Northumbrian Universities Multiple Access Computer

Universities of Durham and Newcastle upon Tyne

The central processer multiple disc and drum storage units of the IBM 360/67 computer.

Peripheral units of the 360/67 computer.

The users view of a modern computer a terminal for the time sharing System 360 Model 67 computer.
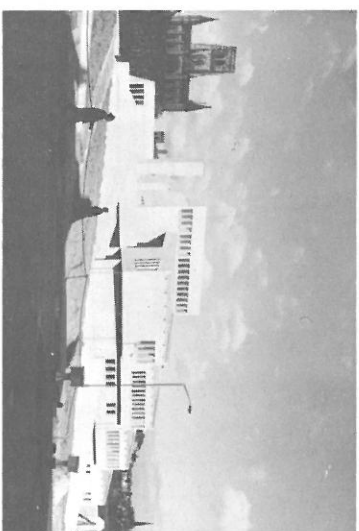
The majority of the demand on the computing system will arise from research workers in science, engineering and medicine, although other workers, especially in the bibliographic and social science fields, will make substantial demands. Although the needs for computer time for each student example are slight, the numbers involved produce an appreciable demand from this source also.
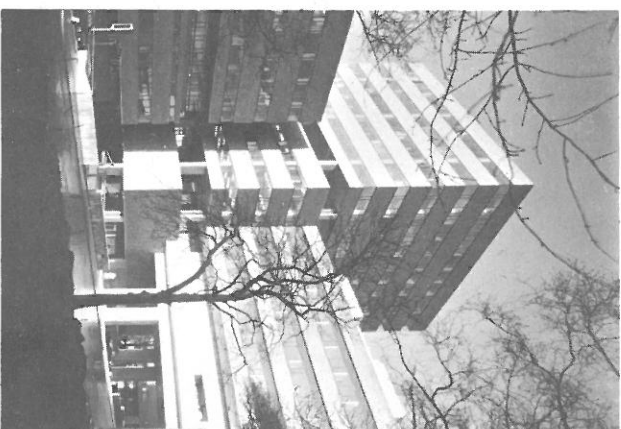
Dunelm House   Durham

The Claremont Tower   Newcastle

N.U.M.A.C. INAUGURATION - 18 March 1968

The Northumbrian Universities Multiple Access Computer (N.U.M.A.C) is the name given to the system installed to serve the computing needs of the Universities of Durham and Newcastle upon Tyne. N.U.M.A.C. is the first computing system in the United Kingdom to be jointly owned and operated by two universities; such co-operation has enabled a much more powerful system to be available for use by research workers and students than could have been bought by either University acting alone. The total cost of about £1 million has been provided by pooling grants of £400,000 and £175,000 to the two Universities from the Computer Board, by a substantial allocation from the Universities themselves and by a generous contribution under their Educational Scheme by IBM (United Kingdom) Limited.

When the Model 67 is operated in time-sharing mode, several users in Newcastle and Durham will be working simultaneously at typewriter terminals under the experimental time-sharing system TSS/360. The users will be able to employ a conversational approach, entering modifications to programs or data through the keyboard and receiving information from the typed output. They will be able to call upon their own programs and data previously stored on the multiple disc unit and upon common information also available there. Initially, six terminals in the Newcastle laboratory and two in Durham will be connected, followed shortly by five more at different places in the Newcastle campus and others at Durham. Other programs will be processed as a background task, depending on the activity at the terminals.

The arrangements for running the system are aimed to ensure that, after initial agreement on the general principles of operation, each University is free to adopt its own policy for the allocation of time and facilities among its members within its share (70%) for Newcastle and 30% for Durham). The design of the 360, Model 67 and the programming systems to be employed permit this independent control of its use. The running costs are being provided by an annual grant from the Computer Board for early years of the system's operation. Systems programming, advisory and operating staff have been appointed in both Universities and will work with the programming and engineering staff from IBM (United Kingdom) Limited to provide the services that the users require.

Data preparation in the Newcastle University Computing Laboratory

The 1130 Computer Terminal at Durham

The computer chosen is the IBM system 360, Model 67; situated in the University of Newcastle upon Tyne Computing Laboratory are the central processor unit, the core store of 512 K bytes (K = 1,024, byte = 8 bit character), a drum of 4 million bytes, a multiple disc unit capable of holding 233 million bytes available for access on eight replaceable discs, magnetic tape drives, appropriate selector and multiplexor channels controlling the flow of information and peripheral devices including printing, card and paper tape equipment and graph plotters. A small on-line satellite computer, the IBM 1130, also with printer, plotter, card and paper tape equipment, has been installed in both Durham and Newcastle. Typewriter terminals have been placed in Durham. A wide range of data preparation equipment for both cards and tape is available in both Universities.

The Model 67 can operate either as a fast multiprogramming batch processing system or as an experimental time-sharing system. In the former mode, the 1130 in Durham is connected to the central system by a private G.P.O. line and programs and data may be entered from the peripheral units in Newcastle and Durham, results transmitted to them and another program executed at the same time under the control of a systems program (HASP). Programmers will be able to refer to programs or data previously recorded on magnetic disc or tape. At times an 1130 in the Newcastle Computing Laboratory will be connected in the same way as the Durham 1130. When either 1130 is not connected to the main system, it can be used separately as an efficient computer for small research applications or student examples.