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AUG 12 1969

TO: Prof. Smullin  
FROM: M. L. Dertouzos  
SUBJECT: Educational Computer Needs  
DATE: Aug. 11, 1969

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Attached are:

- (1) A brief statement of our needs, for inclusion in your letter to Prof. Wiesner. I have included foreseeable expansion plans on the basis of our group discussions, and I have left out costs, as you requested.
- (2) A Summary of our conclusions to date, for internal use or/and justification of our proposal.
- (3) A rough before-and-after Table for our own internal use.

*M.L. Dertouzos*  
M. L. DERTOUZOS

CC: Profs. Bruce, Corbato, Davenport  
Fano, F. Lee, Luconi  
Searle, Thornton, Weizenbaum  
Messrs: Brammer, Mills

August, 1969

Educational Computer Needs of E. E. Department  
for 1969-1970

The E. E. Department, in order to meet its current undergraduate educational computer needs, and in order to encourage the use of computation in undergraduate subjects, proposes the following:

1. Establishment of a service, consisting initially of 3 and, by the end of the year, 6 consoles, concentrated in the ground floor of Building 10. The 3 initial consoles will operate on an open-shop basis, 16 hours/day, as dedicated APL users on the 360-67. The remaining consoles will operate on MULTICS when it becomes available, and on non-APL services of the 360-67, on a negotiable basis, according to need and available resources.
2. To make this service possible, the Department will undergo expenditures for the following foreseeable items:

A. Immediately

1. Guaranteed 360-67 APL service, 16 hours/day on 3 consoles.
2. Supervision of service and help to its users by one T.A. equivalent, borrowed from the subjects using the service, who will be physically present at the service site.
3. Equipment costs necessary to rent consoles, provide basic supplies, and miscellaneous items such as log books.
4. Direct and Indirect cost associated with day-to-day administration of the service and development of the service by and for individual subjects.

B. Later in the year

1. Three additional consoles, and computer time to accommodate MULTICS and non-APL 360-67 use.
2. Costs involved with the use of one or two portable terminals for class demonstration, and program development.

C. Beyond the first year

1. Expansion of service in number of consoles and possibly in the type of useable resources.
2. Addition of auxiliary helpful computational devices, such as an electronic desk calculator, a display terminal and related peripherals.
3. The service is intended for undergraduate use. We plan to (i) encourage use for undergraduate courses (excluding 6.47), projects and S. B. theses; (ii) permit use by S.M. thesis students and graduate subjects, only to the extent of available free time, and (iii) discourage or altogether exclude use of the service for Ph.D theses and sponsored research.

Committed users are expected to load the service initially by 150 console hours/week, and later in the year by 300 console hours/week. The proposed load factor of about 50% is intended to (i) encourage use of the service by new subjects, and (ii) insure the availability of consoles to the students.

August, 1969

Summary of our conclusions on E. E. Department educational computers

The following is a summary of our (the UEPC subcommittee and it's working group) conclusions and recommendations, in approximately inverse chronological order:

1. The type of service expected in the fall of 1969 is APL on the 360/67 and some, as yet undefined, service from MULTICS, when it becomes available (November).
2. Six terminals are now on order. Their target location is in Bldg. 10, near the present computer facilities. At least for the fall semester, all the consoles will be concentrated in that location to permit some form of supervision and to maximize use of each console. It is expected that we will start with 3 consoles devoted to APL use, and will add more according to need or when MULTICS becomes available. So far as portable terminals are concerned, we will wait and see how satisfactory they are (several of these have apparently been ordered for MULTICS use), and we will probably try one out for classroom demonstration during the fall.
3. The service will be essentially open shop. Teaching Assistants will be borrowed from the subjects using the service, and will be assigned to "supervise" use of the service. This supervision will consist of:
  - (1) Logging-in all the consoles early in the morning, and logging out in the evening (probable hours 9:00AM - to 11:00PM). Alternatively, I.P.C. could arrange for the service to shut down automatically at a specified time.
  - (2) Helping the student both in terms of the problem and in terms of the programming systems.
  - (3) Insuring that the student signs in on a log-book, indicating his problem, the type of service used, and the time spent. This information will be used for evaluation purposes, and for planning changes in the service. There will be no other formal log-in procedure and students may come in at any time, although it is expected that they will tend to use the service, when their T.A. is around (which in turn permits some control of the time distribution of users).

If more supervision is needed especially in the evening, it can be done with the help of part-time students.

4. At least for the first year, there should be no special fees charged for computer-time or for incidental expenses such as paper, ribbons, log-books etc.

5. If we find that students have difficulty in locating an available console, we will assign one console for express use, with an upper bound on user's time (10 min.).

6. This service is intended for use by undergraduates of our department, so that within sensible limits we will (i) encourage use for undergraduate courses (excluding 6.47), projects and S. B. theses; (ii) permit use by S.M. thesis students and graduate subjects, only to the extent of available free time, and (iii) discourage or altogether exclude use of the service for Ph.D theses and sponsored research.

7. Assignment of T.A.'s will be handled by Professors of subjects using the service in cooperation with Prof. Bruce. Day-to-day decisions on administrative matters and routing of specific problems will be handled by Mr. Brammer. The responsibility for evaluating the service, planning for the future and in general for taking actions with educational implications will rest with the working group (Mr. Brammer or Prof. Bruce, and Profs. F. Lee, Searle, Thornton and Dertouzos).

8. Prof. Smullin should perhaps write a letter to our faculty letting them know of the service and encouraging its use in undergraduate subjects.

EDUCATIONAL COMPUTER USE OF E.E. DEPT

VERY ROUGH ANALYSIS\*

ACTIVITY	RESOURCE	SEMESTER COST	USE OF NEW SERVICE	COMMENTS
6.47	360-65	\$6,000	NO	Not allowed to use new service Not a clear user of on-line Very eager to return to on-line Desires portable terminal and displays Prefers decentralized consoles
6.251	" "	\$7,000	NO	
6.231	" "	\$10,000	YES (MULTICS)	
6.564	APL-Yktn	\$3,000	YES (APL)	
6.341	" "	\$3,000	YES (APL)	
6.544, 6.60 & Misc.	Variable	\$6,000	?	
Academically Supported Theses	Variable	\$7,000	YES PARTIALLY	Expected to be initially low,
Equipment Costs	Keypunches Consoles APL lines	\$10,000	YES PARTIALLY	No need for APL lines, and reduction of consoles
Salaries (PDP1 & Academic Administr. of computer time).	-	\$20,000	-	Academic use of PDP1 is now minimal. Future must be resolved.
-	Tx-0	-	-	Not used. Recommend donating it, or using it in labs.

\* semester costs are based on 1968 and 1969 data, and on crude approximations

- Notes 1. Prof. F. Lee plans to use small machines for his subjects but may use the service
2. Project Labs are potential users of new service, for simulation purposes
3. 6.531, 6.471, 6.001, 6.002 are potential users of this service