COMPUTERIZATION OF HONORS STUDENTS

ID 499
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OBJECTIVES OF PROJECT

The computer is a fast, efficient and time saving machine. As a programmer for the Ball State Computer Center, as well as an honor student, the author hoped to use this efficiency in aiding the Honors Program as it currently operates and as an aid in future selection of honor students.

The address labels as well as the three other reports produced by the system will be of great benefit to the program and the personnel involved. The address labels saves the tedious typing of nearly nine hundred labels for each newsletter and other communique. The name and address grade report serves as an immediate source of information both to the secretaries and to the director, Dr. Vander Hill. The slow task of sorting through a listing of all 16,000 plus students at Ball State to find the current scholastic ratio of the students on the Honors Program is now an event of the past. Under the new system only those students currently on the Honors Program are listed on the report.

The two reports containing information on the individual students can be used by the director as an aid during an interview. The current scholastic standing and the student's high school record can be compared and discussed. This may lead to some helpful discussion or "soul searching" as to why the student is doing more
poorly in college than in high school or why the student is not producing what he is capable of producing.

The statistics report on the honor students as a group can be very beneficial when analyzed. What characterizes the average honor student? What is the average scholastic ranking of the honor students? Are the honor students taking advantage of the pass-fail grading system, if so, how many credit hours have they taken on pass-fail? What is the percentage of males and females in the Honors Program? What is the percentage of students which drop the program and during what period in their schooling does this dropping of the program occur? What is the credit hour load of a typical honor student? How did the Ball State honor students rank on their S. A. T. and Achievement test scores? What percentage are out-of-state students? Does the honor student come from a large or a small high school and how did the student rank in his high school graduating class? What are the technical qualities a person should possess to be a good risk for selection to the Honors Program? These questions and many more can be answered either directly or indirectly from analysis of the report. Thus the reports are a good indication of the success of the program and the success of the students involved. In terms of the past successes or failures of the program and by analysis of the previously mentioned information of current students on the program, the director, Dr. Vander Hill, will have a good indication of the requirements for acceptance of future honor students.
In searching for a topic for ID499 the author was interested in a challenging and beneficial project to himself and those involved. Hoping to keep the subject narrowed to some use of the computer at Ball State University, the mathematics department was first approached. Finding no interest or suggestions from the math department, the idea of some service to the Honors Program evolved.

The first step in the development of the project was to check with the computer center about the feasibility of some such project. On discussing the idea with the head of applications programming and getting a positive response, the next step was to approach Dr. Vander Hill with the proposal.

Dr. Vander Hill was very receptive to the idea of the project, in fact, he offered to act as sponsor for the project. After some discussion about what the reports would contain, it was decided that when full plans had been formulated there would be another meeting to finalize the project outline.

The next step was to return to the Computer Center and get the project officially approved and started. This required that requisitions for the reports be signed by the requesting department head, Dr. Vander Hill, and the manager of systems at the Center. Before the manager of systems could sign the requisitions, there had to be a systems flowchart available for his approval. The systems flowchart is a graphic diagram of the programs, their
functions, and the files which are used. After the system was approved, the programs were given job numbers and requisition numbers. The requisitions were then signed and released to the author for programming.

The first task was to define a new field in the student master which would hold the honors code to indicate the student was on the program. Once the position was decided upon, the layout was drawn up and distributed to all staff in the center.

The coding of the programs was the next step in the process. The four programs required were:

1) An update program to add and delete people from the Honors Program.
2) A program to print local address labels for the students on the program.
3) A program which turns out two reports; a name and address grade report and an individual student information report.
4) A statistical study report of the entire Honors Program.

After coding the programs, they were submitted to keypunch to be punched into data cards. Upon receiving the source decks from keypunch, the job control cards were added and the programs were run on the computer to find the syntactical and keypunch errors. The process of debugging the programs took several runs on the computer and much correcting of the source deck and logic. With the programs free of syntactical errors, the next step in
Testing was to create test data to test the programs on. Using a program previously written by the author, a test student index file and a test student master file were created on a disk work area. Cards containing the social security numbers of people in the test files were punched and used as input to the update program. The update program read the cards and put a "H" in the honors field of the corresponding student master record. After building the honors code, the rest of the programs could be tested on the updated student file.

Running the programs against the test files uncovered errors in logic in the programs. By analysis of the results or output from the programs, these logic errors were uncovered and corrected. With the logic corrected, the programs were now ready to be tested against the live or actual data.

The actual building of the live files turned out to be somewhat of a problem. Since the student database is indexed by the student's social security number, the social security numbers of all the honors students were required. This information, however, was not available. All that was known were the student's names. In order to acquire the student's social security number, another program was written which would match names from card input with the names in the student database and punch out cards containing the student's social security number and full name. The list of students was acquired from the Honors House and submitted to
keypunch to be punched on cards. These cards were used for input to the one-shot program and cards with the social security number and name of the student were punched out. These cards had to be audited and checked for errors. Since many of the names on the list received from the Honors House had no middle initial and/or the first name specified was a nickname or incorrectly spelled there were many mismatches and duplicate cards punched. Sorting through these incorrect cards by hand and correcting them when possible was a tedious and time consuming process. After correction, the punched cards were ready to be loaded to the live student database master.

The four programs were now ready to be run with the live data. The update program loaded the honors code and the three other programs printed out the four reports. The logic of the programs was again checked and corrected according to the results of the test run on the live data. Due to the invalid and mismatched names, the reports contained many students which were not on the program and omitted some that were on the Honors Program. The name and address report was taken to the Honors House and hand checked for these discrepancies. The update information to correct the file was received from the Honors House and loaded to the file by the update program. All four reports were again run and taken to the user, the Honors department, for final approval.
With the programs all working and the reports given final approval, the documentation of the system could now be finished. Each program has two folders containing the following information:

1. Program narrative
2. Systems flowchart
3. Program flowchart
4. Source listing of the program
5. Sample input (if any)
6. Sample output (if any)
7. Control card layout
8. List of job control language used
9. Input, output formats
10. Run procedures
11. Copy of the program requisition

One folder is put in the operations room and the second folder is placed in the programming library. The instructions for the running of the entire system as a unit is also required in the operations room. At the time the documentation is released, the source decks are catalogued into the operations library so that the programs can be executed on request. After being catalogued the decks are stored in card drawers indexed by the program numbers. After the documentation and source decks are turned in, all responsibility for running and delivery of the reports is with the computer center and not with the programmer.
The above process is the procedure for initiation, development, and completion for a new system at the Ball State Computer Center. All steps are required and to omit one would leave room for costly error or dissatisfaction on the part of the computer center personnel or on the part of the user.
The label report is a list of the honors students and their campus addresses. These labels are primarily a labor saving and time saving help for the secretaries of the Honors House. No longer will they have to type each address and name by hand. The names and addresses are printed on pre-gummed labels. There are forty-eight labels to a page, four across and twelve down. The labels are easily peeled off the surface they are on and placed on the envelope or card which is to be mailed to the honors student. Once on the card or envelope the labels are almost impossible to remove. The labels are in alphabetic sequence and contain only those persons on the Honors Program.
The name and address, ratio report contains the following information:

1. Student name
2. Student's local address
3. Sex
4. Classification
5. Cumulative grade point ratio

The sex field contains "M" for male or "F" for female. The class field contains the following codes:

"1" -------- Freshman
"2" -------- Sophomore
"3" -------- Junior
"4" -------- Senior
"5" -------- Graduate student

The grade ratio is the cumulative ratio for all quarters which the student has attended Ball State University.

The name and address report will provide a quick source of information as to the honors students addresses and their current grade point ratios. Previously the only way available for checking grades was to sort through the entire list of students at Ball State. This report will hopefully prove much more efficient and convenient.
INDIVIDUAL STATISTICS REPORT

The individual statistics report lists all the students on the Honors Program and gives their Ball State statistics and information on their J. A. T. and Achievement test scores. Each student is identified by his name and social security number. The other information given is sex, class, U. S. citizen, marital status, race, matriculate or transfer student, military duty, hours registered, teaching code, curricular code, majors, minor, pass-fail hours, hours earned, and grade point ratio. The report can be interpreted by use of the following key:

Sex: Sex is broken into two codes, "M" for male and "F" for female.

Class: Under class, the different codes are:
1-----Freshman
2-----Sophomore
3-----Junior
4-----Senior
5-----Graduate student

Citizenship: A "U" is specified if the student is an United States citizen and a "I" if he is not.

Marital Status: For marital status, an "M" is the code for married and a "S" is the code for single.

Race: Although race is usually not specified, "A" is for American Indian, "B" is for Black-American, "C" for Caucasian, and "O" is for the others.
Matriculate or Transfer: Under this heading, a matriculate is designated by a "M" and a transfer is denoted by a "T".

Military Status: If a person has not been in the military a blank is shown, otherwise the following codes hold:
- A-----Army
- C-----Coast-guard
- F-----Air Force
- M-----Marines
- N-----Navy
- Y-----Other

Hours Registered: The hours registered heading contains the number of hours for which the student is currently registered.

Teaching Code: If the student is on the teaching curriculum, a "Y" is placed in the teaching code column. If the student is not on teaching then the column is left blank.

Curricular Code: The curricular codes are those assigned by the University to the different curricula that it is possible to follow a course of study in.

Major and Minor Codes: The first and second major codes and the first minor code are again those assigned by the University. If the major code or the minor code are not specified, then the student is at present undecided as to his major or minor.

Pass-Fail Hours: The total number of pass-fail hours the student has taken are specified under the pass-fail heading.
**Hours Earned:** The number of hours listed under hours earned are the student's total number of hours for all his quarters at Ball State.

**Grade Point Ratio:** The ratio listed is the student's cumulative ratio for all the classes taken at Ball State University. If the student is an upperclassman but has zero values for hours earned, hours registered and cumulative ratio it is because of an incomplete grade that the student has received and not yet made up.

**S. A. T. Scores:** The S. A. T. math and verbal scores listed are the raw scores and not the percentile rank of the student.

**Achievement Test Scores:** As with the S. A. T. test, the raw scores are listed for the four achievement test scores.
The statistical analysis report gives a break-down of all honor students as they are arranged within a particular category. The report is arranged as in the following formatted example:

**SEX**

<table>
<thead>
<tr>
<th>SUBDIVISION</th>
<th>NUMBER</th>
<th>PERCENTAGE</th>
</tr>
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<tbody>
<tr>
<td>Male</td>
<td>244</td>
<td>30.461</td>
</tr>
<tr>
<td>Female</td>
<td>557</td>
<td>69.539</td>
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</tbody>
</table>

In the above example, "sex" is the main division title, "male" and "female" are the subdivisions under sex. In this particular example there were 801 students on the program, 244 or 30.461 percent were males and 557 or 69.539 percent were females.

The main division titles of the report are:

1. Sex
2. Marital status
3. Classification
4. Matriculate or transfer
5. Race
6. Citizen
7. Relations from or at Ball State
8. Number of dependents
9. Military service
10. Hours registered
11. Teaching code
12. Number of pass-fail hours
13. Grade point ratio
14. Financial aid
15. S. A. T. math scores
16. S. A. T. verbal scores
17. Achievement test scores
18. Student employment
19. Indiana resident
20. High school size
21. Campus housing
22. Percent rank in high school
23. Member of an organization.

The divisions which contain accurate information are broken down into subdivisions. Single and married are the two subdivisions under marital status. The classification heading has freshmen, sophomores, juniors, and seniors as its four subdivisions. The hours for which the student is currently registered is subdivided into four groupings. These groupings being less than twelve hours, twelve to fifteen hours, sixteen to seventeen hours and eighteen or more hours. Pass-fail hours taken are placed in six different ranges. The hours specified for pass-fail are the students total hours that he has taken on pass-fail. Below 3.000, 3.000 to 3.199, 3.200 to 3.399, 3.400 to 3.599, and greater than 3.600 are the subdivisions.
of the grade ratio. The ratio used is the student's cumulative average. The S. A. T. math and verbal scores are separated into seven groupings. The scores used are the raw scores of the test. The Achievement Test scores are also divided into seven subdivisions. Since the student can have from one to six Achievement scores the calculation is of necessity a little different. The raw scores are summed up and the average of the scores is calculated. The calculated average is the information which is used. The division header, High School Size, is divided into two groupings. A small school is termed as one in which the graduation class was smaller than three hundred students. If the graduating class was three hundred or over, then the school is termed as a large school.

Some of these divisions contain little or no accurate data at the present time because of the newness of the student files or because of government directive. The government at one time stated that no account of race was to be kept, so the information on race is incorrect. The number of dependents a person claims is information that in the past has not been gathered or used. The consequence being that the information contained in the field is incorrect or missing. The field for persons receiving financial aid has not yet been updated for the new student files. The result being that no one is shown as receiving financial aid. The same is true of the fields for student employment and place of residence. Due to the change in computers the information has not been gathered and placed in the student's files.
To keep the system intact and running as it presently is requires yearly renewal of the requisition forms. If any change in the frequency of the reports or in the output format or content is wanted, then these changes are noted on the new requisitions. If the changes are feasible and not too difficult they will be included in the system immediately. If, on the other hand, the change would involve extensive system modification then the user may be asked to come in for a conference to discuss the specified changes.

Updating of the system is accomplished by sending the social security numbers of the persons to be added or dropped from the Honors Program to the control auditor at the computer center. The list of numbers is then routed to keypunch where the social security numbers are punched into cards. The cards are used as input to the update program which builds or deletes the honors code from the master file.
SUMMATION

It is the author's hope that the computerization of the reports and labels will be of use to the Honors Program. The efficiency of the label program is quite apparent, as is the usefulness of the name and address grade report. The two statistical programs will require some familiarization to obtain their maximum usefulness. It is hoped that these two reports will be of use in picking future honors students.

One question which was ask was: "What are the characteristics of the average honors student?" By an analysis of the statistical report it appears that the average honors student is a single female in the freshman or sophomore class. She is a white, United States citizen and has been at Ball State University for all her college schooling. She is not related to anyone at Ball State, and she is on the teaching curriculum. She is registered for a maximum class load of sixteen to seventeen credit hours. She has not taken any courses on a pass-fail basis and has better than a 3.000 accumé average. She scored in the fifty to seventy range in math and in the fifty to sixty-five range in verbal S. A. T. raw scores. The average of her Achievement tests is a little lower at the fifty to sixty raw score range. She is an Indiana resident from a small or medium size school who ranked in the upper ten percent of her high school class. She lives on campus and also works at a student job. Thus we have Miss Honors Student of Ball State University.
ACKNOWLEDGEMENTS

The author would like to thank all those whose help was so vital to the completion of this project. Special thanks to Dr. Vander Hill for his cooperation and ideas and for volunteering to sponsor the project. Thanks also to the secretaries at the Honors House for their help with the validation and updating of the reports. At the computer center, special appreciation to Tim Flint for approving the project, to Tom Gagnon for his cooperation in use of computer time and to Vera Mansfield for her patience.

Again, special thanks to Dr. Vander Hill for being the sponsor. The author hopes the reports are worth the effort and time of all involved.