

Present status of database for diffusion in melts

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Abstract

A database system has been developed for the project in NASDA for diffusion phenomenon. The function of data retrieval was newly added to the database system. Microsoft Excel, which is the software produced by Microsoft corporation, was adopted for the addition of a function of retrieval. At present, the database has a handy and easily extensible character, by which users can add the new data by themselves.

1. Introduction

Until the last fiscal year, we had developed the database system for the diffusion research. It can be thought that the developed database is a simple database, because we can collect the data easily by changing the data on paper medium into electronic data (if needed, PDF form) timely. In this database, we can also set up the link for accessing to related data. Moreover, we add the new data to the present database system. On the other hand, because of the absence of retrieval function in the present system, the quick access to required data has been difficult. Under the condition described above, only the link system has been helpful for finding the related data. However, the access to related data has become difficult further and further with the increase of data amount in the database.

Therefore, in this year, the function of retrieval was planned to be added and a trial system for it was prepared.

Followings were adopted as the premise of constructions of retrieval system.

- Following to the previous plan, the database is open only to members of diffusion project.
- Introduction of retrieval system is considered on the database constructed in 1999.
- At present the database is considered to be distributed in the CD-ROM form.

2. About the introduction of retrieval function

2. 1 A plan for the construction of database with the retrieval function

As examples of construction of the database with the retrieval function, two types, shown in figures 1 and 2 respectively, were considered. Type 1 was a system based on the use of the existing software “Full-text Search Database Soft” for carrying out the full-text search of the data. In the case of Type2, a new database is constructed for the retrieval of original database. Hereafter, the new database is called as “Database for Retrieval” and the original one is called simply as “Main Diffusion Database”. Type 1 is ideal for a retrieval function. However, in order to adopt Type 1 for the present purpose, there are difficulties relating to the following two points.

- ① Main data is recorded as image data of a PDF file, which cannot be used for the full-text search software.
- ② Many of the full-text search software employ the Common Gateway Interface (CGI), which requires a specialized computer environment.

When Type1 system is employed under a common server system, the required condition is only the setup of environment for CGI in the common server system. In this case, there is no problem. However, this database was premised to be distributed by CD-ROM. Therefore, there is a problem that a setup for CGI with each committee's personal computer was needed. As a result, we adopted and made a trial version of Type2 for the database system with retrieval function.

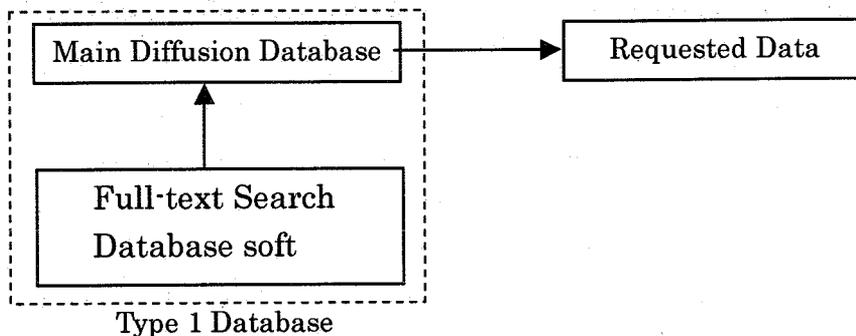


Fig.1 The construction of database with the retrieval function of Type1

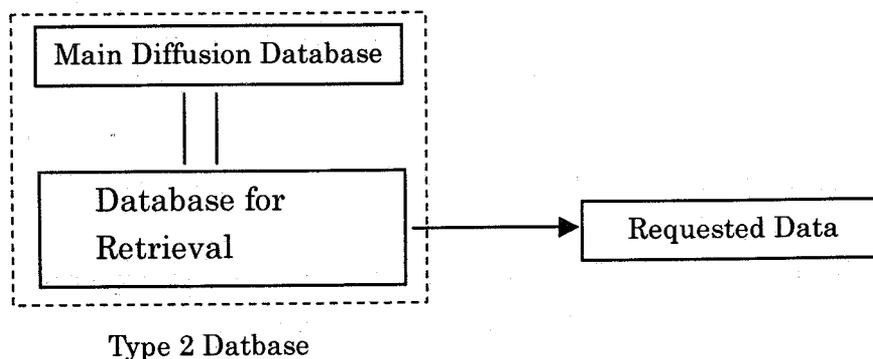


Fig.2 The construction of database with the retrieval function of Type2

2. 2 Selection of the database software

Software selection for the database with retrieval function was performed for the Type2 database system. There were various possibilities, such as Microsoft Access and Microsoft Excel. Microsoft Access is promising since it is originally presented as database software and it has various functions. However, we selected Microsoft Excel from the following viewpoints.

- Microsoft Excel has been already employed by many committees in the diffusion project.
- Microsoft Excel is originally a spreadsheet software and its retrieval function is rather simpler than that of Microsoft Access. However, the retrieval function of Microsoft Excel is sufficient to the present purpose. In addition, it can be used easily because of its simplicity.
- Required function is only the retrieval function and other complex functions are not necessary.

2. 3 Trial test of database with retrieval function

Described in Secs. 2.1 and 2.2, we constructed the database with retrieval function, which is the combination of previous database and Microsoft Excel. Outline of retrieval procedure is described below.

[Procedure 1] Click the data menu of the menu bar in Microsoft Excel .

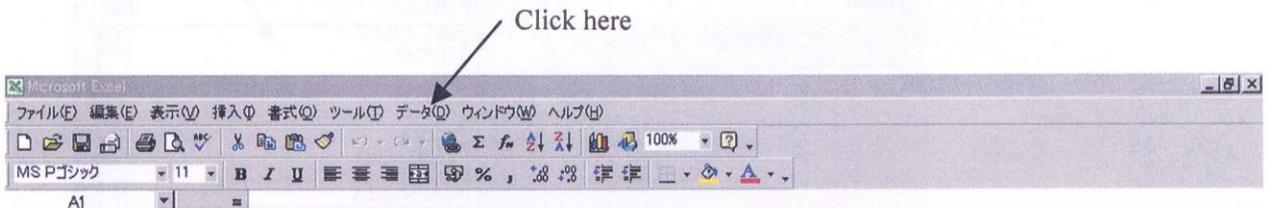


Fig.3 Procedure 1

[Procedure 2] Chose the auto filter in the filter menu

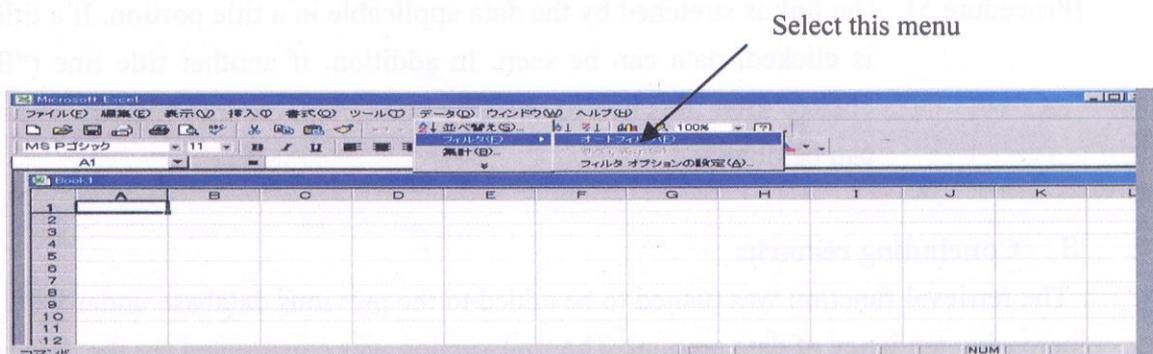


Fig.4 Procedure 2

[Procedure 3] Click  of the column for search and choose “option”

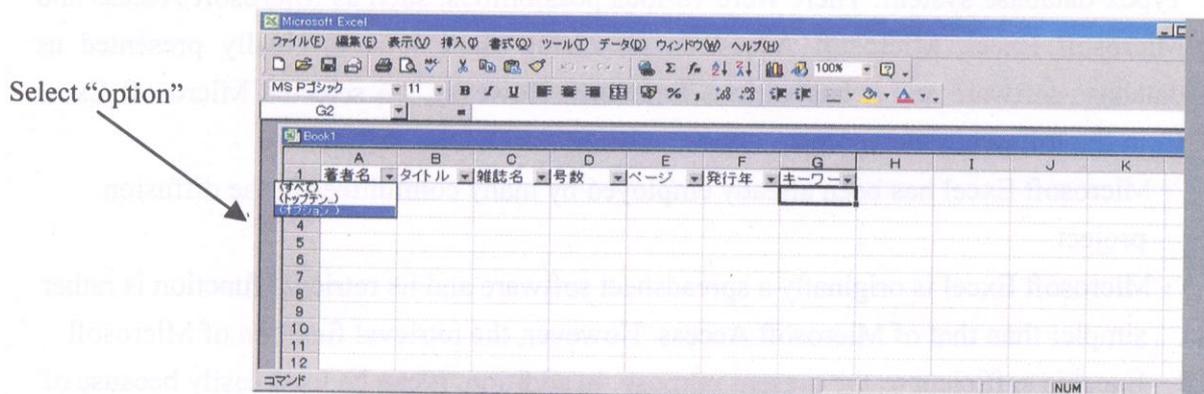


Fig.5 Procedure 3

[Procedure 4] After the below figure appears, input the retrieval word for searching in the part A, and chose the condition of searching in the part B. The case of the retrieval containing a reference key word "Itami" is shown below.

Part A: Input the word

Part B : Selection condition

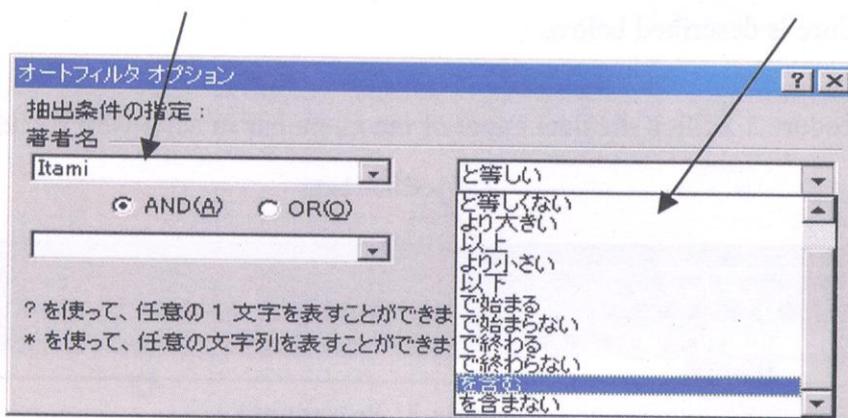


Fig6 Procedure 4

[Procedure 5]. The link is stretched by the data applicable in a title portion. If a title line is clicked, data can be seen. In addition, if another title line (“B”) is clicked after the click of one title line (“A”), the information “A and B” can be obtained.

3. Concluding remarks

The retrieval function was planned to be added to the previous database under the increasing tendency of data amount. The trial version was constructed for the database with retrieval function. Required data was confirmed to be searched out with the use of

this trial version. Because of the popularity among committees of the diffusion project and its simplicity for the operation, Microsoft Excel was incorporated into the database as the retrieval functions. At present, the database has a handy and easily extensible character, by which users can add the new data by themselves.