Bitmania

Luca Ferraris

	COLLABORATORS		
	TITLE : Bitmania		
ACTION	*NAME*	*DATE*	*SIGNATURE*
WRITTEN BY	Luca Ferraris	July 22, 2024	

REVISION HISTORY			
NUMBER	DATE	DESCRIPTION	NAME

Contents

Chapter 1

Bitmania

1.1   Bitmania V1.2 (07/03/95) - By Luca Ferraris

```
              Bitmania V1.2 - By Luca Ferraris


  Introduction
  Requirements
  Installation
@(" New Features " link "New Features"}
  How To Use Bitmania
  History
  Next versions
  Contacting The Author
  Copyrights
```

1.2   Bitmania / Introduction

```
              Bitmania V1.2 - By Luca Ferraris

  Bitmania V1.2 is a simple student oriented program which allows
  user to convert a number in an other format.
  This is an improved version of Bitmania (the last version is V1.0).

  Features:

  - Decimal  -> Binary
  - Binary   -> Decimal
  - Binary   -> Hexadecimal
  - Hexadacimal -> Binary
  - Decimal  -> Hexadecimal
  - Hexadecimal -> Decimal

  Bitmania is also able to convert a binary number in a code.
  Supported codes are:

  - BCD (four types, see Use for them..)
```

```
- Grey
```

Others Features are:

```
- Factorial of a number
- Fibonacci's numbers
- Arithmetical operations
- Complements ( for binary numbers only!)
```

Bitmania V1.2 has been written completly in AMOS Pro.

1.3   Bitmania/ What's new!

New Features

```
- BCD 8-4-2-1   Corrected! (Sorry for the last wrong version...)
- BCD 2-4-2-1   New BCD code
- BCD Excess 3  An other BCD code...

- Corrected bugs
```

1.4   Bitmania / Requirements

Requirements

There are no particular requirements. I think Bitmania works fine
on all Amigas.

1.5   Bitmania / Installation

Installation

Bitmania can be launched from disk but it can be easily installed
on an hard drive. There are no file of support and so,if you want
to install bitmania on your hard disk, copy the main file.
It's all!

1.6   Bitmania / Use

Use

Bitmania is very easy to use.
If you press the right mouse button, a menu will appear on the
screen. You simply have to choice an option. There are five
menus.

The first is called Programs. It has only an option that quit

```
from program.


The second is called Convertions.This menu allows you to
insert a number to convert in an other format.

EX. From Binary To Decimal


Third menu is called Calculations.
There are six voices under this menu:

- Sum
- Subtraction
- Multiplication
- Division
- Complement to 1
- Complement to 2

The first four options allows you to execute simple operations.
The last two are to calculate complements of a binary number.

COMPLEMENT To 1
---------------
Complement to 1 work in this way.
It is defined such as:

((r^n)-1-X)


where r is the base and X is your number.
For binary numbers, complement to 1 is very simple. Every bit is
tested and it is changed to its negative ( 0->1  1->0 ).

Positive numbers are represented with their module.
Negative numbers are represented with the complement of the correspon-
dent positive number,sign bit included.
There are two representations of number 0

+0   0
-0   1

COMPLEMENT To 2
---------------
Complement to 2 is similar to complement to 1.
In this case, it is defined like:

((r^n)-X)


where r is the base and X is the number to complement.
For binary numbers complement to 2 work in this way:
from right to left, every bit is unchanged till the bit to test is
equal to 1 (this bit is also unchanged). All the others bit from the
first bit setted to 1 are changed to their negative.

Positive numbers are represented with their module, and the sign bit
is setted to 1.
Negative numbers are represented with the complement of the correspon-
```

```
dent positive number, sign bit included.

Example.

+4    0100

-4    0100 --> 1100

+20   00100

-20   11100

There is only a representation for number 0 (because number 0 doesn't
contain bit setted to 1 and so is impossible to complement it!)


The fourth menu is called Others.
There are two voices under it:

- Factorial
- Fibonacci

Factorial allows you to calculate factorial of a number.

EX. Factorial of 3 is 6 (3!=1x2x3)

Fibonacci's numbers are numbers growing faster than normal.
The grow is based on a simple formula:

F(n+2)=F(n)+F(n+1)

F(0)=0 : F(1)=1 : F(2)=2 : F(3)=3

F(3+2)=F(3)+F(3+1)  --> F(5)=3+5=8

The last menu is called Codes.
In this version are supported four codes. They are:

- BCD 8-4-2-1
- BCD 2-4-2-1
- BCD Excess 3
- Grey

BCD 8-4-2-1
-----------
A decimal number is converted to BCD code in a simple way.
Every decimal digit is coverted in the equivalent binary number.
There are 10 decimal digits ranging between 0 & 9 and so there
are 10 binary numbers.

EX.

973  ---->  1001 0111 0011

              _ _ _ _ _ _
              \/   \/   \/
              9    7    3
```

```
BCD 2-4-2-1
-----------
This BCD code is based on complement to 1.
Numbers from 0 to 4 are converted to the equivalent binary numbers and
numbers >4 are the complement of a previous number.

Formula is:

Ad=x    ac=bin(x)
          __
9-x=y   y=ac

EX:

Ad=2   ac=0010
         __
9-2=7   ac=1101

So, there is a table like this:

-----------------------------
Decimal digit |  Binary Code |
-----------------------------
     0              0000
     1              0001
     2              0010
     3              0011
     4              0100
     5              1011
     6              1100
     7              1101
     8              1110
     9              1111
-----------------------------

BCD Excess 3
------------
To convert a decimal number in this code, every decimal digit is
incremented by 3 and after it is converted in the equivalent
binary number.

EX.   184 ---> 4 11 7 --->  0100  1011  0111

GREY
----
For the Grey code is supported the conversion from binary to Grey.
This conversion is based on a simple algorithm:

1) Add a 0 to the left of the binary number
2) Check every couple of bit and  convert them in the correspondent
   Grey value:

   BIT      GREY

   00        0
   01        1
   10        1
```

```
   11        0
```

   This is a simple EX-OR operation.

1.7 **Bitmania / History**

```
                        Program History
```

   * Version 1.0   The first version of Bitmania.
                   It came out on 28/02/95.
                   Main features:

                     - Conversions
                     - Operations
                     - BCD & Grey codes
                     - Other

                   In that version there was a wrong code conversion (BCD).

   * Version 1.2   This! A lot of things have been corrected and added.

1.8 **Bitmania / Next Versions**

```
                        Next Versions
```

   Next versions of Bitmania will include more features.
   In this version the number of supported codes has been incremented
   and so there are only few things to do :-)

   - Shift and rotate options
   - Octal numbers
   - Printing options
   - Debugging

   Look out on Aminet for them!

1.9 **Bitmania / Author**

```
                        Author
```

   Well, i'm Luca Ferraris and i was born on 1974. I'm studying
   at the department of Computer's Science at Turin, Italy.
   I'm an happy owner of an A500 standard with two floppy drives
   and i would like to buy an A4000/30. I know a lot of program-
   ming languages, C,Basic, GWBasic (all basic!), Pascal... but
   my favourite is AMOS Pro (i know it better than others!) and
   i'm working on a lot of projects.

   At this time, you can find my Pattern Generator V1.1 Demo on

```
Aminet in directory gfx/fract. It's shareware and i think
it's a good product (it was my first AMOS Pro program).
I'm working on version 1.9, but currently i have problems with
an Out Of Memory Error and so i think it will be released very
later.

You can contact me via e-mail at address:

aldo@di.unito.it (specify in the subject that your mail is for
                 Luca)

If you want to write to me, well, my snail mail address is:

   Ferraris Luca
   Via Nicola Porpora, 42
   10154 - Turin
   ITALY

I hope you will enjoy with Bitmania. Hallo!
```

1.10 Bitmania / Copyrights

```
                    Copyrights

Bitmania is absolutly a PD program. It can be included in PD col-
lections like Fish Disks, Aminet CDROMs and others.
You can distribute it to everyone you know.
The only limitation is: you cannot modify docs!

© Luca Ferraris - 1994/95
```