Massive Data Set of Fortran77 Use Other Software

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REZUMAT. Lucrarea se referă la unele aspecte ale folosirii masivelor de date rezultate la rularea unui program în Fortran 77. Se caută găsirea unor căi de acces a datelor spre alte medii de programare, versatile, fără dificultăți în utilizare.

1 Some instructions of a fortran77 program

For example, begin with a threads of f77 program, as we see below:

```
.....
      WRITE(*,91) XR,(Y(J),J=1,4)
C
      IF(Y(3).GT.0.0) THEN
      KINT = KINT + 1
      GO TO 1500
      ELSE
      STOP
 91   FORMAT(F8.6, 4F10.4/)
      END IF
      END
```

Is important to observe, f77 programmers use a very good secvence for save of results programs rule, as

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```
WRITE(*,91) XR,(Y(J),J=1,4)
```

As in guide f77 for use we can create a massive block of data as program ruling. So, I indicate a small of this results

```
0.099981 511.947 0.78838  0.8632  0.7158
0.099983 511.947 0.78838  0.8633  0.7159
0.099985 511.947 0.78838  0.8633  0.7159
0.099987 511.947 0.78838  0.8634  0.7159
0.099989 511.947 0.78838  0.8634  0.7160
0.099991 511.947 0.78838  0.8634  0.7160
0.099993 511.947 0.78838  0.8635  0.7160
0.099995 511.947 0.78838  0.8635  0.7161
0.099997 511.947 0.78838  0.8636  0.7161
0.099999 511.947 0.78838  0.8636  0.7161
0.100001 511.947 0.78838  0.8637  0.7162
.....
```

These are results saved in fortran using instruction above we see. But, in this envinroment programming is very difficult treate data as graphic views.

2 Transfer data block in another software with improvement accesibillity

This transfer is possible with instructions

So, is a new stack data with PRN extension allows to use any graphic software.

3 Use data new stack in any software

The most important of this transfer is for engineers. I continue example with an application in graphics mode. For use we have instruction **READPRN**

```
a: READPRN (”D:\data.PRN”)
```

- **Graphics**

The file Data I saved in disk D with PRN extension. After this is possible to operate for any utilisation. We see, as below one representation of stack with PRN extension

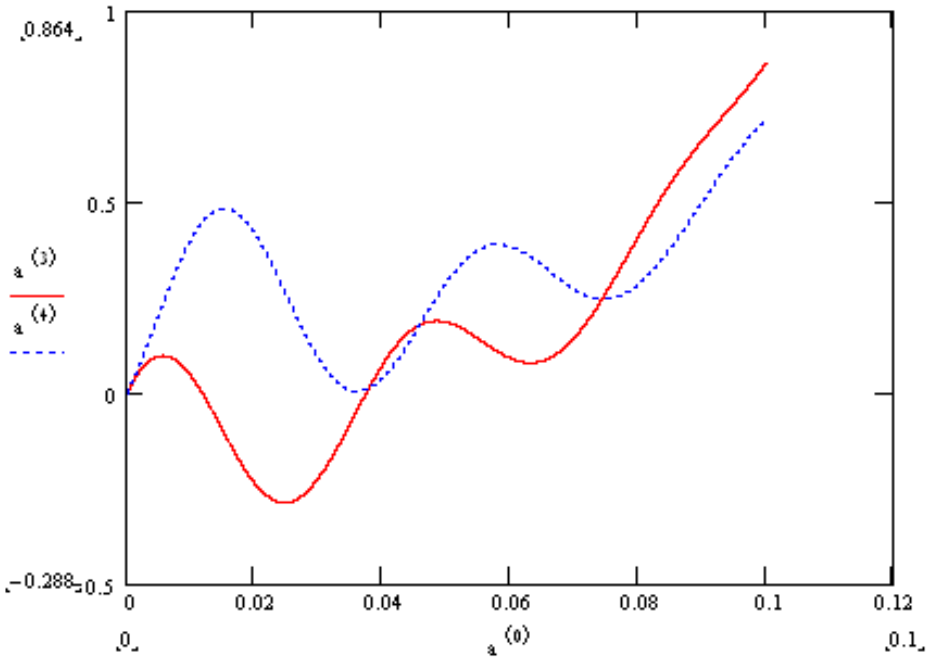

Figure 1.1

- **Approximation**

With **READPRN** we read the data, for example for approximation, to write an equation of a points passing a curve. So, we have instruction

Cz := READPRN ("E:\coef.prn")

I used mean least square method and construction the followings

Cz =

	0	1	2	3	4	5	6	7
0	0	0.1321	0.2642	0.392	0.45	0.44	0.396	0.334
1	0	0.1324	0.2648	0.393	0.4515	0.441	0.397	0.3345
2	0	0.1327	0.2654	0.394	0.453	0.442	0.398	0.3345
3	0	0.133	0.266	0.395	0.4545	0.443	0.399	0.3355
4	0	0.1333	0.2666	0.396	0.456	0.444	0.4	0.336
5	0	0.1336	0.2672	0.397	0.4575	0.445	0.401	0.337
6	0	0.1339	0.2678	0.398	0.459	0.446	0.402	0.338
7	0	0.134	0.2684	0.399	0.4605	0.447	0.403	0.339
8	0	0.1345	0.269	0.4	0.462	0.448	0.404	0.34
9	0	0.1348	0.2696	0.401	0.464	0.449	0.405	0.341
10	0	0.1351	0.2702	0.402	0.466	0.45	0.406	0.342
11	0	0.1354	0.2708	0.403	0.468	0.4515	0.4075	0.343
12	0	0.1357	0.2714	0.404	0.47	0.453	0.409	0.344
13	0	0.136	0.2702	0.405	0.472	0.4545	0.4105	0.345
14	0	0.1364	0.2728	0.406	0.474	0.456	0.412	0.346
15	0	0.1402	0.2804	0.414	0.486	0.464	0.418	0.352

With the data by interpolation method find the following coefficients of a 13^{th} degrees polinomials

b =

	0
0	0.132036
1	-0.014154
2	0.78781
3	-9.423695
4	52.423366
5	-159.568434
6	286.941558
7	-313.363411
8	202.254459
9	-64.473451
10	-2.238293
11	9.365848
12	-2.977706
13	0.32064

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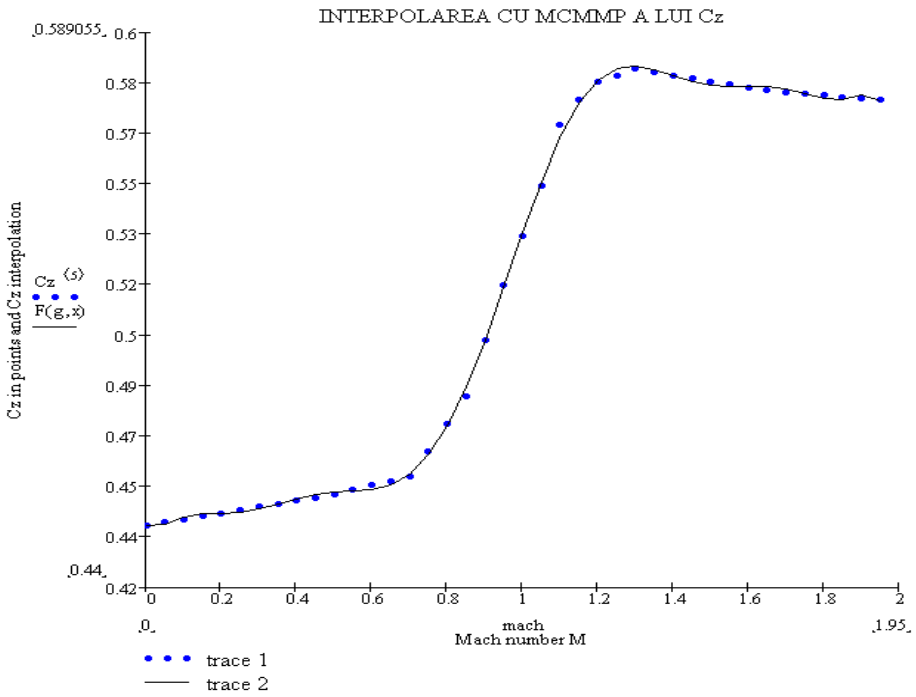

Figure 1.2

Those massive stack in PRN will be in pascal and turbopascal for use as data for interpolation, approximation and other applications

```
uses   wincrt;
var
    i,j,k:integer;
.....
    ff:text;
    cz,.....:real;
read(ff,cz);read(ff,...);
const
    alfa:array[1..m] of real=(0.0,4.0,8.0,12.0,16.0,20.0,24.0,28.8);
.....
procedure BAITKEN;
const NMAX=41;
    begin
       IF N > NMAX then writeln( 'Dimension too large');
            for I := 1 to N  do
            begin
               FT[I] := FI[I];
.....
```

```
begin
clrscr;
{INTERPOLATION OF Cz}

      X:=MACHC;
      for i:= 1 to n do
          begin
             fi[i]:=cz[i,2];
          end;
     BAITKEN;
     cz2:=f;
.....
```

In this secvence we can see an interpolation of data.PRN with procedure Baitken.

Conclusion

In paper work for scientifics study using the results of f77 ruling programs to other programs in point of difficulty working with that in f77 software. Modeling of the data in massive stack by extension PRN is very important for engineers use other software.

References

[NL95] Nyhoff, R.L.; Lee, S. - FORTRAN 77 and Numerical Methods for Engineers and Scientists, 1st edition, Prentice Hall, NJ

[Sun95] *** - Fortran 77 4.0 Reference Manual, Sun Microsystems, Inc. 2550 Garcia Avenue, Mountain View, CA

[ZB02] Ziv Bar-Yossef, The complexity of Massive Data Set Computations, Ph.D. Disertation, Computer Science Division, U.C. Berkeley

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