

COLUMBIA UNIVERSITY COMPUTER CENTER

PROJECT ABSTRACTS

July 1971 to June 1972

Columbia University
New York, New York 10027

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PREFACE

This report has been prepared to give an account of research, instructional, and administrative work done at the Columbia University Computer Center. It covers the period from July, 1971, through June, 1972. The Introduction describes the development of the system from the opening of the Center through the installation of the coupled 360/75 and 360/91. The remainder of the report contains information on user projects and administrative work.

We have attempted to include in this report an account of every project that used computer time during the fiscal year 1971-72. Title and researcher information and, in most cases, a brief description of computer work are given here in a section arranged by project identifiers. All projects are referenced in a Title Index; since the "key word in context" format is used, the Title Index also serves as a subject index. A directory of departments and sponsoring organizations precedes the list of research projects.

There is necessarily much duplication of material that appeared in previous reports, since many projects span reporting periods. Where appropriate, the abstract provides information on the development or completion of the project, and on any publications resulting from it.

The information on user projects has, in large part, been extracted from Center records, which were of course not designed for producing this report. We want to apologize for projects omitted or incorrectly classified, and for all other errors. We appreciate being informed of corrections.

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INTRODUCTION

The Columbia Computer Center opened on January 2, 1963, with its initial equipment consisting of a purchased IBM 7090 and 1401. A 1410, shared by the Registrar's Office of the University and the Computer Center, was added in August 1963; and the 7090 was upgraded to a 77094-1 in November 1963. The system was further upgraded by the addition of a rented 7040 to form a 7-40-7094 directly coupled system in May 1965.

At this point development of the second-generation system ceased; the computer system at Columbia was stable and saturated, and plans were begun for conversion to third-generation equipment. In June 1967 a rented 360/50 and in August 1967 a purchased 360/75 were added. The 7040 was discontinued in February 1968. In December 1968, the 77094, the 1401, and the 360/50 were removed to prepare for the installation of a 360/75-360/91 multiple processor system.

The 360/91 was installed during the first two months of 1969; during this period the stand-alone 360/75 was the operational system. Toward the end of February 1969, the computing load was transferred to the Model 91. Since that time, a series of incremental improvements have been applied to the operating system, including: optimization of OS multiprogramming; refinement of ASP priority scheduling; improvement of resource allocation and usage measurement; upgrading of the remote terminal system; upgrading of OS, ASP, and applications systems; addition of 2 million bytes of large-capacity storage on the Model 75; and implementation of the coupled /75-/91 system.

The Computer Center is maintained by the University as a research and educational facility for its faculty, research staff, and students and to support the data-processing requirements of its administrative offices. The policies that govern the activities of the Center are formulated and maintained by a Policy Committee appointed by the

President of the University. The Center is administered by a Director who reports to the Vice President for Information Services.

The programming staff of the Center is responsible for maintaining and developing a library of systems and applications programs of general use at the University, and for promoting the interchange of information related to computing methods. The staff also offers a variety of intensive, tuition-free courses in programming designed to enable untrained users to develop some programming competence quickly.

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

1. projects of research under the direction of the academic staff of the University that are consistent with the purposes of the University and that are subject to financial audit by the University administration;
2. the activities of the faculty and students of the University that are essential to or appropriate for a degree program in the University;
3. computing activities related to the support of internal administrative functions at the University; and
4. other activities of faculty and students at Columbia University, or activities of other institutions, that are deemed by the policy committee to be in consonance with the purposes of the Center and the University.

Non-staff computing work conducted at the Computer Center falls into three categories. Instructional projects support both courses designed to teach some aspect of computing (additional information on these may be found in the University Bulletin for the Computer center) and courses in areas other than computing which use the 360 for research computations. Research projects, which comprise the bulk of non-staff computing work, include those conducted by University faculty, by the staffs of University-related organizations, by students doing dissertation research, and by non-University organizations conducting research requiring computer use. Computer work that provides University offices, students, faculty, or staff with processed information falls under Administrative projects. The project information in this report has accordingly been grouped as Instructional, Research, and Administrative.