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5th Floor, Hunt Library
Carnegie Mellon University
4909 Frew Street
Pittsburgh, PA 15213-3890
Telephone: 412-268-2434
Email: huntinst@andrew.cmu.edu
Web site: www.huntbotanical.org

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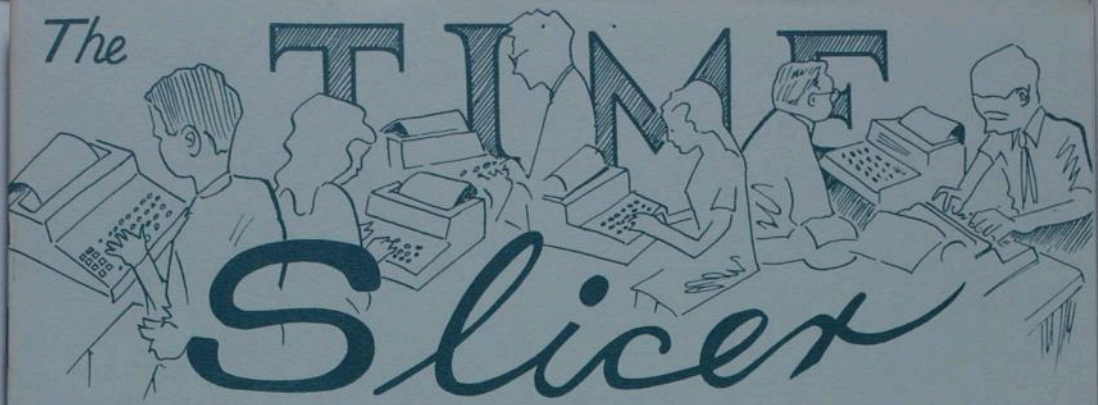
About the Institute
The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, portraits and data files, and provides publications and other modes of information service. The Institute meets the reference needs of botanists, biologists, historians, conservationists, librarians, bibliographers and the public at large, especially those concerned with any aspect of the North American flora.

Hunt Institute was dedicated in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971 the Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography and the Library.



SYSTEMS AND COMPUTING
COMPUTER SCIENCE DEPARTMENT

Vol. 3 No. 4 Washington State University September, 1969

COMPUTER SCIENCE DEPARTMENT

O. Rechard, W. Walden

In June of this year the Board of Regents for Washington State University voted approval of a change from "Information Science Program" to "Computer Science Department." The use of the word "Program" implied that most faculty members held joint appointments in another department and the Information Science Program. The change to use of the word "Department" implies recognition of the fact that several faculty members may want to devote their entire research and instructional efforts in the Computer Science area.

Because this change has been made, we take this opportunity to describe the new department in the Time Slicer. The programs in Computer Science are designed to prepare graduate students for professional careers or research in the field of Computer Science or in closely associated areas. In addition, courses are available at the undergraduate and graduate level to provide a background of knowledge and skills for those students who will require some competence in computing for application in other fields of specialization. There are degree programs for the Master of Science and the Doctor of Philosophy in Computer Science. A description of courses is given below. Courses numbered 500 or greater are open only to graduate students.

Description of Courses

CPT S 200 Introduction to Computers
Study of computer characteristics which portend major influences on society.

(cont. on p. 2)

TAXIR, AN INFORMATION RETRIEVAL PROGRAM

R. Dutton, M. Massara, W. Walden

A taximetrics information retrieval program, TAXIR, was developed and programmed at the University of Colorado Taximetrics Laboratory by Bob Brill, George Esterbrook, and David Rogers. This version was implemented on a Control Data Corporation 6400. The group is continuing to make changes and improvements to the program.

The program has been converted to the IBM 360 Model 67 here at Washington State University and we will describe this version. The program is written in FORTRAN and the source deck consists of approximately 2200 cards. 120K bytes of core storage are required for the program. Additional core storage is required for the data bank, which varies in size from one application to another.

The data bank for a particular application is based on three concepts; an item, a descriptor, and a descriptor state. A data bank has N items and M descriptors. Each item usually has a descriptor state for each descriptor. If a descriptor state is missing or unknown, a special code which indicates this is entered in the data bank. As an example a collection of books could correspond to the items, "publisher" could be one of the descriptors, and "Prentice-Hall" could be a descriptor state for one of the books.

The program has three basic parts; the accession module, the define item routine, and the query routine. The accession module reads the number and names of descriptors and descriptor states and defines basic areas and codes. In particular, a descriptor is read followed by each of the possible descriptor states which may be used for that descriptor. Using the example of a book

(cont. on p. 6)

Taximetrics Lab.

February 3, 1971

Dr. Willis Skrdla
Regional Director
North Central Plant Introduction Station
Iowa State University
Ames, Iowa 50010

Dear Dr. Skrdla:

Dr. Sam Dietz at Pullman told me that you are interested in using the TAXIR system for your plant introduction data. Since I was the original developer of the system, I am naturally interested to know of your plans with respect to the system. Which plants will be put into the system, about how many PI's there will be, etc.

I will be happy to have any information you care to share with me about your plans in this regard.

Sincerely yours,

David J. Rogers
Professor of Biology

Taximetrics Lab., Armory 101 Oct. 31, 1969

Dr. William Walden, Director
Computer Center
Washington State University
Pullman, Washington 99163

Dear Bill:

We've had a couple of informal letters (not on your letterhead) from Terry L. McCoy, asking for TAXIR listings. We responded to his first letter saying that he should contact you about this, to which re replied that he is taking Ron Dutton's job, at least with respect to TAXIR. Is this true?

We want to continue our collaboration, when and if we can. We had hoped that Sam Dietz could sell the idea to USDA, such that we might get some funds to make it possible to turn over the up-dated, revised, more flexible system now in its final stages of completion. Can you talk over the possibility of a contract from USDA to us, through Sam or you? I think it much more probable that a contract could be awarded if the initiative were taken there, rather than for us to go after it. Of course we'll be glad to give you all the needed back-up for writing a contract, if this direction meets with yours and Sam's approval.

I'll be interested in your response.

Sincerely,

David J. Rogers
Professor of Biology

Oct. 21

Dear Mr. Brill,

I received your letter recently concerning my request. Thank you for your time.

I am taking over the TAXIR project at Washington State University. Ron Dutton is working on another project and I am taking his place.

He suggested that I contact you and obtain an up-dated printout of your TAXIR system. I would still like to obtain that printout, if possible.

To date, no routine has been written to correspond to your CORRECT ITEM. That is what I am working on now.

Sincerely,

Terry L. McCoy

WASHINGTON STATE UNIVERSITY
PULLMAN, WASHINGTON 99163

COMPUTING CENTER

November 10, 1969

Dr. David J. Rogers
Taximetrics Lab.
Armory 101
Department of Biology
University of Colorado
Boulder, Colorado 80302

Dear Dave:

Terry McCoy has replaced Ron Dutton. He is a new student and I didn't realize he had written to you. He is working informally on a disk version of TAXIR and helping Cal Konzak and Lee Hudson. He was simply interested in finding out about any changes you may have made that we should incorporate in the 360 version.

You may have received, by now, some copies of The Time Slicer. Feel free to use them as you wish. In the article we suggested that potential users contact you.

I have sent Sam a copy of your letter and requested that he visit with me about the possibility of a USDA contract. I will let you know what develops.

Best regards,

William E Walden

William E. Walden
Director

WEW:mmr

WASHINGTON STATE UNIVERSITY
PULLMAN, WASHINGTON 99163

DEPARTMENT OF AGRONOMY
December 1, 1969

Mrs. Genevieve Michel
Assistant Scientific Attache
Ambassade De France Aux Etats-Unis
2129 Wyoming Avenue, N. W.
Washington, D. C. 20008

Dear Mrs. Michel:

Your letter to Dr. William Walden, Director of the Washington State University Computing Center, was referred to me. I do not know exactly the article to which you have reference. However, we are enclosing a copy of a manuscript to be published soon in Economic Botany. This paper deals with some general aspects of documentation and a concept of a system of records on plant genetic resources.

We have not yet published papers on more recent work using a computer information retrieval system called TAXIR. TAXIR was originally developed by the Taximetrics Group led by Dr. David Rogers at Colorado State University, Boulder. The system was originally designed for taxonomy applications. It is written in Fortran IV originally for a CDC 6400, though we have revised part of the program set for use on our IBM 360-67. Some of the collaborators in the project (S. M. Dietz and L. W. Hudson) have now accumulated most of the available descriptive information on stocks of about 3200 out of 5000 of the USDA Phaseolus collection. This compilation of data is already being used economically to help in answering specific requests for genetic stocks for analyses of the collection and for exercises in an agronomy advanced plant breeding course.

The research conducted at Washington State University is associated with the program of the Crop Ecology and Genetic Resources Branch of the Plant Production and Protection Division of FAO and of the Genetics and Plant Breeding Section of the FAO/IAEA Division of Atomic Energy in Food and Agriculture.

I am presently serving as coordinator of an FAO/IAEA working group on international standardization in crop research data recording.

Thank you for your inquiry. I hope that this information is useful to you. We look forward to having more cooperators in this endeavor.

Sincerely,

C. F. Konzak
Professor

CFK/bem
Enclosure
cc: W. E. Walden L. W. Hudson
S. M. Dietz D. J. Rogers

Taximetrics Laboratory

Armory 101

October 16, 1969

Terry L. McCoy
B-11 Kamiak Apts.
Pullman, Washington 99163

Dear Mr. McCoy,

A version of the TAXIR system is already operative on the IBM 360 at Pullman. For more information please contact William Walden, director of the WSU computer center and Ron Dutton, WSU graduate student in computer science.

Sincerely,

R.C. Brill
Taximetrics Laboratory

Oct. 9

Dear Sir,

I am working on your TAXIR program trying to convert it to use on the IBM 360, Mod 67 here at W. L. U.

I would appreciate your sending me an up-dated print out of your program.

Any help you could give me on the conversion problem would be greatly appreciated.

Sincerely,
Terry L. McCoy

Bob: Please answer this - Refer him to their computing center

Taximetrics Laboratory

Armory 101

25 September 1969

Mr. Ron Dutbon
Computer Center
Washington State University
Pullman, Washington 99163

Dear Ron:

Thanks for returning our Manihot data tape.

We don't need the bean data bank at this time, so I'm returning that tape to you. Thanks.

Regards to all our friends at Pullman.

Robert C. Brill

RCB:gm

WASHINGTON STATE UNIVERSITY
PULLMAN, WASHINGTON 99163

COMPUTING CENTER

July 23, 1969

David Rogers
University of Colorado
Boulder, Colorado

Dear Dave:

I am enclosing a copy of an article that appeared in the Pullman Herald. A similar article, I understand, appeared in the Spokane Chronicle. The next time publicity is generated we will credit George Esterbrook also.

I am also enclosing a copy of my letter to Dean Crowe. We are very much interested in extending our 360 version of TAXIR to a form that will take data off of disk drives, and Ron and I are looking forward to talking to Bob Brill about this. Tell Bob that if he wants to take that 7:25 flight out of Denver which arrives in Spokane at 9:15, that Ron and I will be glad to come up and pick him up in Spokane. I am used to the drive and it will give us a chance to talk to him some about the program, so we will be glad to do it. It will save you some money too, since he won't have to rent a car.

I am sorry I won't be around when you come up to visit, however, Ron Dutton did a good job on the demonstration in the meeting this month and I am sure he will do as well in August. The portable terminal worked fine.

Best regards,

Bill

W. E. Walden
Director

WEW:dh

WASHINGTON STATE UNIVERSITY
PULLMAN, WASHINGTON 99163

COMPUTING CENTER

July 23, 1969

Lawson Crowe
Dean, Graduate School
University of Colorado
Boulder, Colorado

Dear Dean Crowe:

Professor David Rogers has asked me to write a letter describing our use of the TAXIR program at Washington State University. The TAXIR program was developed at the Taximetrics Laboratory at the University of Colorado, the primary work being done by Professor David Rogers in association with Bob Brill and George Esterbrook. For some time certain research scientists in the College of Agriculture at Washington State University have been looking for an information retrieval program which would be suitable to their needs. Unfortunately, most of the programs that we in the Computing Center have been able to locate, which would do the job, have been much too general. As a result, they use too much core storage or are very inefficient in time of execution. We found that TAXIR was ideally suited to retrieval of information relative to bean data. As a result, we have converted TAXIR to the IBM 360 Model 67 and have begun to use it with the bean data collection on the Washington State University campus. We are so enthusiastic about the use of TAXIR for this collection that we would like to see it extended to handle larger collections of data. As a matter of fact, we plan to do this, if necessary funds come available, and use the extended program for wheat data. We would think that the same program would be quite useful at the University of Colorado and hope that a parallel effort will be made for the Control Data Corporation 6400.

The programmers in the Computing Center who have converted TAXIR to the IBM 360 Model 67 have commented that they consider the programming effort, by the Taximetrics Laboratory personnel, for the CDC 6400 to be extremely clever and outstanding in every way. Our association with this group has been helpful, informative and pleasant. I hope that they continue to remain in the same capacity at the University of Colorado.

Sincerely yours,

W E Walden

W. E. Walden
Director

WEW:dh

N. PITTS
Administration, U.S. Ed
Public Health Service, National sprin

Computer Retrieval Programs Introduced

Would it be possible to learn in a few minutes which wheats from Turkey have disease resistance, or where African farmers grew yellow seeded sorghum varieties, or what variety of wheat should be planted in Central Iowa?

Yes, by using computer retrieval programs like the one demonstrated each noon for participants in the Symposium on the Induction and Utilization of Mutations in Plants being held at WSU July 14 to 18.

IF A BEAN GROWER wants to know what variety of beans he should plant in his geographic location with its climate, soil type, disease and insect problems, he can feed his question into the computer, which will process the question against the data in its information bank and find the answer.

Sherl M. Dietz, of the U.S. Department of Agriculture plant introduction staff, and Leland W. Hudson, WSU horticulturist, are preparing to use the computer retrieval system under development at WSU to process questions from scientists wishing to have information about bean varieties useful for breeding, improved resistance, and other features.

THE COMPUTER retrieval system is being shown to scientists at the plant mutations symposium as a means of retrieving information on genetic resources, which include induced mutations, said Dr. Calvin F. Konzak, WSU professor of agronomy and genetics and coordinator of the symposium.

The system is designed to serve as a basic step toward an operational world-wide system coordinated by the Food and Agriculture Organization, Konzak said. WSU is doing research in the developing aspects of the genetic resource information system that eventually will be operated in Rome, he said.

THE COMPUTER RETRIEVAL program, originally developed a year ago by David Rogers and Bob Brill at the Taximetrics Laboratory of the University of Colorado, has been converted at WSU into one that will run on IBM, Model 67, by Ron Dutton and Mary Massara, graduate students in Computer Science. The original program was developed for a computer called Control Data Corporation 6400.

WASHINGTON STATE UNIVERSITY
PULLMAN, WASHINGTON 99163

COMPUTING CENTER

July 23, 1969

Professor K. G. Briggs
Department of Plant Science
Faculty of Agriculture
University of Alberta
Edmonton 7, Alberta
Canada

Dear Professor Briggs:

Thank you very much for your letter of inquiry about the computer program TAXIR which was demonstrated at the 2nd International Barley Genetics Congress at Washington State University. We would be most happy to provide you with a listing of our 360 version of the program. Also, if you would send us a magnetic tape, 9-track, 800 bpi, we would be happy to give you a copy of the program. I cannot guarantee, at the present time, that we will maintain the system. However, I can say informally that we would probably be able to provide you with any changes that we find improve the program or correct errors discovered after we send you a copy. Perhaps I could give you a bit of the history relative to TAXIR. TAXIR was developed for a Control Data Corporation 6400 at the University of Colorado. The development, design, and programming was done by David Rogers, Bob Brill, and George Esterbrook. We have converted that program so that it will run on an IBM 360 Model 67. I am sending you a listing of the program under separate cover and will look forward to receiving a magnetic tape from you so that we can send you the program itself.

Sincerely yours,

W E Walden

W. E. Walden
Director

WEW:dh

FACULTY OF AGRICULTURE

DEPARTMENT OF PLANT SCIENCE
• HORTICULTURE • PLANT PATHOLOGY
• PLANT PHYSIOLOGY AND BIOCHEMISTRY
• WEED SCIENCE AND CROP ECOLOGY

THE UNIVERSITY OF ALBERTA
EDMONTON 7, ALBERTA, CANADA

July 14, 1969

Mr. B. Walden
Computing Center
Washington State University
PULLMAN,
Washington, U.S.A.

Dear Sir:

During my recent visit to W.S.U. to attend the 2nd International Barley Genetics Congress I was able to become familiar with the general purpose of the computer program TAXIR, which is being used for information retrieval for the USDA World Bean collection.

As I am interested in setting up a similar information storage and retrieval system for our own plant breeding programs at the University of Alberta I would be very interested in receiving a listing of the program TAXIR. The program demonstrators at the Congress indicated that it would be available on request and I should write to you for information.

I would be most grateful if you could assist me in obtaining this program and any pertaining information.

Yours sincerely,

K. G. Briggs

KGB/ms

AUG 4 1969

FACULTY OF AGRICULTURE

DEPARTMENT OF PLANT SCIENCE
• HORTICULTURE • PLANT PATHOLOGY
• PLANT PHYSIOLOGY AND BIOCHEMISTRY
• CROP ECOLOGY AND PLANT BREEDING

THE UNIVERSITY OF ALBERTA
EDMONTON 7, ALBERTA, CANADA

Crop Ecology and Plant Breeding,
University of Alberta,
Edmonton 7, Alberta.

July 25,1969

Mr. W. E. Walden,
Computing Centre,
Washington State University,
Pullman, Washington 99163
U.S.A.

Dear Mr. Walden:

I thank you for your very prompt and kind assistance concerning my recent request for the 360 version of the program TAXIR, and look forward to receiving the listing which you mailed under separate cover.

Whilst I should also like to thank you for offering to make us a tape copy of the program I do not think that at this time we will have an immediate requirement for a tape. At this stage we are concerned mainly with accumulating a wide variety of computer programs which will be of use in servicing the plant breeding program which we are now getting started. I suspect that TAXIR, with modification if necessary, will be useful in solving one of our main problems of information storage and retrieval.

Yours sincerely,

K. G. Briggs

KGB/cs

WASHINGTON STATE UNIVERSITY
PULLMAN, WASHINGTON 99163

COMPUTING CENTER AND PROGRAM IN INFORMATION SCIENCE

February 6, 1969

Professor David Rogers
TaxiMetrics Lab
University of Colorado
Boulder, Colorado

Dear Professor Rogers:

I am one of the persons involved in the translation of TAXIR for use on the IBM 360-67 at Washington State University. We have found that we have no information or source decks of the following:

IAM	IADROP
WRT280	INITIA
FRAME	DATE
CMNHLD	INFO
CMHLD	

Would you please send us the source decks for these to the above address in care of me. We would also appreciate a general flow chart, if available, and as many detailed flow charts as possible.

Thank you for your help.

Sincerely,

Mary Massara

Mary Massara

MM:gb

February 13, 1969

Mary Massara
Washington State University
Pullman, Washington 99163

Dear Miss Massara,

The subroutines you mention in your letter fall into two types. IAM, WRT2SO, FRAME, CMNHLD, CMNHLD, IADROP, and INITIA are part of a larger set of subroutines which permit us to query a TAXIR data bank from a console keyboard and to receive responses on a console display tube. You are not aware of the balance of the subroutines in this set because they are called in their turn by the subroutines named above. The total package is, of course, inapplicable on your machine. If you have a similar console device, you probably also have a similar set of subroutines (which you can use as is or have tailored for your use). Note that in the neighborhood of the calls on these subroutines you will find calculations of parameters to these subroutines. These calculations will have to be rewritten to supply parameters for your console subroutine package. If you do not have a console device, then it will be necessary to remove from the program all coding that is reached after successfully

testing the value of the variable INTYPE to be equal to 3.

The other two subroutines mentioned in your letter, DATE and INFO, are routines in our system library for reading the current date and for reading elapsed time on the central processor and peripheral processor. I don't know if the concept of central and peripheral processor means anything on your machine, but here we are charged at different rates for central processor time (calculating) and peripheral processor time (input/output). You will have to substitute your own routines for these.

As for flowcharts, the only one we wrote is the one which covers the query section and we sent this to Dr. Walden recently. I would suggest that we have some technical sessions together during which I can answer your questions and give you further explanations. I believe that Dr. Walden expects to be passing through our shop fairly soon. In the meanwhile, if you have problems that can't conveniently wait till Dr. Walden's visit, please call me at 303-443-2211, ext. 6712 and I will be glad to help you.

Sincerely,

Robert C. Brill

20 December 1968

Dr. William E. Waldon
Computer Center
Washington State University
Pullman, Washington 99163

Dear Bill:

This is to let you know that we will meet programming costs according to our verbal agreement, up to $5,000, between January 1 and July 1, 1969.

Please submit a bill for programming services to me at the Taximetrics Lab.

Sincerely,yours,

David J. Rogers
Professor of Biology

DJR:gm

LONG DISTANCE CALL FROM BILL WALDEN

Tuesday, January 17, 3:30 PM

He has permission from the necessary Vice President to go ahead with the conversion of TAXIR to the IBM 360 at our expense.

However, he needs a letter from you saying that you can pay up to $6,000 between January 1 and July 1, 1969, for such service, so he can go ahead and hire a programmer to get started.

If you want further details, you can call him back.

William E. Walden
Computer Center
Washington State University
Pullman, Wash. 99163

5 February 1969

Dr. William E. Walden
Computer Center
Washington State University
Pullman, Washington 99163

Dear Dr. Walden:

By far the most complex portion of the TAXIR system is the query scan and execution part. I am enclosing some documents which should aid you in your conversion of this difficult section.

At our meeting in Pullman in November, you mentioned that you might be passing through Denver early this year. If you are still planning to do so, we would welcome a visit from you. you. We would be glad to help clear up any questions you may have raised while digging into the TAXIR system.

Regards to Ron Dutton.

Sincerely,

R. C. Brill

RCB:gm
Enc.