

Forces

COLLABORATORS

	<i>TITLE :</i> Forces		
<i>ACTION</i>	<i>NAME</i>	<i>DATE</i>	<i>SIGNATURE</i>
WRITTEN BY		June 25, 2022	

REVISION HISTORY

NUMBER	DATE	DESCRIPTION	NAME

Contents

1	Forces	1
1.1	MBlank 1.05 - Modules/Forces	1
1.2	MBlank 1.05 - Modules/Forces/Bugs	1
1.3	MBlank 1.05 - Modules/Forces/Requirements	1
1.4	MBlank 1.05 - Modules/Forces/Introduction	1
1.5	MBlank 1.05 - Modules/Forces/Help	2
1.6	MBlank 1.05 - Modules/Forces/ToolTypes	2
1.7	MBlank 1.05 - Modules/Forces/History	5

Chapter 1

Forces

1.1 MBlank 1.05 - Modules/Forces

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Forces. (It's alive!)
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Introduction...
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Requirements...
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ToolTypes...
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History...
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Bugs...
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Help...
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1.2 MBlank 1.05 - Modules/Forces/Bugs

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-TOOLTYPES with a string-value (MODE, MASSES etc) don't have  
correct defaults for if a tooltype is not found.
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1.3 MBlank 1.05 - Modules/Forces/Requirements

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Forces uses a few additional libraries.  
It tries to open mathffp.library + mathtrans.library, both  
of version 37.  
If it's unable to open these libraries, it will not use the  
MAGNETIC-MODE.
```

1.4 MBlank 1.05 - Modules/Forces/Introduction

This module will display a number of objects on screen which are affected in their movements by forces.

There are two actual forces available at present:
Gravitational force, which comes from the screen-sides.
Magnetic force, which objects act out on each other.
This magnetic force is in practice more like the gravitational force generated by the masses of the objects.

1.5 MBlank 1.05 - Modules/Forces/Help

Can someone tell me how I can speed up the rendering/double-buffering in a system-legal(friendly) way?

At present my routines, which are not to optimized, are way to slow. Even on my 68030 I can only display a few objects without an irritating slowdown.

At present Forces uses: CALLGFX BltBitMapRastPort
 (render(no mask) and clear)
 CALLGFX BltMaskBitMapRastPort
 (render(mask))
 CALLINT MakeScreen
 CALLINT RethinkDisplay
 (dblbuf)

Contact...

1.6 MBlank 1.05 - Modules/Forces/ToolTypes

- MODE=GRAVITY|MAGNETIC|AUTOMATIC
default: NONE

If NONE is specified, Forces will produce a rather dull display.

GRAVITY|MAGNETIC can be combined.

GRAVITY will cause the objects to be drawn to a specific side of the screen. See G_SOURCE to see what the possibilities are.

MAGNETIC will cause the objects to be drawn to each other in a not so magnetic way. (unless you use M_DIRECTION=MIX, see below)

AUTOMATIC will cause Forces to play a sequence of tooltype-settings.

- RENDER=DBLBUF|MASK
default: NONE

The values to this tooltype can be combined.

DBLBUF will force Forces to use a double-buffered display.

This means no flickering display, but at the same time a doubling of the screen-memory(CHIP) consumption.

MASK will cause Forces to use a mask while drawing the

objects, this will slow down the rendering, but will eliminate the square object-borders.

- SCREENDEPTH=1|2|3|4
default: 4

These are mutually exclusive, first found=used.
1=2 colour display, fastest.
2=4 colour display, little slower.
3=8 colour display, slower.
4=16 colour display, slowest.

- DIM=number
default: 0

Dimming percentage. (don't add % to the number).
Calculation: brightness = 100%-DIM% -> brightness%.
This determines the brightness of the objects,
the background will always be black. The default,
which is 0 percent dimming, means no dimming at all.

- OBJECTS=number
default: 7

Number of objects on screen. (On a 1230 50 MHZ +
4MB FAST), I use OBJECTS=10, but you can set it to
anything you like, boundary checking is done on all
tooltypes!

- IMAGE=SMILEY|COIN|SPHERE
default: SPHERE

Choose one of the currently three available images.
(Not seriously implemented yet, just testing.)

- PRECISION=number
default: 9

Don't change this one. It will affect almost all other
number-tootype values. But if your adventurous:

Use only values between 8-11 here. This is really an
internal variable representing a number of bits. It
represents the internal speed-calculation-precision.

- NOVA_SPEED=number
default: 12000

Speed with which objects will be propelled in certain
situations. If you use a larger M_FORCE for instance,
you will also need a larger NOVA_SPEED to tear up clusters
of magnetic objects.

- AIR_FRICTION=number
default: 5

The friction that's consistently working on moving objects.

(Unfortunately this friction is not relative(reversed) to an object's speed.)
Don't use to high values here, object's will go 'dead' fast.

- WALL_FRICTION=number
default: 150

The friction applied to an object if it collides with a side of the screen. (This value will be subbed from the speed).

- STILL_COUNT=number (number of frames, not allways 1/50th of a secs.)
default: 1250

The amount of time an object may lie still before it is blanked. You don't want areas of your screen to lighten up for longer periods, otherwise the blanker would defeat it's own purpose.

- STILL_MOVE=number (pixels)
default: 1

If you want objects moving at very low speeds to be regarded by Forces as 'still' objects, set this value to 1.
Don't use higher values, because otherwise apparently moving objects will be blanked out.

- G_SOURCE=BOTTOM|TOP|LEFT|RIGHT
default: UP|DOWN

These can be combined, but two opposite sides will cancel out each other. (the calculations are performed though, so on a large number of objects it will have a negative effect.)
G_SOURCE, b.t.w. stands for Gravity-Source.

- G_FORCE=number
default: 300

The higher this value, the stronger the gravitational force.

- M_FORCE=number
default: 300

The higher this value, the stronger the magnetic force.

- M_SUSTAIN=number
default: 1

A higher value here will result in a slower decay of force with distance.

- M_RADIUS=number (in pixels)
default: 800

The circle surrounding an object, in which the magnetic force is active.

- MASSES=RANDOM|EQUAL|ORDER

default: RANDOM

RANDOM, objects masses are randomly picked.
 EQUAL, all objects have the same mass, and therefore size.
 ORDER, object masses will be MAX_MASS, MAX_MASS-1, ... ,
 MAX_MASS-(OBJECTS-1)

- MAX_MASS=number
 default: 15

The masses are used in the stupidly called MAGNETIC-MODE.
 A 'heavier' object will pull harder at other objects than a
 'lighter' object will.

- M_DIRECTION=PULL|PUSH|MIX
 default: PULL

I've included this option just because it was so easy to
 implement. Only the PULL gives interesting results I think.
 MODE=AUTOMATIC does use the MIX value for a short period of
 time.

- NOVA_COUNT=number
 default: 5

If objects overlap each other(if they have exactly the
 same positions), a counter is incremented. If this counter
 reaches NOVA_COUNT, Forces will let the (assumed) cluster
 explode with a maximum speed of NOVA_SPEED.

1.7 MBlank 1.05 - Modules/Forces/History

+MASSES/MAXMASS support added. 'Magnetic' calculations now use
 the mass of BOTH objects to ascertain the pulling/pushing force.

-STILLCOUNT will count the number of cycles in which an object
 lies still, on overflow, NOVA the object.

+Now link sizes according to masses.

18-11 +Add tooltype parsing:

+MODE=GRAVITY|MAGNETIC|TRAILS (combis possible)
 +G_SOURCE=BOTTOM|TOP|LEFT|RIGHT (combis possible)
 +SPHERES=number (if =0, use default(10))
 +PRECISION=number (if <=1, use default(10))
 +NOVA_COUNT=number (default=5)
 +NOVA_SPEED=number (if <=3, use default(15))
 +AIR_FRICTION=number (default=5)
 +WALL_FRICTION=number (default=64)

20-11 +STILL_COUNT=number

+STILL_MOVE=number
 +G_FORCE=number
 +PLAY_TIME=number (1/50th of seconds)
 +M_FORCE=number
 +M_RADIUS=number
 +M_SUSTAIN=number

+MAX_MASS=number
+MASSES=RANDOM|ORDER|EQUAL
+M_DIRECTION=PULL|PUSH|MIX
+RENDER=MASK|DBLBUF
+MASK, if set causes rendering with mask, which causes quite a slowdown.
+DBLBUF, if set causes use of double-buffering, which slows things down AND costs twice as much screen-memory as leaving it OFF.

22-11 +Use BitMapScaleArgs() instead of shapes for every size.
Used routines from IFFtoImage_0.4 in simplified form.

23-11 New TOOLTYPE:
SCREENDEPTH=1|2|3|4

Forces.blm (instead of Spheres.blm):

26-11 +Inserting new Sequencer, together with MODE=AUTOMATIC tt-value.

Forces.blm 1.6:

04-01-1997

+Initial explosion(NOVA) from center.

Forces_1.04:

12-01 +TT: DIM=number (tt), dimming is 100-DIM percent.

+Memory corruption never occurs again, spontaneous unblank does, but this could be due to unexpected mouse-events which another blanker reported as well.

TODO: (maybe)

-Extend AUTOMATIC sequences, different G_SOURCES.

-Remove mousepointer completely.

-TTs: SCREENWIDTH=640/SCREENHEIGHT=512

-TT: MIN_MASS=number (tt), specify a minimum mass for use in random or order. (MASSES=<RANDOM|EQUAL|ORDER>)

-Thinking about a TT: ELASTICS-mode which would be the same as MAGNETICS, but the pulling force would increase as the distance increases. An object would be almost physically connected to another object, maybe with a specified length. If the distance is greater than that length, the pulling force will increase on the connected objects. Maybe also an ELASTICITY variable, which would snap an object to a halt if distance=length, if set to zero.

-Custom rendering.

-Add trails.