than those connected with instruction or academic research.
V. Equipment:

In more detail the equipment at the Center consists of:

1. The 7090 System:

This system consists of the 7090 central processing unit, power and control units, and the following input-output and storage units:

- Memory: 32,768 words of magnetic core storage.
- Data Channels: two, A and B.
- Magnetic Tapes: four 729 VI drives and one 729 V drive on channel A; four 729 VI drives and one 729 V drive on channel B. One additional 729 V drive may be switched from the 1401 system to each channel.
- On-Line Equipment: Card Reader, 250 cards/minute. This reader reads 72 card columns only. Printer, 150 lines/minute and up to 120 characters per line.

2. The 1401 System:

- Memory: 4000 character positions.
- Magnetic Tapes: two 729 V drives. Two additional 729 V drives from the 7090 system may be switched to the 1401 system or the two 729 V drives on the 1401 may be switched to the 7090 system.
- Card-Read-Punch: reads 800 cards per minute and punches 250 cards/minute
- Printer: prints 600 lines/minute with up to 132 characters/line.

The 1401 system is operated by the Center as an input-output device for the 7090 computer and consequently it is unavailable for other use except in exceptional circumstances.
3. Auxiliary punched card equipment:

4 type 026 printing keypunches (one with a special device to permit duplication of binary cards).

1 type 407 tabulator-printer (with the H character set).

1 type 519 reproducing punch (with regulated power supply enabling it to duplicate binary decks).

1 type 085 collator.

1 type 082 sorter.

1 type 557 alphabetic interpreter (with the H character set).

VI. Supplies:

Cards punched at the Center and paper printed at the Center are supplied by the Center if these supplies are used in the normal course of work on an authorized project and the consumption of supplies by the project is not unusually large. Magnetic tapes for the temporary storage of information are provided by the Center and kept in the Tape Library. In no case can tapes belonging to the Center be removed from the Library. Projects desiring to retain personal possession of magnetic tapes must purchase these tapes from a supplier.

VII. Authorization Procedure:

1. Application:

In order to use the equipment in the Computer Center it is necessary to write a letter of application to the Director of the Computer Center. Acceptable sponsors of Computing projects must be members of the University's regular academic faculty holding the rank of instructor or higher. Other acceptable sponsors may be designated by the Policy Committee.
VII. Application (Cont'd)

For purposes other than the use of the equipment in connection with approved courses of instruction, the letter of application should include the title of the project, a brief but meaningful description of the problem and the role of the computer, and a University address and telephone extension where the applicant can be reached. If any part of the work carried out at the center in connection with the project involves persons other than the applicant, a list of those persons and a statement of their role in the project must be included in the letter of application. The applicant must also state whether or not the project is in any way related to research which is supported financially by a non-university source and if the research is so supported, the applicant must list the source of support and identify the contract or grant. The application should also include an estimate of the number of 7090 and 1401 hours required for the project and an estimate of the number of cards to be used and the maximum number of reels of tape which must be reserved at any one time over the period of the project. If use of the auxiliary punched card equipment is required for the project, the application should include an estimate of the hours required on these machines. If during the course of a project, its scope, personnel, or support status should change, the applicant should send a statement defining the change to the Director.

Letters of application for the use of the Computer Center facilities in connection with approved courses should be signed by the course instructor and should include the number and title of the course, and a list of those students enrolled in the course who will use the computer for the processing of assigned problems and projects.

Projects related to thesis research must be sponsored by a member of the faculty on the student's thesis committee or the faculty director of the study project, and the application must bear the written endorsement of the project by this faculty member.

When an application has been approved by the Director and/or the Policy Committee, a notification bearing an assigned computer project number and authorization to use a specific amount of computer time will be sent to the University address given. The assigned project number must appear on the service request card and program identification cards used in submitting programs to the 7090.

Authorization to use the Computer Center facilities in connection with research projects is subject to review or termination at regular intervals (see below) and a request for a continuation or renewal may be necessary on research of a continuing nature.

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2. Review and Renewal:

Authorization for use of the Computer Center facilities in connection with research projects by the faculty and academic staff is valid for a period of six months, or until the time allocated to the project has been used, whichever occurs first. At the end of each period for which authorization is granted or extended, the original applicant will be requested to indicate a need for its continuation and be asked to submit a brief statement of the status of the project, and an estimate of the subsequent computing requirements of the project. If a termination is requested, or is implied by failure to respond to the request for a continuation statement, the computer project will be removed from the Computer Center's active list. Authorization to use the Computer Center facilities in connection with courses or thesis research automatically terminates at the close of each semester. An extension of a thesis research project will be approved only if the student is regularly enrolled in the University.

3. Termination:

A termination report relating to the original and amended problem statement is requested, regardless of whether the project was successfully terminated or abandoned. A reprint of a published paper or a printed report or abstract qualifies as a termination report. If programs are produced during the course of a project which might be useful to others, the Center welcomes the receipt of write-ups and decks with which to augment the Program Library.

VIII. Computer Center Operation:

1. Staff Duties:

The duties of the staff are to operate the 7090 and 1401 computers for the computer users; to give counsel and instruction in problem formulation, programming, numerical analysis and data processing; to maintain and develop a library of programs of general applicability at the University; and to promote the interchange of information related to computing methods and use by publishing newsletters and arranging suitable seminars and colloquia. The staff is also responsible for giving short intensive courses in programming which will enable untrained users to use the equipment at the Center. The staff members of the Center are not available to code or program specific problems or to operate the equipment in the EAM room.
VIII. Computer Center Operation (Cont'd)

2. Hours:

The normal working hours are from 9 A.M. to 5 P.M. Monday through Friday, excluding University Holidays. During this period only, maintenance engineers will be available to service malfunctioning equipment. With the approval of the Director, special arrangements may be made to use the auxiliary punched card equipment at other hours. Use of the 7090-1401 computers at times other than normal working hours involves the presence of qualified operators trained in Center procedures and such use will be granted only if qualified operators are available and a clear and urgent need is demonstrated for such use of the 7090 or 1401.

3. Reserving Auxiliary Punched Card Equipment Time:

A clipboard holding time reservation sheets is kept in the EAI room for reserving time on the keypunches. The procedure is to enter your name and project identification number opposite the time at which the keypunch is to be used. During the working day (9 A.M. to 5 P.M.) the maximum reservation for any project number on any type machine is one hour with the exception of the express keypunch which can be reserved for no more than 10 minutes during any two hour period. If, however, the equipment is not in demand it may be used for a longer period.

4. 7090-1401 Operating Procedures:

The 7090 computer will ordinarily be operated under the control of a monitor or supervisory program which automatically executes "standard" programs without delay between successive programs, and by means of an attached clock records the time required to process each program. Programs and data are ordinarily written on magnetic tape by the 1401 prior to execution on the 7090 and the output from the 7090 is written on tape for printing on the 1401. Use of a monitor system minimizes idle time on the 7090 required to set up a non-monitor run and consequently all users are asked to conform to rules of program construction so as to operate within one of the standard monitor systems maintained at the Center.
A description of the systems maintained at the Center and rules for their use will be kept in the Library of the Center. Users will be notified of any changes made in these systems by the Computer Center Bulletin.

Jobs will ordinarily be run on the 7090 in the order of their presentation to the receptionist-dispatcher except that short debugging runs with programmer present may be placed in front of jobs which are lengthy or require special operator intervention. The purpose of this scheduling procedure is to facilitate the debugging of problems which require many short runs with a small amount of printed output. This procedure will hopefully minimize programmer idle time. When the programmer is present, error messages will be printed on the 7090 on-line printer, if they are not too numerous, and an effort will be made to put this listing in the programmer's hands as quickly as possible. A list of requirements for programs deserving this special treatment will be kept in the library.

No programmer will be permitted in the 7090-1401 Computer Room without permission of the Director. Operation of the 7090 is complicated and requires the full attention of the 7090 operator. Traffic around the 7090 console can be distracting, and can lead to operator errors. The console of the 7090 has been placed in front of the viewing window in the Reception Room so that programmers may view the activities in the Computer Room if they are interested in these activities.

Completed job information will be filed in the Reception Room where it may be picked up. At periodic intervals the receptionist-dispatcher will record the names of persons with completed jobs. The recorded message bearing the names of persons with completed jobs can be heard by dialing Extension 2228 or CCGU for Computer Center, Columbia University using a local telephone.

A detailed description of the procedure for submitting a job to the receptionist-dispatcher and for picking up jobs will be maintained in the Library. The staff at the Center will be happy to clarify any of these procedures and to assist programmers in conforming with these procedures.
5. The Computer Center Library:

A description of Programming Systems available at the Center and the rules pertaining to their use will be maintained in the Library. In addition a description of procedures for using equipment and submitting work will be available in the Library and all programmers are requested to familiarize themselves with these procedures.

The Library will also contain decks and write-ups of programs of frequent use. Less frequently used programs will be saved on magnetic tape. These programs and write-ups can be obtained by requesting them from the Librarian. The Center is a member of the Share Organization (a cooperative group of 704-709-7090 users) and is therefore given abstract and order cards for routines distributed by Share. A list of routines available through Share is maintained in the Library. Routines of interest will be ordered by the Center Librarian, if they are not already available at the Center. Programmers using a library program who find the write-up ambiguous or who find a "bug" in a library program are requested to make these facts known to the Librarian immediately. The Librarian will maintain a list of people who have used each program in the Library along with any comments these people may have made regarding the quality of the program.

The books and materials maintained in the Library are for reference use in the Library only and are not circulated except to the staff of the Center. In most instances other copies of these books and periodicals are available for circulation in other libraries at the University.

6. Programmers' Room:

The Center has a Programmers' Room where Programmers may work while at the Center. Temporary card storage space is available in the Programmers' Room. This space is assigned by the Librarian. Desk calculators are also available in the Programmers Room for use in checking programs.
7. Programming Classes:

The staff of the Center will teach short intensive programming courses designed to train the University faculty and students in the use of the equipment at the Center. These courses will be tuition free and non-credit. Priority in filling class quotas will be given to persons who are preparing themselves to pursue a project at the Center. Students applying to take one of these courses must obtain the written permission of their faculty advisor or Departmental Representative and must be regularly enrolled at the University. Application forms may be obtained from the Secretary of the Center.

8. Consulting:

The Center will have available during normal working hours professional programmers with whom users or prospective users of the Center facilities may seek advice and counsel on programming questions and other problems related to computing. A list of Center staff members and the hours during which they are available for consultation will be posted on a bulletin board at the Center. Staff members may be consulted at other hours by appointment.

9. Malfunctioning Equipment:

Malfunctioning equipment should be reported immediately to the Receptionist-Dispatcher. Only staff members are authorized to open the covers of the equipment at the Center.

10. Injuries:

Any injury should be brought to the attention of a staff member immediately.
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<tr>
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<th>Tel. Extension</th>
<th>Room Number</th>
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<tr>
<td>Automatic Telephone Answering Service</td>
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<td>Dr. Kenneth M. King</td>
<td>3160</td>
<td>201</td>
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<tr>
<td>Miss Lucia Mendes</td>
<td>3161</td>
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<td>Mr. York Wong</td>
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<td>Mrs. Jayne Pisani</td>
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<td>Miss Joyce Kerr</td>
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<td>Mr. Thomas Conroy</td>
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<td>Miss Alice Gottlieb</td>
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<td>Miss Diane Rode</td>
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<td>Library -Miss S. DiMartino</td>
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<td>Dr. Sterbenz</td>
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<td>Lamont-Nevis-Watson</td>
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<td>Customer Engineering Room</td>
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<td>Reception Room-Computer Room</td>
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<td>Mr. Michael Barrett -Computer Operator</td>
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<td>Miss Marianne Brown-Receptionist</td>
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