CONSULTING NUCLEAR ISOTOPES[1]

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Abstract. *The consulting nuclear isotopes is performed on the database containing a dynamical linked list of nuclear isotopes. The dynamical linked list contains components. Each component of the dynamical linked list contains two other dynamical linked lists. One of them consists of the particularities of consulted isotope and the other consists of its data. Whenever the user wants to consult a nuclear isotope, he/she moves only the cursor to the name of this isotope, press the INS key, then the data of the consulted isotope are displayed in the screen.*

I. THE DATABASE FOR THE CONSULTATION

The data of nuclear isotope are constructed in the form of a dynamical linked list. Each component of this list consists of an information of nuclear isotope. In C language, the dynamical linked list is a structure such as:

```
struct Dulieudv {
                    char Dldv[80];
                    struct Dulieudv *tiep;
                } Dl;
```

The nuclear isotopes create a dynamical linked list, whose each component is a structure. Each structure contains the name of isotope, the particularity list and the data list. The dynamical linked list of nuclear isotopes is appeared as:

```
Struct Dongvihn {
                    char Ten[80];
                    struct Dactinh *Dsdt;
                    struct Dulieu *DsDl;
                }Dv;
struct Dongvihn*pDsdv;
```

where pDsdv is a point that points to the dynamical linked list of nuclear isotopes.

The consulting nuclear isotopes is carried out on the database which was constructed for the expert system for identification of nuclear isotopes, so that, we can avoid building a new database. Besides, this makes a good condition in order to unify two above functions into an unique system.

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II. ACTIVE MECHANISM OF CONSULTATION

The diagram for consulting nuclear isotopes is illustrated in figure1. Names of isotopes are displayed in the selected table. Whenever, the user wants to consult an isotope, he/she moves only the cursor to the name of this isotope, then press INS keys. If he/she wants to consult other isotope, he/she continues to move the cursor to the name of that isotope, and so on.

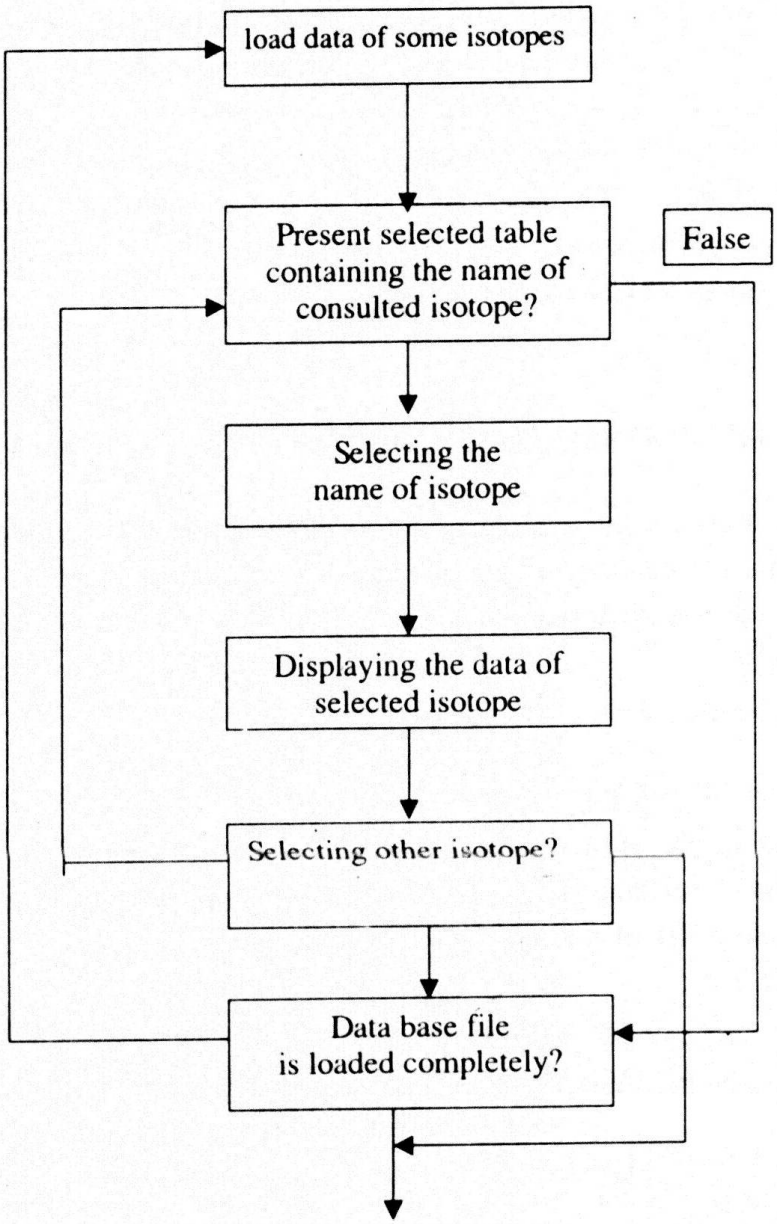

Fig1. **The diagram for consulting istopes**

In order to guarantee that, the program of consultation can work with the small memory computer; the data of isotopes are loaded in small part gradually suiting the free memory of used computer.

After the consulting concerned nuclear isotopes, that appear in the present selected table is completed or the name of concerned isotopes which do not appear in this table,

the computer checks whether the data file is loaded completely; if not, the new part is loaded, if the data file is loaded completely, the consultative nuclear isotopes process is finished.

The consultation is carried out by using the Chondv() function.

For displaying the data of nuclear isotope, using the Timdv() function , which is called in the Chondv() function.

The process of consulting nuclear isotope is carried out as following: In the selected table, containing names of nuclear isotopes, move the cursor to the name of consulted isotope, and then press INS key, Example for Cobalt60, its data appear in the screen below:

Cobalt60
Mass excess(M-A): -61.6466Mev
Spin : 5
Decay mode : Beta-
Half-life : 5.2719 Years
Principal means of production: 59Co(n, ()
Energies (Mev) : E(: 0.3469, 1.1732, 1.3325, 2.1588
E(-: 0.315, 0.670, 1.492

CONCLUSION

The program of consulting nuclear isotopes is constructed and it works well. We hope that it will help scientists in nuclear physics field consult the concerned nuclear isotopes promptly and favorably.

REFERENCE

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[2.] *Experiments in Nuclear Science.* ORTEC 1976.

[3.] 3. W.Kreutzer, B.Mc Kenzie. *Programming for AI: Methods, Tools, Application.* Addison- Wesley Publishing Company 1988.

APPENDIX I **Chondv() function**

```
Chondv()
        {
        int Ma,j,w=15;
        Vtrdv=0;
        textmode(C80);
        textbackground(CYAN);
        window(1,1,80,25);
```

```
Clrscr();
textcolor(RED);
while(TRUE)
Hienthidv(Tendv,Vtrdv,w);
Ma=Nhanma();
Switch(Ma)
{
textbackground(CYAN);
textcolor(RED);
window(1,1,80,25);
Clrscr();
case U_ARRO:;
case L_ARRO:
if(Vtrdv> 0) - Vtrdv; break;
case INSERT:Timdv();break;
case PgUp:;
case PgDn:
goto tt; /*Đọc thêm số liệu từ đĩa nếu còn*/
default: clrscr();return; /*Trở lại mục chọn chính*/
}
}
tt:;while(!Ktdl);
clrscr();
return;
}
```

APPENDIX II **Timdv() function**

```
Timdv()
{
    int t;
    struct Dongvihn *d;
    struct Dongvi *e;
    struct Dactinh *p;
    struct Dulieudv *c;
    clrscr();
    d=pDsdv;
    e=Tendv;
    for(t=0; t< Vtrdv;t++) e=e=> Tiep;
    While(d!=(struct Dongvihn *)NULL)
    {
    if(strcpm(d→ Ten, e→ Ten)==0)
```

```
        { printf((" \n Name of isotope is");
        puts(d→ Ten);
        c = d→ DsDl;
        while(c! = (struct Dulieudv *) NULL)
           {puts(c→ Dldv); c=c→ Tiep;}
        printf(" \ n Press any key to go to other isotope");
        while(kbhit()==0); return;
        }
      d=d→ Tiep;
    }
    return;
}
```

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THAM CHIẾU CÁC ĐỒNG VỊ HẠT NHÂN

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