

**Multibreed Editing Program EDPED**  
**(version 11/15/2001)**

**M. A. Elzo**

# Multibreed Editing Program **EDPED** (version 11/15/2001)

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## Description of the program

Program **edped** is the first of the set of programs that form the multibreed genetic evaluation system. Its primary purpose is the generation of pedigree and edited data files for a multibreed genetic evaluation.

Program **edped** creates pedigree and edited data files based on an error-free base file that contains pedigree (animal, sire, dam, paternal grandsire, paternal granddam, maternal grandsire, maternal granddam), breed composition (breed code, breed fraction) information of an animal and its ancestors, production information (dates and measurements) on a set of traits, and information on factors that may be used in the genetic models for these traits (country, herd number, sex of calf, birth date, weaning date, yearling date, management codes, etc).

The program **edped** allows for character identifications on an animal and its ancestors. Character identifications are stored in the pedigree and data output files. Original animal identification can be used by MREMLEM to produce readable lists of genetic predictions without having to read the original workfiles. All animals are renumbered in sequential order, and the same number for an animal is stored both in the pedigree and the edited data files.

Breed fractions are recomputed according to the breeds to be considered for a particular analysis. The last breed of each recomputed set of breed fractions will be "other" unless all breeds are to be included in a multibreed genetic evaluation, and the initial set of breeds is unique and does not include an "other" breed category.

The input data file **must be sorted** such that parents **precede** progeny. The input data file is read twice. In the first pass, the number of each factor used to construct a contemporary group is counted. In the second pass, contemporary group numbers are computed and added to the edited data file.

Program **edped** is written in a modular fashion to facilitate additions and modifications. It uses case constructs to define data sets. This makes it very easy to tailor this program to handle new data sets. New data sets with their corresponding sets of editing rules can be readily added to the program. The current version has specific modules for a multibreed beef cattle data set (Angus-Brahman, UFL, USA) and for a multibreed dairy cattle data set (Holstein-Brahman-Other Breeds, DPO, Thailand).

## Batch File

The **edped** program is run from a command window using **batch** file (*xedpedsort.bat*). This batch file: 1) runs edped, 2) sorts the output pedigree file by parent, sex, and animal number, 3) sorts the output cgdata file by contemporary group and sire, 4) copies struct\_pedigree\_file, struct\_data\_file, pedigree, and cgdata files to the current CSET directory, and 5) copies struct\_pedigree\_file, struct\_data\_file, and pedigree files to the current MREMLEM directory.

### Xedpedsort.bat program for the 2001 Angus-Brahman genetic evaluation

```
@ECHO OFF
REM xedpedsort.bat
REM Executes program that creates the pedigree and edited data files
REM for the MAB Genetic Evaluation System
REM Sorts output files for cset and MREMLEM

REM dir = c:\home\pkg\mblicsets\edped\RunRelease_MAB

copy c:\home2\palot\MAB\Calves 1987-2002\CAFworkfile_1987-2001-a.txt .
rem copy c:\home2\palot\MAB\Calves 1987-2002\Struct_Workfile_mab-uf1-a.txt .

copy param mabped.param
copy CAFworkfile_1987-2001-a.txt workfile
copy Struct_Workfile_mab-uf1-a.txt struct_workfile

c:\home\pkg\mblicsets\edped\Debug\edped %1 %2 %3 %4

copy output          mabpedo_all.111601
copy tempedigree     mabtemped_all.111601
copy pedigree        mabped_all.111601
copy pedigree        PEDIG
copy tempdata        mabtempdata_all.111601
copy cgdata          mabcgdata_all.111601
copy struct_pedigree_file struct_pedigree_file_mab_uf1
copy struct_data_file struct_data_file_mab_uf1

rem #####
rem Sort tempedigree file
copy c:\home\pkg\mblicsets\edped\RunRelease_MAB\tempedigree infile

rem #####
rem ### Sort
rem ###      infile
rem ### by
rem ###      [iparent:2-3],[isex: 5-6],[ianimal: 52-60]

rem ### animal model
c:\home\srt\qsort\qsort infile outfile /-1.2:2 /+1.5:2 /+1.52:9

copy outfile tempedigree

rem *****
rem SORT 1: Pedigree File
rem *****
rem write(unit=52,&
rem fmt='(2(1x,i2),<numanped>(1x,a<maxcharid>,1x,i12,1x,i9),,&
rem <numbreedgeval>(1x,i3))')&
rem iped(1,pedigsqn(1)),iped(2,pedigsqn(1)),&
rem pedigid(1),pedigint(1),pedigsqn(1),&
rem brfrgeval(:,1),&
rem pedigid(ipedcode(2)),pedigint(ipedcode(2)),pedigsqn(ipedcode(2)),&
rem brfrgeval(:,ipedcode(2)),&
rem pedigid(ipedcode(3)),pedigint(ipedcode(3)),pedigsqn(ipedcode(3)),&
```

```

rem brfrgeval(:,ipedcode(3)),&
rem pedigid(ipedcode(4)),pedigint(ipedcode(4)),pedigsqn(ipedcode(4)),&
rem brfrgeval(:,ipedcode(4)),&
rem pedigid(ipedcode(5)),pedigint(ipedcode(5)),pedigsqn(ipedcode(5)),&
rem brfrgeval(:,ipedcode(5))
rem *****

copy c:\home\pkg\mblocsets\edped\RunRelease_MAB\mapped_all.111601 infile
rem copy infile mapped_all.111601

rem #####
rem ### Sort
rem ###      infile
rem ###      by
rem ###      [iparent:2-3],[isex: 5-6],[ianimal: 52-60]

rem ### animal model
c:\home\srt\qsort\qsort infile outfile /-1.2:2 /+1.5:2 /+1.52:9

move outfile mapped_all.111601.ipar-isex-sire
copy mapped_all.111601.ipar-isex-sire pedigree
copy mapped_all.111601.ipar-isex-sire PEDIG

del infile

rem !*****
rem ! Write output data file with hys for Step 3 ==> connectedness
rem ! (and without herd, year, season, and other irrelevant fields)
rem !*****
rem write(unit=62,fmt='(<numanped>(1x,i8,&
rem <numbreedgeval>(1x,i3)),&
rem <numwrintfields>(1x,i8),&
rem <maxnumcg>(1x,i5),&
rem <numtraits>(1x,i5))')&
rem (pedigsqn(ipedcode(i)),brfrgeval(:,(ipedcode(i))),i=1,numanped),&
rem wrintfields,icg,trait
rem !*****
rem ### Copy
copy c:\home\pkg\mblocsets\edped\RunRelease_mab\mabcgdata_all.111601 infile

rem #####
rem ### SAME SORT (icg,iqs) FOR ALL MODELS (animal, sire-mgs, sire) ###
rem #####
rem ### Sort
rem ###      infile
rem ###      by
rem ###      icg[ibc:683-687],iqs[sire:45-52]
rem ###

c:\home\srt\qsort\qsort infile outfile /+1.683:5 /+1.45:8

rem Trick to eliminate "~" caused by running qsort !!!
c:
cd \home\pkg\mblocsets\edped\RunRelease_mab

move outfile mabcgdata_all.111601.cg-sire

del infile

rem #####
rem *** copy files to c:\home\pkg\mblocsets\cset\RunRelease_mab\ ***
rem #####
rem ### PEDIGREE FILES
copy mapped_all.111601 c:\home\pkg\mblocsets\cset\RunRelease_mab\
copy mapped_all.111601.ipar-isex-sire c:\home\pkg\mblocsets\cset\RunRelease_mab\
copy pedigree c:\home\pkg\mblocsets\cset\RunRelease_mab\
copy PEDIG c:\home\pkg\mblocsets\cset\RunRelease_mab\
copy struct_pedigree_file_mab_ufl c:\home\pkg\mblocsets\cset\RunRelease_mab\

rem ### DATA FILES

```

```

copy mabcgdata_all.111601          c:\home\pkg\mblcsets\cset\RunRelease_mab\
copy mabcgdata_all.111601.cg-sire  c:\home\pkg\mblcsets\cset\RunRelease_mab\
copy struct_data_file_mab_ufl      c:\home\pkg\mblcsets\cset\RunRelease_mab\
rem #####

rem #####
rem *** copy files to c:\home\pkg\mremlem2001\RunRelease_mab\ ***
rem #####
copy mabped_all.111601.ipar-isex-sire c:\home\pkg\mremlem2001\RunRelease_mab\
copy PEDIG                          c:\home\pkg\mremlem2001\RunRelease_mab\
copy struct_pedigree_file_mab_ufl    c:\home\pkg\mremlem2001\RunRelease_mab\
copy struct_data_file_mab_ufl        c:\home\pkg\mremlem2001\RunRelease_mab\
rem #####

```

**Input Files:**     *param*  
                  *struct\_workfile*  
                  *workfile*

**Input File 1:**    *param.*

The parameter file (*mabped.param*) can include lines containing explanatory sentences before entering each set of parameters. Each set of explanatory lines must be preceded by the line: 'begin headings', and must be ended with the line: 'end headings'.

### Param file for the 2001 Angus-Brahman genetic evaluation

```

'begin headings'
'READ [1a] TITLES'
'=====
*** ANGUS-BRAHMAN MULTIBREED GENETIC EVALUATION SYSTEM ***
*** PEDIGREE FILE AND DATA FILE WITH SEQUENTIAL NUMBERS ***
*** Input Files:  mabped.param'
'                   CAFworkfile_1987-2001-a.txt'
'*** Output Files: mabpedo_all.103001'
'                   mabtemped_all.103001'
'                   mabped_all.103001'
'                   mabtempdata_all.103001'
'                   mabcgdata_all.103001'
'=====
'end headings'
'begin headings'
'READ [1b] DATA SET NAME'
'end headings'
'mab-ufl'
'begin headings'
'READ [2] PARAMETERS'
'maxanim = maximum # animals in workfile'
'mbuinf = 15 -> DO **NOT** CHANGE THIS VALUE (Defined in iproglim from MREMLEM)'
'      = max number of pieces of information needed per bull for G inverse'
'numcountries = number of countries represented in workfile'
'maxnumexpsires = maximum number of experimental sires'
'maxanim mbuinf numcountries maxnumexpsires'
'*** SEPARATED BY SPACES ***'
'end headings'
  40000      15      1      200
'begin headings'
'READ [2a] PARAMETERS'
'numidped = # id per animal and its ancestors in the pedigree file (PEDIG)'
'numiddat = # id per animal and its ancestors in the data file (LCSET)'
'numidped numiddat'
'*** SEPARATED BY SPACES ***'

```

```

'end headings'
  3      2
'begin headings'
'READ [2b] PARAMETERS'
'maxnumbreed = number of breeds in workfile'
'maxbreedanim = maximum number of breeds represented in an animal'
'numbreedgeval = number of breeds in the output pedigree and data files'
'idenbf = denominator of breed fractions'
'numtraits = number of traits in workfile'
'maxnumbreed maxbreedanim numbreedgeval idenbf numtraits'
'*** SEPARATED BY SPACES ***'
'end headings'
  2      2      2      32      19
'begin headings'
'READ [2c] Number of columns (integer, character, contgrps in workfile)'
'numintfields = # integer fields in workfile'
'numcharfields = # character fields in workfile'
'numrelevint = # relevant integer fields for MREMLEM modeling'
'numdatuptrt = # dates and unprocessed traits in workfile'
'maxnumuptrt = maximum # unprocessed traits per date'
'numintfields numcharfields numrelevint numdatuptrt maxnumuptrt'
'*** SEPARATED BY SPACES ***'
'end headings'
  162      6      15      21      3
'begin headings'
'READ [3] kdfyr lstyr'
'*****'
'kdfyr = year of birth of the oldest calves in the data set'
'lstyr = year of birth of the youngest calves in the data set'
'*****'
'end headings'
  1987      2010
'begin headings'
'READ [3a] Location of relevant integer elements (numrelevint) in INPUT'
'      vector infields (workfile), put -1 if new element'
'*** SEPARATED BY SPACES ***'
'*** CAN MODIFY COLUMN 2 ONLY !!! ***'
'*** DO NOT CHANGE COLUMNS 1 AND 3 (USED BY edped IN THE ORDER BELOW) !!! ***'
'end headings'
  1  1  'YEARSET calf'
  2  44 'TRP PreWean calf'
  3  46 'Birth Date calf'
  4  59 'Sex calf'
  5  61 'SUR PreWean calf'
  6  62 'DZDAT calf'
  7  63 'RFD calf'
  8  65 'CASDAT calf'
  9  64 'New Sex calf'
 10 104 'Weaning Date calf'
 11 112 'TRP PostWean calf'
 12 134 'TRP PostYear1 calf'
 13 160 'Slaughter Date calf'
 14 -1 'YEARSET dam'
 15 -1 'Birth Date dam'
'begin headings'
'READ [3b] '
'maxnumcg = # contemporary groups to be constructed'
'numcgfactors(j) = # factors per contemporary group: '
'loccgfactor(i,j) = location of cgfactors in OUTPUT vector writnfields'
'** For output data files: tempdatafile and cgdata **'
'*** SEPARATED BY SPACES ***'
'end headings'
  2      'maxnumcg'
  2      1  'YEARSET calf'
      4  'Sex calf'
  3      1  'YEARSET calf'
      9  'New Sex calf'
      2  'TRP PreWean calf'
'begin headings'
'READ [3c] Location of unprocessed dates and weights, and possibly other traits'
'(numdatuptrt), where other traits = heights, scores (e.g., CS, FS, OS, NS)'

```

```

**** SEPARATED BY SPACES ****
**** CAN MODIFY COLUMNS 2,3 AND 5 ONLY !!! ****
**** DO NOT CHANGE COLUMNS 1, 4, AND 6 (USED BY edped IN THE ORDER BELOW) !!! ****
**** Columns: numdat numuptrt locdate namdate locuptrt namuptrt ****
'end headings'
  1  3  46 'BDATE ' 60 'BWT'
      53 'AIGLEN'
      57 'CEase'
  2  1  66 'DATE1 ' 67 'WT1'
  3  1  71 'DATE2 ' 72 'WT2'
  4  1  76 'DATE3 ' 77 'WT3'
  5  1  81 'DATE4 ' 82 'WT4'
  6  1  87 'DATE5 ' 88 'WT5'
  7  1  92 'DATE6 ' 93 'WT6'
  8  1  98 'DATE7 ' 99 'WT7'
  9  1 104 'WDATE ' 105 'WWT'
 10  1 115 'DATE8 ' 116 'WT8'
 11  1 120 'DATE9 ' 121 'WT9'
 12  1 125 'DATE10' 126 'WT10'
 13  1 130 'DATE11' 131 'WT11'
 14  1 135 'DATE12' 136 'WT12'
 15  1 144 'DATE13' 145 'WT13'
 16  1 149 'DATE14' 150 'WT14'
 17  1 151 'DATE15' 152 'WT15'
 18  1 154 'DATE16' 155 'WT16'
 19  1 156 'DATE17' 157 'WT17'
 20  1 158 'FIDATE' 159 'FIWT'
 21  1 160 'SLDATE' 161 'SLWT'
'begin headings'
'READ [4] maxnumbreed BREED CODES AND BREED NAMES'
**** SEPARATED BY SPACES ****
'end headings'
  1 'ANGUS'      'BOS TAURUS'
  2 'BRAHMAN'   'BOS INDICUS'
'begin headings'
'READ [5] numbreedgeval BREED CODES AND BREED NAMES'
**** SEPARATED BY SPACES ****
'end headings'
  1 'ANGUS'      'BOS TAURUS'
  2 'BRAHMAN'   'BOS INDICUS'
'begin headings'
'READ [6] LOCATION OF PEDIGREE NUMBERS, BREED FRACTIONS (intfields vector),'
'      JPEDCODES, AND PEDIGREE NAMES'
'jpedcode = ancestor information AVAILABLE in workfile (iancped)'
**** SEPARATED BY SPACES ****
**** CODE = 0 (ZERO) IF AN ANCESTOR IS **NOT** PRESENT IN THE DATA FILE ****
**** Columns: idloc brfr1 brfr2 jpedcode(i) ipedname(i) ****
'end headings'
  2  0  0  0 'ANIMAL EXPERIMENTAL NUMBER'
  3  6  7  1 'ANIMAL(CODE=1)'
 10 12 13  2 'SIRE(CODE=2)'
 18 21 22  3 'DAM(CODE=3)'
  0  0  0  0 'PATERNAL GRANDSIRE(CODE=4)'
  0  0  0  0 'PATERNAL GRANDDAM(CODE=5)'
 25 27 28  6 'MATERNAL GRANDSIRE(CODE=6)'
 29 31 32  7 'MATERNAL GRANDDAM(CODE=7)'
'begin headings'
'READ [7] LOCATION OF TRAITS IN VECTOR trait'
**** SEPARATED BY SPACES ****
**** Columns: trait codes and trait names'
'end headings'
  1 'GESTATION LENGTH'
  2 'BIRTH WEIGHT'
  3 'WEANING WEIGHT 205D'
  4 'PWG 205D TO 365D'
  5 'PWG 205D TO 550D'
  6 'PWG 365D TO 550D'
  7 'WEIGHT 365D'
  8 'WEIGHT 550D'
  9 'SLAUGHTER AGE'
 10 'WT GAIN BIRTH-100D'

```

```

11 'WT GAIN 100D-200D'
12 'WT GAIN 200D-300D'
13 'WT GAIN 300D-400D'
14 'WT GAIN 400D-500D'
15 'WEIGHT 100D'
16 'WEIGHT 200D'
17 'WEIGHT 300D'
18 'WEIGHT 400D'
19 'WEIGHT 500D'
'begin headings'
'READ [8] COUNTRY CODES AND COUNTRY NAMES'
'*** SEPARATED BY SPACES ***'
'end headings'
  1 'USA'

```

## Input File 2: *struct\_workfile*.

This file contains the structure of the edited base file (*workfile*). It was developed in a spreadsheet than in a text editor, and then stored as a comma-delimited text file (*struct\_workfile*).

## Struct\_workfile for the 2001 Angus-Brahman genetic evaluation

```

'begin headings'
*****
'STRUCTURE OF THE ANGUS-BRAHMAN MULTIBREED WORKFILE'
'Column #,Char_Int Variable#,Column Name,FORTTRAN Type,Format,Variable Type,MaxNumSub,Denominator,Char_Int
Output File,Column Name'
*****
'end headings'
1,1,'YEARSET calf','integer','i4','subclass',40,1,1,'YEARSET calf'
2,2,'EXNUM bull','integer','i4','subclass',400,1,1,'EXNUM bull'
3,1,'REGNUM bull','character','a10','subclass',400,1,1,'REGNUM bull'
4,2,'ASSOC bull','character','a4','subclass',20,1,1,'ASSOC bull'
5,3,'BULL NAME','character','a26','subclass',400,1,1,'BULL NAME'
6,4,'MATG FORM bullname','character','a14','subclass',400,1,1,'MATG FORM bullname'
7,3,'CALF number','integer','i8','subclass',4000,1,0,'CALF number'
8,4,'SHR calf','integer','i1','subclass',4,1,0,'SHR calf'
9,5,'CG calf','integer','i1','regression',6,32,0,'CG calf'
10,6,'AN calf','integer','i2','regression',1,32,0,'AN calf'
11,7,'BR calf','integer','i2','regression',1,1,0,'BR calf'
12,8,'CULDAT calf','integer','i6','regression',1,1,0,'CULDAT calf'
13,9,'CUC calf','integer','i2','subclass',16,1,0,'CUC calf'
14,10,'SIRE number','integer','i8','subclass',400,1,0,'SIRE number'
15,11,'SG sire','integer','i1','subclass',6,1,0,'SG sire'
16,12,'AN sire','integer','i1','regression',1,32,0,'AN sire'
17,13,'BR sire','integer','i1','regression',1,32,0,'BR sire'
18,14,'MATE number','integer','i8','subclass',400,1,0,'MATE number'
19,15,'MG mate','integer','i1','subclass',6,1,0,'MG mate'
20,16,'AN mate','integer','i2','regression',1,32,0,'AN mate'
21,17,'BR mate','integer','i2','regression',1,32,0,'BR mate'
22,5,'MATE NAME','character','a14','subclass',400,1,0,'MATE NAME'
23,18,'DAM','integer','i8','subclass',4000,1,0,'DAM'
24,19,'SHR dam','integer','i1','subclass',4,1,0,'SHR dam'
25,20,'DG dam','integer','i1','subclass',6,1,0,'DG dam'
26,21,'AN dam','integer','i2','regression',1,32,0,'AN dam'
27,22,'BR dam','integer','i2','regression',1,32,0,'BR dam'
28,23,'CULDAT dam','integer','i6','regression',1,1,0,'CULDAT dam'
29,24,'CUC dam','integer','i3','subclass',50,1,0,'CUC dam'
30,25,'MGS number','integer','i8','subclass',400,1,0,'MGS number'
31,26,'MG mgs','integer','i1','subclass',6,1,0,'MG mgs'
32,27,'AN mgs','integer','i2','regression',1,32,0,'AN mgs'
33,28,'BR mgs','integer','i2','regression',1,32,0,'BR mgs'
34,29,'MGDAM number','integer','i8','subclass',4000,1,0,'MGDAM number'
35,30,'DDG mgd','integer','i1','subclass',6,1,0,'DDG mgd'

```

36,31,'AN mgd','integer','i2','regression',1,32,0,'AN mgd'  
 37,32,'BR mgd','integer','i2','regression',1,32,0,'BR mgd'  
 38,33,'AIIDAT','integer','i6','regression',1,1,0,'AIIDAT'  
 39,34,'INS1','integer','i1','subclass',4,1,0,'INS1'  
 40,35,'AI2DAT','integer','i6','regression',1,1,0,'AI2DAT'  
 41,36,'INS2','integer','i1','subclass',4,1,0,'INS2'  
 42,37,'AI3DAT','integer','i6','regression',1,1,0,'AI3DAT'  
 43,38,'INS3','integer','i1','subclass',4,1,0,'INS3'  
 44,39,'CBNumber','integer','i8','subclass',240,1,1,'CBNumber'  
 45,40,'CBGroup','integer','il','subclass',6,1,0,'CBGroup'  
 46,6,'CBNAME','character','a14','subclass',240,1,0,'CBNAME'  
 47,41,'CBIN','integer','i6','regression',1,1,0,'CBIN'  
 48,42,'CBOUT','integer','i6','regression',1,1,0,'CBOUT'  
 49,43,'EXP number','integer','i4','subclass',60,1,0,'EXP number'  
 50,44,'TRP number','integer','i4','subclass',60,1,0,'TRP number'  
 51,45,'CONDAT','integer','i6','regression',1,1,0,'CONDAT'  
 52,46,'BDA TE calf','integer','i6','regression',1,1,1,'BDA TE calf'  
 53,47,'GLA 1 calf','integer','i3','regression',1,1,0,'GLA1 calf'  
 54,48,'GLA 2 calf','integer','i3','regression',1,1,0,'GLA2 calf'  
 55,49,'GLA 3 calf','integer','i3','regression',1,1,0,'GLA3 calf'  
 56,50,'MXGLNS calf','integer','i3','regression',1,1,0,'MXGLNS calf'  
 57,51,'DG dam','integer','i1','subclass',6,1,0,'DG dam'  
 58,52,'MG mgs','integer','i1','subclass',6,1,0,'MG mgs'  
 59,53,'AIGLEN calf','integer','i3','regression',1,1,1,'AIGLEN calf'  
 60,54,'ALNS indicator','integer','i1','subclass',3,1,0,'ALNS indicator'  
 61,55,'NSGLEN calf','integer','i3','regression',1,1,0,'NSGLEN calf'  
 62,56,'CALF number','integer','i8','subclass',4000,1,0,'CALF number'  
 63,57,'CEase','integer','il','subclass',4,1,1,'CEase'  
 64,58,'NCalves','integer','il','subclass',3,1,1,'NCalves'  
 65,59,'SEX calf','integer','i1','subclass',2,1,1,'SEX calf'  
 66,60,'BWT calf','integer','i3','regression',1,1,1,'BWT calf'  
 67,61,'SUR calf','integer','i2','subclass',16,1,1,'SUR calf'  
 68,62,'DZDAT calf','integer','i6','regression',1,1,1,'DZDAT calf'  
 69,63,'RFD calf','integer','i2','subclass',16,1,1,'RFD calf'  
 70,64,'NSX calf','integer','i1','subclass',3,1,1,'NSX calf'  
 71,65,'CASDAT calf','integer','i6','regression',1,1,1,'CASDAT calf'  
 72,66,'DATE1 calf','integer','i6','regression',1,1,1,'DATE1 calf'  
 73,67,'WT1 calf','integer','i3','regression',1,1,1,'WT1 calf'  
 74,68,'BL1 calf','integer','i1','subclass',2,1,0,'BL1 calf'  
 75,69,'FAT1 calf','integer','i1','subclass',2,1,0,'FAT1 calf'  
 76,70,'RBA1 calf','integer','i1','subclass',2,1,0,'RBA1 calf'  
 77,71,'DATE2 calf','integer','i6','regression',1,1,1,'DATE2 calf'  
 78,72,'WT2 calf','integer','i3','regression',1,1,1,'WT2 calf'  
 79,73,'BL2 calf','integer','i1','subclass',2,1,0,'BL2 calf'  
 80,74,'FAT2 calf','integer','i1','subclass',2,1,0,'FAT2 calf'  
 81,75,'RBA2 calf','integer','i1','subclass',2,1,0,'RBA2 calf'  
 82,76,'DATE3 calf','integer','i6','regression',1,1,1,'DATE3 calf'  
 83,77,'WT3 calf','integer','i3','regression',1,1,1,'WT3 calf'  
 84,78,'BL3 calf','integer','i1','subclass',2,1,0,'BL3 calf'  
 85,79,'FAT3 calf','integer','i1','subclass',2,1,0,'FAT3 calf'  
 86,80,'RBA3 calf','integer','i1','subclass',2,1,0,'RBA3 calf'  
 87,81,'DATE4 calf','integer','i6','regression',1,1,1,'DATE4 calf'  
 88,82,'WT4 calf','integer','i3','regression',1,1,1,'WT4 calf'  
 89,83,'HHT410 in calf','integer','i3','regression',1,1,0,'HHT410 in calf'  
 90,84,'BL4 calf','integer','i1','subclass',2,1,0,'BL4 calf'  
 91,85,'FAT4 calf','integer','i1','subclass',2,1,0,'FAT4 calf'  
 92,86,'RBA4 calf','integer','i1','subclass',2,1,0,'RBA4 calf'  
 93,87,'DATE5 calf','integer','i6','regression',1,1,1,'DATE5 calf'  
 94,88,'WT5 calf','integer','i3','regression',1,1,1,'WT5 calf'  
 95,89,'BL5 calf','integer','i1','subclass',2,1,0,'BL5 calf'  
 96,90,'HHT510 in calf','integer','i3','regression',1,1,0,'HHT510 in calf'  
 97,91,'RBA5 calf','integer','i1','subclass',2,1,0,'RBA5 calf'  
 98,92,'DATE6 calf','integer','i6','regression',1,1,1,'DATE6 calf'  
 99,93,'WT6 calf','integer','i3','regression',1,1,1,'WT6 calf'  
 100,94,'BL&cs6 calf','integer','i1','subclass',6,1,0,'BL&cs6 calf'  
 101,95,'FAT&fs6 calf','integer','i1','subclass',6,1,0,'FAT&fs6 calf'  
 102,96,'RBA&ns6 calf','integer','i1','subclass',6,1,0,'RBA&ns6 calf'  
 103,97,'MGT&hs6 calf','integer','i1','subclass',6,1,1,'MGT&hs6 calf'  
 104,98,'DATE7 calf','integer','i6','regression',1,1,1,'DATE7 calf'  
 105,99,'WT7 calf','integer','i3','regression',1,1,1,'WT7 calf'

106,100,'BL 7 calf','integer','i1','subclass',2,1,0,'BL7 calf'  
 107,101,'FA T7 calf','integer','i1','subclass',2,1,0,'FAT 7 calf'  
 108,102,'RBA 7 calf','integer','i1','subclass',2,1,0,'RBA 7 calf'  
 109,103,'MGT7 calf','integer','i1','subclass',6,1,1,'MGT7 calf'  
 110,104,'WDATE calf','integer','i6','regression',1,1,1,'WDATE calf'  
 111,105,'WWT calf','integer','i3','regression',1,1,1,'WWT calf'  
 112,106,'WHHT10 in calf','integer','i3','regression',1,1,1,'WHHT10 in calf'  
 113,107,'WCS','integer','i1','subdass',6,1,1,'WCS'  
 114,108,'WFS','integer','i1','subdass',6,1,1,'WFS'  
 115,109,'WOS','integer','i1','subdass',6,1,1,'WOS'  
 116,110,'WNS','integer','i1','subclass',6,1,1,'WNS'  
 117,111,'EXP\_PW calf','integer','i2','subclass',60,1,1,'EXP\_PW calf'  
 118,112,'TRP\_PW calf','integer','i4','subclass',60,1,1,'TRP\_PW calf'  
 119,113,'DATEIN\_PW calf','integer','i6','regression',1,1,1,'DATEIN\_PW calf'  
 120,114,'DATOUT\_PW calf','integer','i6','regression',1,1,1,'DATOUT\_PW calf'  
 121,115,'DATE8 calf','integer','i6','regression',1,1,1,'DATE8 calf'  
 122,116,'WT8 calf','integer','i3','regression',1,1,1,'WT8 calf'  
 123,117,'BL&hht810 calf','integer','i3','regression',1,1,0,'BL&hht810 calf'  
 124,118,'FAT&cs8 calf','integer','i1','subclass',6,1,0,'FAT&cs8 calf'  
 125,119,'RBA8 calf','integer','i1','subclass',2,1,0,'RBA 8 calf'  
 126,120,'DATE9 calf','integer','i6','regression',1,1,1,'DATE9 calf'  
 127,121,'WT9 calf','integer','i3','regression',1,1,1,'WT9 calf'  
 128,122,'BL9 calf','integer','i1','subclass',2,1,0,'BL9 calf'  
 129,123,'FAT9 calf','integer','i1','subclass',2,1,0,'FAT9 calf'  
 130,124,'RBA9 calf','integer','i1','subclass',2,1,0,'RBA 9 calf'  
 131,125,'DATE10 calf','integer','i6','regression',1,1,1,'DATE10 calf'  
 132,126,'WT10 calf','integer','i3','regression',1,1,1,'WT10 calf'  
 133,127,'BL10 calf','integer','i1','subclass',2,1,0,'BL10 calf'  
 134,128,'FAT10 calf','integer','i1','subclass',2,1,0,'FAT10 calf'  
 135,129,'RBA10 calf','integer','i1','subclass',2,1,0,'RBA 10 calf'  
 136,130,'DATE11 calf','integer','i6','regression',1,1,1,'DATE11 calf'  
 137,131,'WT11 calf','integer','i3','regression',1,1,1,'WT11 calf'  
 138,132,'BL&hht1110 calf','integer','i3','regression',1,1,0,'BL&hht1110 calf'  
 139,133,'FAT&cs11 calf','integer','i1','subclass',6,1,0,'FAT&cs11 calf'  
 140,134,'RBA&mtxp11 calf','integer','i1','subclass',60,1,0,'RBA &mtxp11 calf'  
 141,135,'DATE12 calf','integer','i6','regression',1,1,1,'DATE12 calf'  
 142,136,'WT12 calf','integer','i3','regression',1,1,1,'WT12 calf'  
 143,137,'BL12 calf','integer','i1','subclass',2,1,0,'BL12 calf'  
 144,138,'FAT12 calf','integer','i1','subclass',2,1,0,'FAT12 calf'  
 145,139,'RBA12 calf','integer','i1','subclass',2,1,0,'RBA 12 calf'  
 146,140,'KP12 calf','integer','i2','subclass',12,1,0,'KP12 calf'  
 147,141,'PEN12 calf','integer','i2','subclass',10,1,0,'PEN12 calf'  
 148,142,'MS910\_12 calf','integer','i2','regression',1,1,0,'MS910\_12 calf'  
 149,143,'HH910\_12 calf','integer','i3','regression',1,1,0,'HH910\_12 calf'  
 150,144,'DATE13 calf','integer','i6','regression',1,1,1,'DATE13 calf'  
 151,145,'WT13 calf','integer','i3','regression',1,1,1,'WT13 calf'  
 152,146,'BL13 calf','integer','i1','subclass',2,1,0,'BL13 calf'  
 153,147,'FAT13 calf','integer','i1','subclass',2,1,0,'FAT13 calf'  
 154,148,'RBA13 calf','integer','i1','subclass',2,1,0,'RBA 13 calf'  
 155,149,'DATE14 calf','integer','i6','regression',1,1,1,'DATE14 calf'  
 156,150,'WT14 calf','integer','i3','regression',1,1,1,'WT14 calf'  
 157,151,'DATE15 calf','integer','i6','regression',1,1,1,'DATE15 calf'  
 158,152,'WT15 calf','integer','i3','regression',1,1,1,'WT15 calf'  
 159,153,'Vit D\_15 calf','integer','i1','subclass',3,1,1,'Vit D\_15 calf'  
 160,154,'DATE16 calf','integer','i6','regression',1,1,1,'DATE16 calf'  
 161,155,'WT16 calf','integer','i3','regression',1,1,1,'WT16 calf'  
 162,156,'DATE17 calf','integer','i6','regression',1,1,1,'DATE17 calf'  
 163,157,'WT17 calf','integer','i3','regression',1,1,1,'WT17 calf'  
 164,158,'FINALDATE calf','integer','i6','regression',1,1,1,'FINALDATE calf'  
 165,159,'FINALWT calf','integer','i3','regression',1,1,1,'FINALWT calf'  
 166,160,'SLDATE calf','integer','i6','regression',1,1,1,'SLDATE calf'  
 167,161,'SLWT calf','integer','i3','regression',1,1,1,'SLWT calf'  
 168,162,'YEARSET calf','integer','i4','subclass',40,1,1,'YEARSET calf'

**Input File 3:**      *workfile.*

The base data file **must be corrected for erroneous information** before using it as input file (*workfile*) for program **edped**. If necessary, some editing commands can be added to **edped**, however, this type of editing should be kept to a minimum. The main editing of the input data file done in **edped** is aimed at recoding, rearrangement, and addition of new elements.

The input data file **must be sorted** such that parents **precede** progeny. Beef cattle data files could be sorted by calf birth date, and animal identification. Dairy cattle data could be sorted by female birth date, animal identification, and lactation number.

### Sample of records from Angus-Brahman multibreed *workfile*

```

YEARSET,EXPNUM, REG NUM,ASSOC, "BULL NAME", "'MATING
FORMS",CALF,SHR,CG,AN,BR,CULDAT,CUC,SIRE,SG,AN,BR,MATE,MG,AN,BR, "MATE
NAME",DAM,SHR,DG,AN,BR,CULDAT,CUC,MGS,MG,AN,BR,MGDAM,DDG,AN,BR,AI1DAT,INS,AI2DAT,INS,AI3DA
T,INS,CBN,CBG, "CBNAME",CB IN,CB
OUT,EXP,TRP,CONDAT,BDATE,GLA1,GLA2,GLA3,MXGLNS,DG,MG,AIGLEN,AI_NS,NSGLEN,CALF,CE,NC,SEX,BW
T,SUR,DZDAT,RFD,NSX,CASDAT,DATE1,WT,BL,FAT,RBA,DATE2,WT,BL,FAT,RBA,DATE3,WT,BL,FAT,RBA,DATE
E4,WT,HHT10 in,BL,FAT,RBA,DATE5,WT,BL,HHT10
in,RBA,DATE6,WT,BL&cs,FAT&fs,RBA&ns,MGT&hs,DATE7,WT,BL,FAT,RBA,MGT,WDATE,WWT,HHT10
in,CS,FS,OS,NS,EXP,TRP,DATEIN,DATEOUT,DATE8,WT,BL&10hht,FAT&cs,RBA,DATE9,WT,BL,FAT,RBA,DATE
10,WT,BL,FAT,RBA,DATE11,WT,BL&hht10,FAT&cs,RBA&mtxp,DATE12,WT,BL,FAT,RBA,KP,PEN,MS910,HH91
0,DATE13,WT,BL,FAT,RBA,DATE14, WT,DATE15, WT,Vit
D,DATE16,WT,DATE17,WT,FINALDATE,FINALWT,SL DATE,SL WT,YEARSET, BULL NAME,MATING FORMS,MATE
NAME,CBNAME
1900,0,,, "J K PINE TAR", "",10362604,,1,32,0,,6834245,1,32,0,,,,,
",0,,1,32,0,,0,1,32,0,0,1,32,0,,,,,
",,,,,,1,,,,,1,,,,,
,,,,,1900,J K PINE TAR
1900,0,,, "", "",9000014,,6,20,12,,0,6,20,12,,,,,
",0,,6,20,12,,0,6,20,12,0,6,20,12,,,,,
",,,,,,1,,,,,1,,,,,
,,,,,1900
1900,0,,, "", "",8442952,,1,32,0,,0,1,32,0,, "",0,,1,32,0,,0,1,32,0,0,1,32,0,,,,,
",,,,,,1,,,,,1,,,,,
,,,,,1900
1900,0,,, "", "",7640000,,5,0,32,,0,5,0,32,, "",0,,5,0,32,,0,5,0,32,0,5,0,32,,,,,
",,,,,,1,,,,,1,,,,,
,,,,,1900
1900,0,,, "PINE DRIVE BIG SKY", "",6834245,,1,32,0,,0,1,32,0,,,,,
",0,,1,32,0,,0,1,32,0,0,1,32,0,,,,,
",,,,,,1,,,,,1,,,,,
,,,,,1900,PINE DRIVE BIG SKY
1900,0,,, "", "",5670200,,5,0,32,,0,5,0,32,, "",0,,5,0,32,,0,5,0,32,0,5,0,32,,,,,
",,,,,,1,,,,,1,,,,,
,,,,,1900
1900,0,,, "", "",5150000,,5,0,32,,0,5,0,32,, "",0,,5,0,32,,0,5,0,32,0,5,0,32,,,,,
",,,,,,1,,,,,1,,,,,
,,,,,1900
1900,0,,, "", "",5111000,,6,20,12,,0,6,20,12,,,,,
",0,,6,20,12,,0,6,20,12,0,6,20,12,,,,,
",,,,,,1,,,,,1,,,,,
,,,,,1900
1900,0,,, "", "",5000000,,6,20,12,,0,6,20,12,,,,,
",0,,6,20,12,,0,6,20,12,0,6,20,12,,,,,
",,,,,,1,,,,,1,,,,,
,,,,,1900
1900,0,,, "", "",4520000,,6,20,12,,0,6,20,12,,,,,
",0,,6,20,12,,0,6,20,12,0,6,20,12,,,,,
",,,,,,1,,,,,1,,,,,
,,,,,1900
1900,0,,, "", "",4400000,,5,0,32,,0,5,0,32,, "",0,,5,0,32,,0,5,0,32,0,5,0,32,,,,,
",,,,,,1,,,,,1,,,,,
,,,,,1900

```

```

1900,0,,, "EMULOUS PRIDE 135", "",4285112,,1,32,0,,0,1,32,0,,,,,
"" ,0,,1,32,0,,,0,1,32,0,0,1,32,0,,,,,,
"" ,,,,,,1,,,,,1,,,,,
,,,,,1900,EMULOUS PRIDE 135
1900,0,,, "", "",4000000,,6,20,12,,0,6,20,12,,,,,
"" ,0,,6,20,12,,,0,6,20,12,0,6,20,12,,,,,
"" ,,,,,,1,,,,,1,,,,,
,,,,,1900
1900,0,,, "", "",3870140,,1,32,0,,0,1,32,0,,,,, "" ,0,,1,32,0,,0,1,32,0,0,1,32,0,,,,,
"" ,,,,,,1,,,,,1,,,,,
,,,,,1900
1900,0,,, "", "",3864114,,2,24,8,,3800047,1,32,0,,,,,
"" ,3824229,,3,16,16,,,0,5,0,32,0,1,32,0,,,,,
"" ,,,,,,1,,,,,1,,,,,
,,,,,1900
1900,0,,, "", "",3856515,,5,0,32,,0,5,0,32,,,,, "" ,0,,5,0,32,,0,5,0,32,0,5,0,32,,,,,
"" ,,,,,,1,,,,,1,,,,,
,,,,,1900
1900,0,,, "", "",3850506,,5,0,32,,0,5,0,32,,,,, "" ,0,,5,0,32,,0,5,0,32,0,5,0,32,,,,,
"" ,,,,,,1,,,,,1,,,,,
,,,,,1900
1900,0,,, "", "",3840047,,1,32,0,,0,1,32,0,,,,, "" ,0,,1,32,0,,0,1,32,0,0,1,32,0,,,,,
"" ,,,,,,1,,,,,1,,,,,
,,,,,1900
1900,0,,, "", "",3830394,,5,0,32,,0,5,0,32,,,,, "" ,0,,5,0,32,,0,5,0,32,0,5,0,32,,,,,
"" ,,,,,,1,,,,,1,,,,,
,,,,,1900
1900,0,,, "", "",3830378,,5,0,32,,0,5,0,32,,,,, "" ,0,,5,0,32,,0,5,0,32,0,5,0,32,,,,,
"" ,,,,,,1,,,,,1,,,,,
,,,,,1900
1900,0,,, "", "",3820225,,5,0,32,,0,5,0,32,,,,, "" ,0,,5,0,32,,0,5,0,32,0,5,0,32,,,,,
"" ,,,,,,1,,,,,1,,,,,
,,,,,1900
1900,0,,, "", "",3820212,,1,32,0,,0,1,32,0,,,,, "" ,0,,1,32,0,,0,1,32,0,0,1,32,0,,,,,
"" ,,,,,,1,,,,,1,,,,,
,,,,,1900
1900,0,,, "", "",3810193,,1,32,0,,0,1,32,0,,,,, "" ,0,,1,32,0,,0,1,32,0,0,1,32,0,,,,,
"" ,,,,,,1,,,,,1,,,,,
,,,,,1900
1900,0,,, "", "",3810140,,1,32,0,,0,1,32,0,,,,, "" ,0,,1,32,0,,0,1,32,0,0,1,32,0,,,,,
"" ,,,,,,1,,,,,1,,,,,
,,,,,1900

```

**Output Files:** *output*  
*struct\_pedigree\_file*  
*struct\_data\_file*  
*pedigree*  
*cgdata*

**Output File 1:** *output*

Printout of the edped computer run. It contains transcripts of files param and struct\_workfile, and samples of intermediate steps of edped (used for error diagnostics purposes).

### Sample of the output file from the 2001 Angus-Brahman genetic evaluation

```

READ [1a] TITLES
=====
*** ANGUS-BRAHMAN MULTIBREED GENETIC EVALUATION SYSTEM ***

```

```

*** PEDIGREE FILE AND DATA FILE WITH SEQUENTIAL NUMBERS ***
*** Input Files:  mabped.param
                  CAFworkfile_1987-2001-a.txt
*** Output Files: mabpedo_all.103001
                  mabtemped_all.103001
                  mabped_all.103001
                  mabtempdata_all.103001
                  mabcgdata_all.103001
=====
READ [1b] DATA SET NAME
  mab-uf1
READ [2] PARAMETERS
maxanim = maximum # animals in workfile
mbuinif = 15 -> DO **NOT** CHANGE THIS VALUE (Defined in iproglim from MREMLEM)
          = max number of pieces of information needed per bull for G inverse
numcountries = number of countries represented in workfile
maxnumexpsires = maximum number of experimental sires
maxanim mbuinif numcountries maxnumexpsires
*** SEPARATED BY SPACES ***
      maxanim      mbuinif      numcountries maxnumexpsires
      40000         15           1             200
READ [2a] PARAMETERS
numidped = # id per animal and its ancestors in the pedigree file (PEDIG)
numiddat = # id per animal and its ancestors in the data file (LCSET)
numidped numiddat
*** SEPARATED BY SPACES ***
      numidped      numiddat
      3              2
READ [2b] PARAMETERS
maxnumbreed = number of breeds in workfile
maxbreedanim = maximum number of breeds represented in an animal
numbreedgeval = number of breeds in the output pedigree and data files
idenbf = denominator of breed fractions
numtraits = number of traits in workfile
maxnumbreed maxbreedanim numbreedgeval idenbf numtraits
*** SEPARATED BY SPACES ***
      maxnumbreed  maxbreedanim  numbreedgeval  idenbf  numtraits
      2            2             2                 32      19
READ [2c] Number of columns (integer, character, contgrps in workfile)
numintfields = # integer fields in workfile
numcharfields = # character fields in workfile
numrelevint = # relevant integer fields for MREMLEM modeling
numdatuptrt = # dates and unprocessed traits in workfile
maxnumuptrt = maximum # unprocessed traits per date
numintfields numcharfields numrelevint numdatuptrt maxnumuptrt
*** SEPARATED BY SPACES ***
      numintfields  numcharfields  numrelevint  numdatuptrt  maxnumuptrt
      162           6              15            21            3
READ [3] kdfyr lstyr
*****
kdfyr = year of birth of the oldest calves in the data set
lstyr = year of birth of the youngest calves in the data set
*****
      first cafyr      last cafyr
      1987             2010
READ [3a] Location of relevant integer elements (numrelevint) in INPUT
          vector infields (workfile)
*** SEPARATED BY SPACES ***
*** CAN MODIFY COLUMN 2 ONLY !!! ***
      location      number element
      1              1 YEARSET calf
      2              44 TRP PreWean calf
      3              46 Birth Date calf
      4              59 Sex calf
      5              61 SUR PreWean calf
      6              62 DZDAT calf
      7              63 RFD calf
      8              65 CASDAT calf
      9              64 New Sex calf
      10             104 Weaning Date calf
      11             112 TRP PostWean calf
      12             134 TRP PostYear1 calf
      13             160 Slaughter Date calf
      14             -1 YEARSET dam
      15             -1 Birth Date dam
READ [3b]
maxnumcg = # contemporary groups to be constructed
numcgfactors(j) = # factors per contemporary group:
loccgfactor(i,j) = location of cgfactors in OUTPUT vector wrintfields
** For output data files: tempdatafile and cgdata **
*** SEPARATED BY SPACES ***

```

```

Number of contemporary groups to be constructed (maxnumcg)      2
cg numcgfactor      loccgfactor(i,j)      namecgfactor(i,j)
  1          2          1 YEARSET calf
                    4 Sex calf
  2          3          1 YEARSET calf
                    9 New Sex calf
                    2 TRP PreWean calf
READ [3c] Location of unprocessed dates and weights, and possibly other traits
(numdatuptrt), where other traits = heights, scores (e.g., CS, FS, OS, NS)
*** SEPARATED BY SPACES ***
*** CAN MODIFY COLUMNS 2,3 AND 5 ONLY !!! ***
*** DO NOT CHANGE COLUMNS 1, 4, AND 6 (USED BY edped IN THE ORDER BELOW) !!! ***
*** Columns: numdat numuptrt locdate namdate locuptrt namuptrt ***
  date # # traits      col date      col trait
    1   3      46 BDATE      60 BWT
                        53 AIGLEN
                        57 CEase
    2   1      66 DATE1      67 WT1
    3   1      71 DATE2      72 WT2
    4   1      76 DATE3      77 WT3
    5   1      81 DATE4      82 WT4
    6   1      87 DATE5      88 WT5
    7   1      92 DATE6      93 WT6
    8   1      98 DATE7      99 WT7
    9   1     104 WDATE     105 WWT
   10   1     115 DATE8     116 WT8
   11   1     120 DATE9     121 WT9
   12   1     125 DATE10    126 WT10
   13   1     130 DATE11    131 WT11
   14   1     135 DATE12    136 WT12
   15   1     144 DATE13    145 WT13
   16   1     149 DATE14    150 WT14
   17   1     151 DATE15    152 WT15
   18   1     154 DATE16    155 WT16
   19   1     156 DATE17    157 WT17
   20   1     158 FIDATE    159 FIWT
   21   1     160 SLDATE    161 SLWT
READ [4] maxnumbreed BREED CODES AND BREED NAMES
*** SEPARATED BY SPACES ***
  ibrcoef(i) ibrname(1,i)      ibrname(2,i)
    1 ANGUS      BOS TAURUS
    2 BRAHMAN    BOS INDICUS
READ [5] numbreedgeval BREED CODES AND BREED NAMES
*** SEPARATED BY SPACES ***
  jbrcoef(i) jbrname(1,i)      jbrname(2,i)
    1 ANGUS      BOS TAURUS
    2 BRAHMAN    BOS INDICUS
READ [6] LOCATION OF PEDIGREE NUMBERS, BREED FRACTIONS (intfields vector),
JPEDCODES, AND PEDIGREE NAMES
jpedcode = ancestor information AVAILABLE in workfile (iancped)
*** SEPARATED BY SPACES ***
*** CODE = 0 (ZERO) IF AN ANCESTOR IS **NOT** PRESENT IN THE DATA FILE ***
*** Columns: idloc brfr1 brfr2 jpedcode(i) ipedname(i) ***
  id loc      brfr1      brfr2 jpedcode(i) ipedname(i)
    2
    3          6          7          1 ANIMAL(CODE=1)
   10         12         13          2 SIRE(CODE=2)
   18         21         22          3 DAM(CODE=3)
   25         27         28          6 MATERNAL GRANDSIRE(CODE=6)
   29         31         32          7 MATERNAL GRANDDAM(CODE=7)
READ [7] LOCATION OF TRAITS IN VECTOR trait
*** SEPARATED BY SPACES ***
*** Columns: trait codes and trait names
  itrcoef(i) itrtrname(i)
    1 GESTATION LENGTH
    2 BIRTH WEIGHT
    3 WEANING WEIGHT 205D
    4 PWG 205D TO 365D
    5 PWG 205D TO 550D
    6 PWG 365D TO 550D
    7 WEIGHT 365D
    8 WEIGHT 550D
    9 SLAUGHTER AGE
   10 WT GAIN BIRTH-100D
   11 WT GAIN 100D-200D
   12 WT GAIN 200D-300D
   13 WT GAIN 300D-400D
   14 WT GAIN 400D-500D
   15 WEIGHT 100D
   16 WEIGHT 200D
   17 WEIGHT 300D

```

```

18 WEIGHT 400D
19 WEIGHT 500D
READ [8] COUNTRY CODES AND COUNTRY NAMES
*** SEPARATED BY SPACES ***
countrycode countryname
1 USA

```

```

=====
(readparam_mab_ufl) INPUT PARAMETERS FOR cset
=====
numanped numbreedgeval numwrintfields maxnumcg numtraits numwrcharfields
5          2          59          2          19          1
=====
BWT cont grp   WWT cont grp
80             81
=====
loc sire       loc mgs
6              14
=====

```

```

=====
*****
STRUCTURE OF THE ANGUS-BRAHMAN MULTIBREED WORKFILE
Column #,Char_Int Variable #,Column Name,FORTRAN Type,Format,Variable Type,MaxNumSub,Denom
*****

```

```

=====
1 1 YEARSET calf integer 14 subclass 40 1 1
2 2 EXPNUM bull integer 14 subclass 400 1 1
3 1 REG NUM bull character a10 subclass 400 1 1
4 2 ASSOC bull character a4 subclass 20 1 1
5 3 BULL NAME character a26 subclass 400 1 1
6 4 MATG FORM bullname character a14 subclass 400 1 1
7 3 CALF number integer 18 subclass 4000 1 0
8 4 SHR calf integer 11 subclass 4 1 0
9 5 CG calf integer 11 regression 6 32 0
10 6 AN calf integer 12 regression 1 32 0
11 7 BR calf integer 12 regression 1 1 0
12 8 CULDAT calf integer 16 regression 1 1 0
13 9 CUC calf integer 12 subclass 16 1 0
14 10 SIRE number integer 18 subclass 400 1 0
15 11 SG sire integer 11 subclass 6 1 0
16 12 AN sire integer 11 regression 1 32 0
17 13 BR sire integer 11 regression 1 32 0
18 14 MATE number integer 18 subclass 400 1 0
19 15 MG mate integer 11 subclass 6 1 0
20 16 AN mate integer 12 regression 1 32 0
21 17 BR mate integer 12 regression 1 32 0
22 5 MATE NAME character a14 subclass 400 1 0
23 18 DAM integer 18 subclass 4000 1 0
24 19 SHR dam integer 11 subclass 4 1 0
25 20 DG dam integer 11 subclass 6 1 0
26 21 AN dam integer 12 regression 1 32 0
27 22 BR dam integer 12 regression 1 32 0
28 23 CULDAT dam integer 16 regression 1 1 0
29 24 CUC dam integer 13 subclass 50 1 0
30 25 MGS number integer 18 subclass 400 1 0
31 26 MG mgs integer 11 subclass 6 1 0
32 27 AN mgs integer 12 regression 1 32 0
33 28 BR mgs integer 12 regression 1 32 0
34 29 MGDAM number integer 18 subclass 4000 1 0
35 30 DDG mgd integer 11 subclass 6 1 0
36 31 AN mgd integer 12 regression 1 32 0
37 32 BR mgd integer 12 regression 1 32 0
38 33 AI1DAT integer 16 regression 1 1 0
39 34 INS1 integer 11 subclass 4 1 0
40 35 AI2DAT integer 16 regression 1 1 0
41 36 INS2 integer 11 subclass 4 1 0
42 37 AI3DAT integer 16 regression 1 1 0
43 38 INS3 integer 11 subclass 4 1 0
44 39 CBNumber integer 18 subclass 240 1 1
45 40 CBGroup integer 11 subclass 6 1 0
46 6 CBNAME character a14 subclass 240 1 0
47 41 CB IN integer 16 regression 1 1 0
48 42 CB OUT integer 16 regression 1 1 0
49 43 EXP number integer 14 subclass 60 1 0
50 44 TRP number integer 14 subclass 60 1 0
51 45 CONDAT integer 16 regression 1 1 0
52 46 BDATE calf integer 16 regression 1 1 1
53 47 GLA1 calf integer 13 regression 1 1 0

```

54	48	GLA2 calf	integer	13	regression	1	1	0
55	49	GLA3 calf	integer	13	regression	1	1	0
56	50	MXGLNS calf	integer	13	regression	1	1	0
57	51	DG dam	integer	11	subclass	6	1	0
58	52	MG mgs	integer	11	subclass	6	1	0
59	53	ATGLEN calf	integer	13	regression	1	1	1
60	54	AI_NS indicator	integer	11	subclass	3	1	0
61	55	NSGLEN calf	integer	13	regression	1	1	0
62	56	CALF number	integer	18	subclass	4000	1	0
63	57	CEase	integer	11	subclass	4	1	1
64	58	NCalves	integer	11	subclass	3	1	1
65	59	SEX calf	integer	11	subclass	2	1	1
66	60	BWT calf	integer	13	regression	1	1	1
67	61	SUR calf	integer	12	subclass	16	1	1
68	62	DZDAT calf	integer	16	regression	1	1	1
69	63	RPD calf	integer	12	subclass	16	1	1
70	64	NSX calf	integer	11	subclass	3	1	1
71	65	CASDAT calf	integer	16	regression	1	1	1
72	66	DATE1 calf	integer	16	regression	1	1	1
73	67	WT1 calf	integer	13	regression	1	1	1
74	68	BL1 calf	integer	11	subclass	2	1	0
75	69	FAT1 calf	integer	11	subclass	2	1	0
76	70	RBA1 calf	integer	11	subclass	2	1	0
77	71	DATE2 calf	integer	16	regression	1	1	1
78	72	WT2 calf	integer	13	regression	1	1	1
79	73	BL2 calf	integer	11	subclass	2	1	0
80	74	FAT2 calf	integer	11	subclass	2	1	0
81	75	RBA2 calf	integer	11	subclass	2	1	0
82	76	DATE3 calf	integer	16	regression	1	1	1
83	77	WT3 calf	integer	13	regression	1	1	1
84	78	BL3 calf	integer	11	subclass	2	1	0
85	79	FAT3 calf	integer	11	subclass	2	1	0
86	80	RBA3 calf	integer	11	subclass	2	1	0
87	81	DATE4 calf	integer	16	regression	1	1	1
88	82	WT4 calf	integer	13	regression	1	1	1
89	83	HHT410 in calf	integer	13	regression	1	1	0
90	84	BL4 calf	integer	11	subclass	2	1	0
91	85	FAT4 calf	integer	11	subclass	2	1	0
92	86	RBA4 calf	integer	11	subclass	2	1	0
93	87	DATE5 calf	integer	16	regression	1	1	1
94	88	WT5 calf	integer	13	regression	1	1	1
95	89	BL5 calf	integer	11	subclass	2	1	0
96	90	HHT510 in calf	integer	13	regression	1	1	0
97	91	RBA5 calf	integer	11	subclass	2	1	0
98	92	DATE6 calf	integer	16	regression	1	1	1
99	93	WT6 calf	integer	13	regression	1	1	1
100	94	BL&cs6 calf	integer	11	subclass	6	1	0
101	95	FAT&fs6 calf	integer	11	subclass	6	1	0
102	96	RBA&ns6 calf	integer	11	subclass	6	1	0
103	97	MGT&hs6 calf	integer	11	subclass	6	1	1
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105	99	WT7 calf	integer	13	regression	1	1	1
106	100	BL7 calf	integer	11	subclass	2	1	0
107	101	FAT7 calf	integer	11	subclass	2	1	0
108	102	RBA7 calf	integer	11	subclass	2	1	0
109	103	MGT7 calf	integer	11	subclass	6	1	1
110	104	WDATE calf	integer	16	regression	1	1	1
111	105	WWT calf	integer	13	regression	1	1	1
112	106	WHHT10 in calf	integer	13	regression	1	1	1
113	107	WCS	integer	11	subclass	6	1	1
114	108	WFS	integer	11	subclass	6	1	1
115	109	WOS	integer	11	subclass	6	1	1
116	110	WNS	integer	11	subclass	6	1	1
117	111	EXP_PW calf	integer	12	subclass	60	1	1
118	112	TRP_PW calf	integer	14	subclass	60	1	1
119	113	DATEIN_PW calf	integer	16	regression	1	1	1
120	114	DATOUT_PW calf	integer	16	regression	1	1	1
121	115	DATE8 calf	integer	16	regression	1	1	1
122	116	WT8 calf	integer	13	regression	1	1	1
123	117	BL&hht810 calf	integer	13	regression	1	1	0
124	118	FAT&cs8 calf	integer	11	subclass	6	1	0
125	119	RBA8 calf	integer	11	subclass	2	1	0
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130	124	RBA9 calf	integer	11	subclass	2	1	0
131	125	DATE10 calf	integer	16	regression	1	1	1
132	126	WT10 calf	integer	13	regression	1	1	1
133	127	BL10 calf	integer	11	subclass	2	1	0
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135	129	RBA10 calf	integer	11	subclass	2	1	0
136	130	DATE11 calf	integer	16	regression	1	1	1
137	131	WT11 calf	integer	13	regression	1	1	1
138	132	BL&hht1110 calf	integer	13	regression	1	1	0
139	133	FAT&cs11 calf	integer	11	subclass	6	1	0
140	134	RBA&mtxp11 calf	integer	11	subclass	60	1	0
141	135	DATE12 calf	integer	16	regression	1	1	1
142	136	WT12 calf	integer	13	regression	1	1	1
143	137	BL12 calf	integer	11	subclass	2	1	0
144	138	FAT12 calf	integer	11	subclass	2	1	0
145	139	RBA12 calf	integer	11	subclass	2	1	0
146	140	KP12 calf	integer	12	subclass	12	1	0
147	141	PEN12 calf	integer	12	subclass	10	1	0
148	142	MS910_12 calf	integer	12	regression	1	1	0
149	143	HH910_12 calf	integer	13	regression	1	1	0
150	144	DATE13 calf	integer	16	regression	1	1	1
151	145	WT13 calf	integer	13	regression	1	1	1
152	146	BL13 calf	integer	11	subclass	2	1	0
153	147	FAT13 calf	integer	11	subclass	2	1	0
154	148	RBA13 calf	integer	11	subclass	2	1	0
155	149	DATE14 calf	integer	16	regression	1	1	1
156	150	WT14 calf	integer	13	regression	1	1	1
157	151	DATE15 calf	integer	16	regression	1	1	1
158	152	WT15 calf	integer	13	regression	1	1	1
159	153	Vit D_15 calf	integer	11	subclass	3	1	1
160	154	DATE16 calf	integer	16	regression	1	1	1
161	155	WT16 calf	integer	13	regression	1	1	1
162	156	DATE17 calf	integer	16	regression	1	1	1
163	157	WT17 calf	integer	13	regression	1	1	1
164	158	FINALDATE calf	integer	16	regression	1	1	1
165	159	FINALWT calf	integer	13	regression	1	1	1
166	160	SL DATE calf	integer	16	regression	1	1	1
167	161	SL WT calf	integer	13	regression	1	1	1
168	162	YEARSET calf	integer	14	subclass	40	1	1

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(proctrails) Unprocessed ages and weights for calf, icount 1000
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(proctrails) j 2 wtages(j) 0 1lj 67 intfields(1lj) 0
(proctrails) j 3 wtages(j) 24 1lj 72 intfields(1lj) 54
(proctrails) j 4 wtages(j) 54 1lj 77 intfields(1lj) 75
(proctrails) j 5 wtages(j) 95 1lj 82 intfields(1lj) 107
(proctrails) j 6 wtages(j) 137 1lj 88 intfields(1lj) 150
(proctrails) j 7 wtages(j) 186 1lj 93 intfields(1lj) 205
(proctrails) j 8 wtages(j) 236 1lj 99 intfields(1lj) 255
(proctrails) j 9 wtages(j) 236 1lj 105 intfields(1lj) 255
(proctrails) j 10 wtages(j) 275 1lj 116 intfields(1lj) 260
(proctrails) j 11 wtages(j) 0 1lj 121 intfields(1lj) 0
(proctrails) j 12 wtages(j) 360 1lj 126 intfields(1lj) 259
(proctrails) j 13 wtages(j) 388 1lj 131 intfields(1lj) 257
(proctrails) j 14 wtages(j) 415 1lj 136 intfields(1lj) 275
(proctrails) j 15 wtages(j) 0 1lj 145 intfields(1lj) 0
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(proctrails) j 18 wtages(j) 0 1lj 155 intfields(1lj) 0
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(proctrails) j 20 wtages(j) 0 1lj 159 intfields(1lj) 0
(proctrails) j 21 wtages(j) 0 1lj 161 intfields(1lj) 0

(proctrails) Traits for calf, icount 1000
(proctrails) GESTATION LENGTH 1 trait(i) 279
(proctrails) BIRTH WEIGHT 2 trait(i) 36
(proctrails) WEANING WEIGHT 205D 3 trait(i) 226
(proctrails) PWG 205D TO 365D 4 trait(i) 5
(proctrails) PWG 205D TO 550D 5 trait(i) 0
(proctrails) PWG 365D TO 550D 6 trait(i) 0
(proctrails) WEIGHT 365D 7 trait(i) 231
(proctrails) WEIGHT 550D 8 trait(i) 0
(proctrails) SLAUGHTER AGE 9 trait(i) 0
(proctrails) WT GAIN BIRTH-100D 10 trait(i) 75
(proctrails) WT GAIN 100D-200D 11 trait(i) 105
(proctrails) WT GAIN 200D-300D 12 trait(i) 3
(proctrails) WT GAIN 300D-400D 13 trait(i) 29
(proctrails) WT GAIN 400D-500D 14 trait(i) 0
(proctrails) WEIGHT 100D 15 trait(i) 111
(proctrails) WEIGHT 200D 16 trait(i) 216
(proctrails) WEIGHT 300D 17 trait(i) 219
(proctrails) WEIGHT 400D 18 trait(i) 248
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```

```

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```

## Output File 2: *struct\_pedigree\_file*

### Struct\_pedigree\_file from the 2001 Angus-Brahman genetic evaluation

```

'begin headings'
*****
'STRUCTURE OF THE MULTIBREED ANGUS-BRAHMAN PEDIGREE FILE'
'LOCATION NAME OF EFFECT TYPE MAXNUMSUB DENOMINATOR'
*****
'end headings'
1 'Parent Indicator ' 'subclass ' -1 1
2 'Sex Indicator ' 'subclass ' -1 1
3 'Charact Ident Animal' 'subclass ' -1 1
4 'Ingeger Ident Animal' 'subclass ' -1 1
5 'Seq Number Animal ' 'subclass ' -1 1
6 'Fractn Br 1 Animal ' 'regression' 1 32
7 'Fractn Br 1 Animal' 'regression' 1 32
8 'Charact Ident Sire ' 'subclass ' -1 1
9 'Ingeger Ident Sire ' 'subclass ' -1 1
10 'Seq Number Sire ' 'subclass ' -1 1
11 'Fractn Br 1 Sire ' 'regression' 1 32
12 'Fractn Br 1 Sire ' 'regression' 1 32
13 'Charact Ident Dam ' 'subclass ' -1 1
14 'Ingeger Ident Dam ' 'subclass ' -1 1
15 'Seq Number Dam ' 'subclass ' -1 1
16 'Fractn Br 1 Dam ' 'regression' 1 32
17 'Fractn Br 1 Dam ' 'regression' 1 32
18 'Charact Ident Mgs ' 'subclass ' -1 1
19 'Ingeger Ident Mgs ' 'subclass ' -1 1
20 'Seq Number Mgs ' 'subclass ' -1 1
21 'Fractn Br 1 Mgs ' 'regression' 1 32
22 'Fractn Br 1 Mgs ' 'regression' 1 32

```

23	'Charact Ident Mgd	'subclass'	-1	1
24	'Ingeger Ident Mgd	'subclass'	-1	1
25	'Seq Number Mgd	'subclass'	-1	1
26	'Fractn Br 1 Mgd	'regression'	1	32
27	'Fractn Br 1 Mgd	'regression'	1	32

Output File 3: *struct\_data\_file*

### Struct\_pedigree\_file from the 2001 Angus-Brahman genetic evaluation

```
'begin headings'
*****
'STRUCTURE OF THE EDITED MULTIBREED ANGUS-BRAHMAN DATA FILE'
'LOCATION  NAME OF EFFECT          TYPE          MAXNUMSUB  DENOMINATOR  RENUMBER'
*****
'end headings'
  1  'Int Number Animal      ' 'subclass '      -1          1          0
  2  'Seq Number Animal     ' 'subclass '      -1          1          0
  3  'Fractn Br 1 Animal    ' 'regression'     1          32         0
  4  'Fractn Br 2 Animal    ' 'regression'     1          32         0
  5  'Int Number Sire       ' 'subclass '      -1          1          0
  6  'Seq Number Sire       ' 'subclass '      -1          1          0
  7  'Fractn Br 1 Sire      ' 'regression'     1          32         0
  8  'Fractn Br 2 Sire      ' 'regression'     1          32         0
  9  'Int Number Dam        ' 'subclass '      -1          1          0
 10  'Seq Number Dam        ' 'subclass '      -1          1          0
 11  'Fractn Br 1 Dam       ' 'regression'     1          32         0
 12  'Fractn Br 2 Dam       ' 'regression'     1          32         0
 13  'Int Number Mgs       ' 'subclass '      -1          1          0
 14  'Seq Number Mgs       ' 'subclass '      -1          1          0
 15  'Fractn Br 1 Mgs      ' 'regression'     1          32         0
 16  'Fractn Br 2 Mgs      ' 'regression'     1          32         0
 17  'Int Number Mgd       ' 'subclass '      -1          1          0
 18  'Seq Number Mgd       ' 'subclass '      -1          1          0
 19  'Fractn Br 1 Mgd      ' 'regression'     1          32         0
 20  'Fractn Br 2 Mgd      ' 'regression'     1          32         0
 21  'YEARSET calf        ' 'subclass '     40          1          1 hash renum
 22  'TRP PreWean calf     ' 'subclass '     60          1          1 hash renum
 23  'Birth Date calf     ' 'regression'     1          1          0
 24  'Sex calf            ' 'subclass '      2          1          1 hash renum
 25  'SUR PreWean calf    ' 'subclass '     16          1          1 hash renum
 26  'DZDAT calf         ' 'regression'     1          1          0
 27  'RFD calf           ' 'subclass '     16          1          1 hash renum
 28  'CASDAT calf        ' 'regression'     1          1          0
 29  'New Sex calf       ' 'subclass '      3          1          1 hash renum
 30  'Weaning Date calf   ' 'regression'     1          1          0
 31  'TRP PostWean calf   ' 'subclass '     60          1          1 hash renum
 32  'TRP PostYearl calf  ' 'subclass '     60          1          1 hash renum
 33  'Slaughter Date calf ' 'regression'     1          1          0
 34  'YEARSET dam        ' 'subclass '     40          1          1 hash renum
 35  'Birth Date dam     ' 'regression'     1          1          0
 36  'AGE0 calf          ' 'regression'     1          1          0
 37  'BWT calf           ' 'regression'     1          1          0
 38  'AIGLEN calf       ' 'regression'     1          1          0
 39  'CEase             ' 'subclass '      4          1          1 hash renum
 40  'AGE1 calf          ' 'regression'     1          1          0
 41  'WT1 calf           ' 'regression'     1          1          0
 42  'AGE2 calf          ' 'regression'     1          1          0
 43  'WT2 calf           ' 'regression'     1          1          0
 44  'AGE3 calf          ' 'regression'     1          1          0
 45  'WT3 calf           ' 'regression'     1          1          0
 46  'AGE4 calf          ' 'regression'     1          1          0
 47  'WT4 calf           ' 'regression'     1          1          0
 48  'AGE5 calf          ' 'regression'     1          1          0
 49  'WT5 calf           ' 'regression'     1          1          0
 50  'AGE6 calf          ' 'regression'     1          1          0
 51  'WT6 calf           ' 'regression'     1          1          0
 52  'AGE7 calf          ' 'regression'     1          1          0
```

53	'WT7 calf	' regression'	1	1	0
54	'AGEE calf	' regression'	1	1	0
55	'WWT calf	' regression'	1	1	0
56	'AGE8 calf	' regression'	1	1	0
57	'WT8 calf	' regression'	1	1	0
58	'AGE9 calf	' regression'	1	1	0
59	'WT9 calf	' regression'	1	1	0
60	'AGE10 calf	' regression'	1	1	0
61	'WT10 calf	' regression'	1	1	0
62	'AGE11 calf	' regression'	1	1	0
63	'WT11 calf	' regression'	1	1	0
64	'AGE12 calf	' regression'	1	1	0
65	'WT12 calf	' regression'	1	1	0
66	'AGE13 calf	' regression'	1	1	0
67	'WT13 calf	' regression'	1	1	0
68	'AGE14 calf	' regression'	1	1	0
69	'WT14 calf	' regression'	1	1	0
70	'AGE15 calf	' regression'	1	1	0
71	'WT15 calf	' regression'	1	1	0
72	'AGE16 calf	' regression'	1	1	0
73	'WT16 calf	' regression'	1	1	0
74	'AGE17 calf	' regression'	1	1	0
75	'WT17 calf	' regression'	1	1	0
76	'FINAL AGE calf	' regression'	1	1	0
77	'FINALWT calf	' regression'	1	1	0
78	'SL AGE calf	' regression'	1	1	0
79	'SL WT calf	' regression'	1	1	0
80	'BWT cont grp	' subclass '	30	1	1 hash renum
81	'WWT cont grp	' subclass '	309	1	1 hash renum
82	'GESTATION LENGTH	' regression'	1	1	0
83	'BIRTH WEIGHT	' regression'	1	1	0
84	'WEANING WEIGHT 205D	' regression'	1	1	0
85	'PWG 205D TO 365D	' regression'	1	1	0
86	'PWG 205D TO 550D	' regression'	1	1	0
87	'PWG 365D TO 550D	' regression'	1	1	0
88	'WEIGHT 365D	' regression'	1	1	0
89	'WEIGHT 550D	' regression'	1	1	0
90	'SLAUGHTER AGE	' regression'	1	1	0
91	'WT GAIN BIRTH-100D	' regression'	1	1	0
92	'WT GAIN 100D-200D	' regression'	1	1	0
93	'WT GAIN 200D-300D	' regression'	1	1	0
94	'WT GAIN 300D-400D	' regression'	1	1	0
95	'WT GAIN 400D-500D	' regression'	1	1	0
96	'WEIGHT 100D	' regression'	1	1	0
97	'WEIGHT 200D	' regression'	1	1	0
98	'WEIGHT 300D	' regression'	1	1	0
99	'WEIGHT 400D	' regression'	1	1	0
100	'WEIGHT 500D	' regression'	1	1	0
101	'Charact Ident Animal'	' subclass '	-1	1	0

#### Output File 4: *pedigree*

Actual, intermediate integer, sequential integer numbers, breed codes, and breed fractions for all animals and its ancestors.

#### Sample of the output file from the 2001 Angus-Brahman genetic evaluation

1	1	"WR MR. SUVA 203		"	299021	66	0	32	"	
		"	0	0	32	"				0
0	0	32	"			0	0	0	32	"
		"	0	0	0	32				
1	1	"		"	263561	67	12	20	"	
		"	0	0	12	20	"			0
0	12	20	"			0	0	12	20	"
		"	0	0	12	20				

1	1	"		"	263560	68	20	12	"	
0	20	12	0	0 20 12		0	0	20	12	0
1	1	"	0	0 20 12	246417	69	20	12	"	
0	20	12	0	0 20 12		0	0	20	12	0
1	1	"	0	0 20 12	203167	70	20	12	"	
0	20	12	0	0 20 12		0	0	20	12	0
1	1	"	0	0 0 32	26356	71	8	24	"	
0	16	16	0	0 0 32		0	0	32	0	0
1	1	"3949133	0	0 0 32	3949133	72	8	24	"	
0	16	16	0	0 0 32		0	0	32	0	0
1	1	"3939046	0	0 0 32	3939046	73	16	16	"	
0	32	0	0	0 32 0		0	0	32	0	0
1	1	"3939043	0	0 32 0	3939043	74	24	8	"	
0	16	16	0	0 32 0		0	0	0	32	0
1	1	"BRANGUS 2001	0	0 20 12	157	75	20	12	"	
0	20	12	0	0 20 12		0	0	20	12	0
1	1	"CNF-PL-DAYTONA 722D2	0	0 20 12	156	76	20	12	"	
0	20	12	0	0 20 12		0	0	20	12	0
1	1	"HARDEE PATRIOT 0/60	0	0 20 12	155	77	20	12	"	
0	20	12	0	0 20 12		0	0	20	12	0
1	1	"CHAPMAN 2001	0	0 0 32	154	78	0	32	"	
0	0	32	0	0 0 32		0	0	0	32	0
1	1	"MR ST CYR IMPERATOR 60	0	0 0 32	153	79	0	32	"	
0	0	32	0	0 0 32		0	0	0	32	0
1	1	"JCC SUGAR LOX ESTO 735	0	0 0 32	152	80	0	32	"	
0	0	32	0	0 0 32		0	0	0	32	0
1	1	"1980172	0	0 32 0	146	81	32	0	"	
0	32	0	0	0 32 0		0	0	32	0	0
1	1	"1970081	0	0 32 0	142	82	32	0	"	
0	32	0	0	0 32 0		0	0	32	0	0
1	1	"3 B MR SUVA 239/8	0	0 0 32	141	83	0	32	"	
0	0	32	0	0 0 32		0	0	0	32	0
1	1	"LITTLE CREEK RANCH 1999	0	0 20 12	140	84	20	12	"	
0	20	12	0	0 20 12		0	0	20	12	0
1	1	"BRINKS NEW UPDATE 589A2	0	0 20 12	139	85	20	12	"	
0			0	0 20 12						0

```

0 20 12 " " 0 0 20 12 "
1 1 "HD CAROLINA SUN 605 YW " 138 86 20 12 "
" 0 0 20 12 " 0
0 20 12 " " 0 0 20 12 "
1 1 "WHS MADHYO ESTO 542/8 " 137 87 0 32 "
" 0 0 0 32 " 0
0 0 32 " " 0 0 0 32 "
1 1 "PARTIN 1999 " 136 88 0 32 "
" 0 0 0 32 " 0
0 0 32 " " 0 0 0 32 "
1 1 "JDH MR MANSO 526/9 " 135 89 0 32 "
" 0 0 0 32 " 0
0 0 32 " " 0 0 0 32 "
1 1 "BRINKS NORRIS 479M " 132 90 8 24 "
" 0 0 0 32 " 0
0 16 16 " " 0 0 32 0 "
1 1 "SEXTON-CRANE " 130 91 24 8 "
" 0 0 32 0 " 0
0 16 16 " " 0 0 32 0 "
1 1 "1970110 " 129 92 32 0 "
" 0 0 32 0 " 0
0 32 0 " " 0 0 32 0 "
1 1 "RHF MUCHO 5499-6011 " 128 93 32 0 "
" 0 0 32 0 " 0
0 32 0 " " 0 0 32 0 "
1 1 "RA TRAVELER 600 " 127 94 32 0 "
" 0 0 32 0 " 0
0 32 0 " " 0 0 32 0 "
1 1 "SPRING COVE TRUE VALUE " 126 95 32 0 "
" 0 0 32 0 " 0
0 32 0 " " 0 0 32 0 "
1 1 "BAR GS EMPEROR DIDOR 135 " 125 96 0 32 "
" 0 0 0 32 " 0
0 0 32 " " 0 0 0 32 "
1 1 "3969126 " 123 97 8 24 "
" 0 0 0 32 " 0
0 16 16 " " 0 0 32 0 "
1 1 "6-925 " 120 98 24 8 "
" 0 0 32 0 " 0
0 16 16 " " 0 0 32 0 "
" 0 0 0 32

```

Output File 5: *cgdata*

Edited data file containing sequentially numbered animals and their ancestors, elements from the input data file, newly created elements, contemporary groups, traits, and character elements.

### Sample of cgdata file for the Angus-Brahman genetic evaluation

```

3876102 202 0 32 2000000 59 0 32 3800039 201 0 32
3777715 38 0 32 3760612 200 0 32 1 1 31897
2 1 0 0 0 2 32040 0 0 0

```



