

CLAS-NOTE-90-002

Extension and merging of LUND-format data files.

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1. Introduction

This document describes three utilities which can be used to perform manipulations on data files stored in the LUND-type format. The first of these programs, LUND_Count, is for determining the number of records that are stored in a given data file. LUND_Extend is a utility which allows the user to take an existing data file, and create a new one using the original events but with a different number of events. This new file may have either fewer or more events than the first. LUND_Mix allows the user to merge the data contained in two existing data files into a single file, in any given proportion, to yield a new data file containing a user specified number of events.

All three of these programs are interactive and prompt the user for the necessary information when needed.

2. Program Descriptions

2.1 LUND_Count

The LUND_Count program is for determining the length of an existing data file. The user is prompted for the name of the data file, and is returned the number of records (*i.e.* events) in that file. Throughout these programs it is assumed that one LUND format record contains one event. Another use for LUND_Count is for testing whether a data file is clean or if it may have some corrupt structure. If LUND_Count detects any deviation from the standard LUND format within the file it will terminate counting events and inform the user. Note, however, any non-LUND format data file will seem corrupt to LUND_Count.

The '?' directory inquiry command is available from the LUND_Count filename prompt. See section 2.4 for more information.

2.2 LUND_Extend

The LUND_Extend program is used for creating new data files from existing ones when a data file is needed with a different number of events. The user is prompted for the filename of the existing file to use, and is asked to give a destination filename and the number of events desired.

If fewer events than are contained in the original file are requested to be written to the destination file, only the requested number of events from

the original file are copied over. If, on the other hand, the user desires more events to be written to the destination file than were contained in the original file then events will have to be repeated in the new file. In this case the user will be asked to choose between two options. The events can be repeated without alteration until the requested number of events has been written, or LUND_Extend can rotate the coordinate of each repeated event by a randomly selected angle (between 0 and 2π) about the Z-axis before writing it to the new data file. The program selects a new rotation angle for each event.

The '?' directory inquiry command is available from any LUND_Extend filename prompt. See section 2.4 for more information.

2.3 LUND_Mix

The LUND_Mix program is for merging the data from two existing data files into a single data file. The user is allowed to determine how many events are to be written to the data file, as well as how many events are to be taken from each of the source data files.

If fewer events are needed from a given file than are contained in that file, the only the required number of events are taken from the top of the file. If, on the other hand, the user has requested more events be taken from a file than are contained in that file, then events will have to be repeated to fill the request. In this event the user will be asked to select in which manner the events are to be repeated. Either the events can be repeated without alteration, or LUND_Mix can rotate the coordinates of each repeated events about the Z-axis by a randomly selected angle (between 0 and 2π) before writing it to the destination file.

In selecting the events from the different files, a random selection is made of which file to take the next event from. This random selection is based upon the fraction of the events to come from the two different files.

The '?' directory inquiry command is available from any LUND_Mix filename prompt. See section 2.4 for more information.

2.4 Disk directory inquiry option.

From within any of these three programs, there exists the capability to use the DCL DIRECTORY command for inquiring into the contents of any disk directory. From any filename prompt, beginning a line with a '?' will

signify to the program that you are not responding to the question but rather are interested in a disk directory. This question mark is the same as DIR if one were at the DCL prompt, and all DIR options can be used.

Example uses:

```
? ..... Directory listing of default
? *.DAT ..... List only .DAT files
? Drive:[Path] ..... Directory of other path
? /SIZE ..... List also file size.
```

or any combination of DIR options may be used.

3. Example program sessions.

3.1 LUND_Count

```
$ RUN LUND_COUNT
```

```
Lund_Count Utility
```

```
Version 1.0
```

```
[Note: Enter '?' {Path}' to see a directory]
```

```
Enter the name of the LUND format file: ?
```

```
Directory USR2:[LARRY.LUND]
```

```
COUNT.TXT;3      COUNT.TXT;2      LUND.DAT;2      LUND_COUNT.EXE;5
LUND_COUNT.EXE;4  LUND_COUNT.EXE;3  LUND_COUNT.FOR;5  LUND_COUNT.FOR;4
LUND_COUNT.OBJ;1  LUND_COUNT.OLD;1  LUND_EXTEND.EXE;1  LUND_EXTEND.FOR;1
LUND_EXTEND.OLD;1  LUND_MERGE.OLD;1  LUND_MERGE2.OLD;1  LUND_MIX.EXE;1
LUND_MIX.FOR;1    LUND_MIX.OLD;1
```

```
Total of 18 files.
```

Enter the name of the LUND format file: LUND.DAT

One moment..... counting records.

File contains 360 records.

3.2 LUND_Extend

\$ RUN LUND_EXTEND

Lund_Extend Utility

Version 1.0

[Note: Enter '? {Path}' to see a directory]

What is the file_name of the source file: ?

Directory USR2:[LARRY.LUND]

400.DAT;1	COUNT.TXT;4	EXTEND.TXT;2	EXTEND.TXT;1
LUND.DAT;2	LUND2.DAT;2	LUND_COUNT.EXE;5	LUND_COUNT.FOR;5
LUND_COUNT.OBJ;1	LUND_COUNT.OLD;1	LUND_EXTEND.EXE;1	LUND_EXTEND.FOR;1
LUND_EXTEND.OLD;1	LUND_MERGE.OLD;1	LUND_MERGE2.OLD;1	LUND_MIX.EXE;1
LUND_MIX.FOR;1	LUND_MIX.OLD;1		

Total of 18 files.

What is the file_name of the source file: LUND.DAT

What shall the name of the output file be: LUND2.DAT

How many records shall be output to the new file: 400

Please wait one moment... Writing the new file.

Now making pass: 1 through data file.

The source file only held 360 records.

The number of records you requested is greater than the number of records contained in the source file you specified. Thus, in order to complete the new data file with the requested number of records, records from the source will have to be repeated.

The additional records needed can be copied over verbatim from the source file, or they can have their coordinates rotated about the Z-axis by a randomly generated angle.

Please select one of the following options:

- (0) Repeat records from source unaltered.
- (1) Rotate repeated records.
- (2) Terminate further extension of file.

[0, 1, or 2]: 1

Now making pass: 2 through data file. Rotating records.

Extended file is complete.

3.3 LUND_Mix

```
$ RUN LUND_MIX
```

Lund_Mix Utility

Version 1.0

[Note: Enter '? {Path}' to see a directory]

Enter the filename of the first file: ?

Directory USR2:[LARRY.LUND]

400.DAT;1	COUNT.TXT;5	EXTEND.TXT;4	LUND.DAT;2
LUND2.DAT;4	LUND_COUNT.EXE;5	LUND_COUNT.FOR;5	LUND_COUNT.OBJ;1

LUND_COUNT.OLD;1 LUND_EXTEND.EIE;1 LUND_EXTEND.FOR;1 LUND_EXTEND.OLD;1
LUND_MERGE.OLD;1 LUND_MERGE2.OLD;1 LUND_MIX.EIE;1 LUND_MIX.FOR;2
LUND_MIX.FOR;1 LUND_MIX.OLD;1 MIX.TXT;1

Total of 19 files.

Enter the filename of the first file: LUND.DAT
Enter the filename of the second file: LUND2.DAT

Enter the filename for the output file: MERGED.DAT

How many records shall come from file 1: 500
How many records shall come from file 2: 500

Please wait one moment.... Writing out new file.

File 2 contains 114 records.

The number of records you requested to have taken from file two is greater than the number of records contained in that file. In order to complete the new data file with the requested number of records, records from file two will have to be repeated in the destination file.

You will have to choose between two options concerning the repetition of the records. This utility can either duplicate records from the source file unaltered, or it can repeat records after having rotated the coordinates of the particles about the Z-axis by a randomly generated angle.

Please select one of the following options:
'Y' To rotate repeated records.
'N' To repeat records unaltered.

[Y or N]: Y

File 1 contains 360 records.

The number of records you requested to have taken from file one is greater than the number of records contained in that file. In order to complete the new data file with the requested number of records, records from file one will have to be repeated in the destination file.

You will have to choose between two options concerning the repetition of the records. This utility can either duplicate records from the source file unaltered, or it can repeat records after having rotated the coordinates of the particles about the Z-axis by a randomly generated angle.

Please select one of the following options:

- 'Y' To rotate repeated records.
- 'N' To repeat records unaltered.

[Y or N]: N

Output file results:

[Ideal proportions]	File 1 = 50.00%	File 2 = 50.00%
[Resulting proportions]	File 1 = 47.20%	File 2 = 52.80%

Merge file complete.