More Fun with Bounce!

24K Cassette or 32K Disk

by Joel Gluck

Way back in the golden days, when issues of **ANALOG Computing** were still numbering in the teens, I wrote a program called **Bounce**. It appeared in the **Our Game** column in issue 15. At that time, I was fiddling with a fun new language for the Atari—Action! by Optimized Systems Software. I was thinking that a version of **Bounce** in Action! would be a worthwhile project.

Not long after I had that thought I discovered, to my amusement, that someone had beaten me to it. The friendly folks at **ANALOG Computing** told me one day that a certain David Plotkin had submitted a little ditty called **Bounce in Action!**, which later appeared in issue 20.

However, David's idea of a better **Bounce** program was different from mine. His improvements consisted of adding GTIA color and, of course, speed (with Action!) to the original design. I *enjoyed* playing with David's program, and I was *pleased* that someone else was as enthusiastic about **Bounce** as I was. . . I simply had another idea that had to be tried.

To me, the next natural step for **Bounce** is to add more discs—having multiple moving objects at your command makes **Bounce** about a million times more fun than the original. Of course, Action! is the only high-level language for the Atari that is fast enough to do a multiple-object **Bounce** effectively.

First there was **Bounce**, then **Bounce in Action!**, and now I give you **More Fun with Bounce (MFB** for short).

Other improvements.

I had other upgrading in mind, too. Tops on the list was user-friendliness. **MFB** lets you move the cursor around freely without upsetting the walls or the discs already laid down. Drawing or erasing occurs only when your joystick trigger is held down. To switch between the two functions (drawing and erasing), simply hit the SPACE BAR.

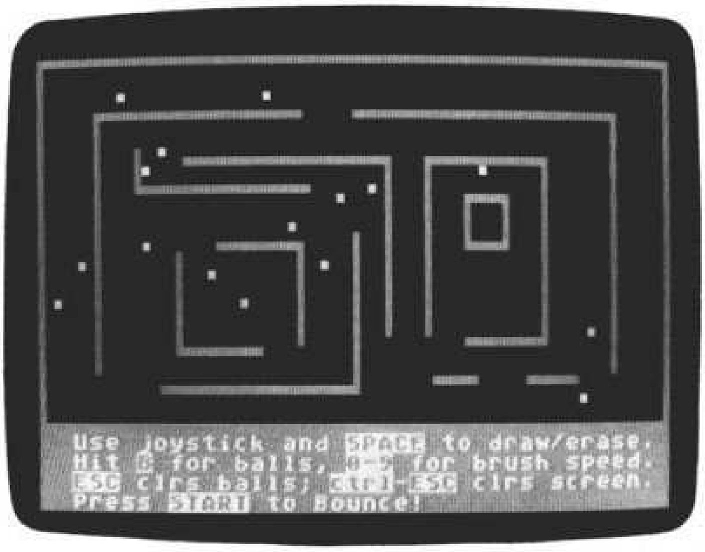
Another user-friendly feature is the amount of control over cursor speed available. For a slow cursor (to maintain fine drawing control), hit a lower digit key like 3 or 4. For high-speed drawing, hit 7 or 8. Cursor speed 9 is for maniacs only.

Laying down the spheres is simplicity itself. Just hit the *B* key. A disc appears at the cursor's position, while the cursor itself moves to the right (so you can keep laying down more). Note that—when drawing, erasing, moving or placing balls—the cursor performs automatic wraparound should it go off the edge of the screen.

Even **Bounce**'s screen-clearing feature has been improved upon. In **MFB**, when you hit ESC, instead of the whole screen clearing, only the discs disappear. This lets you keep your old wall patterns. If you'd like to clear everything, just hit CTRL-ESC. To remove individual discs, draw or erase over them with the cursor.

Let 'er rip!

To start things bouncing, hit START. (If you forgot to lay discs down, the program automatically returns you to the drawing mode.) Immediately, the playing field fills with red goop (to be eaten away by the bouncing balls), and the number of objects bouncing appears in the text window.



Use joystick and SPACE to draw/erase.
Hit C for balls, 0-9 for brush speed.
ESC clrs balls; Ctrl-ESC clrs screen.
Press START to Bounce!

Again, as in drawing mode, you have a number of options. For starters, you have complete control over disc speed. Simply hit digit keys 0 through 9, 9 being the fastest. Keep in mind, however, that the fewer objects you have on screen, the faster they will go (this is a natural by-product of the limited processing speed of your Atari computer). One or two discs on the screen at speed 9 move so fast that they are more of a blur than an object.

You may notice as the balls are bouncing that only one of them is actually making bouncing sounds; the others are silent. To change the "sound focus," hit the S key. This allows you to make different balls audible, one at a time. If you keep hitting S, you'll finally return sound focus to the original disc. This effect is easier to see if you have only a few objects on the screen.

An improvement I've always wanted to add to **Bounce** is to give the user some direct control over the bouncing sphere. In **MFB**, this feature exists and is called "nudging." When you hit the *N* key, the ball that the sound focus is on gets nudged. The effect of this is distinct, yet simple—it causes the ball to react as if a vertical wall were momentarily placed directly ahead of it. Essentially, the ball bounces off of a ghost wall.

Nudging is fun (as is holding down the *N* key for repeated nudgings) and, also, useful if there is a red area on the screen where no ball has been. You can direct one over to that area by nudging it. Note: it is best to practice nudging with only a few objects and at a slow speed. Also note: you can nudge different spheres by changing the sound focus.

When you want to change your wall configuration or the number of bouncing objects, hit SELECT to get back to the drawing mode. To start with a fresh screen, just hit CTRL-ESC. □

Action! listing.

```
;More Fun With BOUNCE
;by Joel Gluck
;for ANALOG COMPUTING

BYTE ARRAY xx(256),yy(256),
           xd(256),yd(256)
BYTE xc,yc,hidden,cmode,TIME=20,
     RANDOM=53770,CONSOL=53279,
     CURSC=708,CH=764,NEWCOL=710,
     dist=[0],audball=[0]
CARD num=[0],curspeed=[1500],
     ballspeed=[900]
CARD ARRAY linept(48)


PROC gr5init()
CARD scrn=88
BYTE line,BALLCOL=709,WALLCOL=710

Graphics(5)
FOR line=0 TO 47 DO
  linept(line)=scrn+20*line
OD
BALLCOL=$0C
WALLCOL=$94
RETURN


PROC plot5(BYTE x,y,col)
BYTE POINTER pixel
BYTE ARRAY colfil= [0 85 170 255],
           mask= [63 207 243 252],
           mask2= [192 48 12 3]

pixel = linept(y)+(x RSH 2)
pixel^ = pixel^ & mask(x & 3)
            % (colfil(col)
            & mask2(x & 3))
RETURN


BYTE FUNC locate5(BYTE x,y)
BYTE POINTER pixel
BYTE ARRAY mask= [192 48 12 3]

pixel = linept(y)+(x RSH 2)
RETURN((pixel^ & mask(x & 3)) RSH
       (((x & 3) XOR 3) LSH 1))


PROC hline(BYTE y,c)
BYTE i

FOR i = 0 TO 79 DO
  plot5(i,y,c)
OD
RETURN


PROC vline(BYTE x,c)
BYTE i

FOR i = 0 TO 47 DO
  plot5(x,i,c)
OD
RETURN


PROC pauz(CARD p)
CARD i

FOR i=1 TO p DO
OD
RETURN


PROC f16(BYTE x,y)
BYTE g,a,b

g=Locate(x,y)
IF g=32 THEN
  RETURN
FI
g==+128
```

```
NEWCOL=15
b=y
DO
  color=0
  Plot(x,b)
  b==-1
  color=g
  Plot(x,b)
  IF b=2 THEN
    EXIT
  FI
  Sound(0,b,8,8)
  pauz(700+x*50)
OD
a=x
DO
  color=0
  Plot(a,b)
  a==+1
  color=g
  Plot(a,b)
  IF a=19 THEN
    EXIT
  FI
  Sound(0,a,8,8)
  pauz(700+x*50)
OD
color=0
Plot(a,b)
SndRst()
RETURN


PROC colburst(BYTE x,y)
BYTE g,c,a

g=Locate(x,y)
IF g=32 THEN
  RETURN
FI
g=g+128
NEWCOL=(Rand(16) LSH 4) % 10
color=g
a=x-1
IF a>13 THEN
  a=0
FI
Plot(x,a)
DrawTo(x,y)
FOR c=0 TO 15 DO
  Sound(0,0,4,15-c)
  pauz(400)
OD
color=0
Plot(x,0)
DrawTo(x,y)
SndRst()
RETURN


PROC dropkick(BYTE x,y)
BYTE g,h,a,b

g=Locate(x,y)
IF g=32 THEN
  RETURN
FI
g==+128
NEWCOL=152
b=y
DO
  color=0
  Plot(x,b)
  b==+1
  color=g
  Plot(x,b)
  IF b=23 THEN
    EXIT
  FI
  Sound(0,b+10+(x LSH 1),10,8)
  Sound(1,b+20+(x LSH 1),10,8)
  pauz(400)
OD
SndRst()
h=0
NEWCOL=159
a=x
DO
  color=h
  Plot(a,b)
  h=Locate(a+1,b-1)
  a==+1
  b==-1
  color=g
  Plot(a,b)
  IF a=18 OR b=1 THEN
    EXIT
  FI
  Sound(0,a-x,8,(b RSH 1))
  pauz(800)
OD
color=0
Plot(a,b)
SndRst()
RETURN


PROC foo()
BYTE v

FOR v=0 TO 15 DO
  Sound(0,255,10,15-v)
  Sound(1,0,8,8-(v RSH 1))
  pauz(500)
OD
SndRst()
RETURN


PROC intro()
BYTE x

Graphics(17)
CURSC=$08
Position(0,10)
PrintD(6,"MORE FUN WITH")
Position(0,12)
PrintD(6,"B O U N C E !")
Position(0,14)
PrintD(6,"BY JOEL GLUCK")
pauz(65000)
pauz(65000)
pauz(65000)
FOR x=0 TO 12 DO
  f16(12-x,10)
OD
FOR x=0 TO 12 DO
  colburst(x,12)
OD
FOR x=0 TO 12 DO
  dropkick(12-x,14)
OD
CURSC=$48
Position(14,1)
PrintD(6,"ANALOG")
foo()
Position(11,3)
PrintD(6,"COMPUTING")
foo()
Position(12,5)
PrintD(6,"FEBRUARY")
foo()
Position(16,7)
PrintD(6,"1985")
foo()
pauz(65000)
pauz(65000)
pauz(65000)
RETURN


PROC drawdoc()
BYTE CURS=752

CURS=1
PutE()
Print("Use joystick and ")
PrintE("SPACE to draw/erase.")
Print("Hit B for balls, ")
PrintE("0-9 for brush speed.")
Print("ESC clrs balls; ")
PrintE("ctrl-ESC clrs screen.")
Print("Press START to Bounce!")
RETURN
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```
PROC clearscrn()
BYTE a,b,g

FOR b=1 TO 19 DO
  FOR a=1 TO 78 DO
    g=locate5(a,b)
    IF (g=2 OR CH>28) AND g>1 THEN
      plot5(a,b,0)
      Sound(0,b,6,4)
      IF CH=28 THEN
        pauz(300)
      FI
    FI
    g=locate5(a,39-b)
    IF (g=2 OR CH>28) AND g>1 THEN
      plot5(a,39-b,0)
      Sound(0,b,6,4)
      IF CH=28 THEN
        pauz(300)
      FI
    FI
  OD
  Sound(0,0,0,0)
OD
IF CH>28 OR hidden=2 THEN
  hidden=0
FI
RETURN


PROC movecursor(BYTE bflag)
BYTE g,STIK=632,TRIG=644,vol
BYTE ARRAY v=[2 2 2 0 2 1 1 1 0 2 0
                  0 0 1 1 1 1 2 1 0 1 1]
INT cxd,cyd

IF STIK<15 OR bflag=1 THEN
  cxd=v((STIK-5) LSH 1)-1
  cyd=v(((STIK-5) LSH 1) % 1)-1
  IF bflag=1 THEN
    cxd=2
  FI
  g=hidden
  IF TRIG THEN
    vol=4
  ELSE
    vol=10
    g=cmode*3
  FI
  Sound(0,(xc+yc)*cmode,
        8+(cmode LSH 1),
        vol-(cmode LSH 1))
  plot5(xc,yc,g)
  xc==+cxd
  yc==+cyd
  IF xc<1 THEN
    xc=78
  FI
  IF xc>78 THEN
    xc=1
  FI
  IF yc<1 THEN
    yc=38
  FI
  IF yc>38 THEN
    yc=1
  FI
  hidden=locate5(xc,yc)
  plot5(xc,yc,1)
FI
RETURN


PROC audlayball()
BYTE i,j,k

FOR j=0 TO 2 DO
  FOR i=j*50 TO j*50+20 DO
    Sound(0,i,10,15-j*6)
    pauz(100)
  OD
OD
Sound(0,0,0,0)
RETURN


BYTE FUNC number()
BYTE n,v

v=CH
Open(2,"K:",4,1)
n=GetD(2)
Close(2)
CH=v
IF n>47 AND n<58 THEN
  RETURN(57-n)
ELSE
  RETURN(99)
FI


PROC audcmode()
BYTE n

FOR n=1 TO 5 DO
  IF cmode THEN
    Sound(0,100-n*10,10,4)
  ELSE
    Sound(1,150-n*10,10,4)
    Sound(0,5-n,8,6)
  FI
  pauz(2000)
  SndRst()
  pauz(1000)
OD
RETURN


PROC cursor()
BYTE n

IF CH<>255 THEN
  IF CH=33 THEN
    cmode==XOR 1
    audcmode()
  ELSEIF CH=28 OR CH=156 THEN
    clearscrn()
  ELSEIF CH=21 THEN
    hidden=2
    plot5(xc,yc,2)
    movecursor(1)
    audlayball()
  ELSE
    n=number()
    IF n<99 THEN
      curspeed=n*500
    FI
  FI
  CH=255
FI
movecursor(0)
RETURN


PROC bouncedoc()
CARD n

PutE()
n=num
IF n=1 THEN
  PrintE("1 ball is bouncing.")
ELSE
  PrintC(n)
  PrintE(" balls are bouncing.")
FI
PrintE("Hit digits 0-9 for speed.")
Print("S changes sound focus, ")
PrintE("N nudges ball.")
Print("Press SELECT to Draw again.")
RETURN


PROC process(BYTE a,b)
BYTE g

g=locate5(a,b)
IF g=2 THEN
  IF num<200 THEN
    xx(num)=a
    yy(num)=b
    num==+1
  ELSE
    plot5(a,b,0)
  FI
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```
ELSEIF g=0 THEN
   plot5(a,b,1)
FI
RETURN


PROC ballinit()
BYTE a,b

CURSC=$44
num=0
FOR b=1 TO 19 DO
   FOR a=1 TO 78 DO
      process(a,b)
      process(a,39-b)
   OD
OD
FOR a=0 TO num DO
   xd(a)=Rand(2) LSH 1
   yd(a)=Rand(2) LSH 1
OD
RETURN


PROC moveball(BYTE n)
BYTE g,pa,pb

g=locate5(xx(n)+xd(n)-1,yy(n)+yd(n)-1)
IF g<2 THEN
   plot5(xx(n),yy(n),0)
   xx(n)=xx(n)+xd(n)-1
   yy(n)=yy(n)+yd(n)-1
   plot5(xx(n),yy(n),2)
   IF n=audball THEN
      dist==+1
   FI
   RETURN
ELSE
   pb=locate5(xx(n),yy(n)+yd(n)-1)
   pa=locate5(xx(n)+xd(n)-1,yy(n))
   IF n=audball THEN
      IF dist THEN
         Sound(0,170-((38-dist) LSH 2),
               10,8)
         Sound(1,((38-dist) LSH 2),
               10,8)
      FI
      dist=0
      TIME=0
   FI
   IF pa>1 THEN
      xd(n)=2-xd(n)
      IF pb>1 THEN
         yd(n)=2-yd(n)
         RETURN
      ELSE
         plot5(xx(n),yy(n),0)
         yy(n)=yy(n)+yd(n)-1
         plot5(xx(n),yy(n),2)
         RETURN
      FI
   ELSEIF pb>1 THEN
      yd(n)=2-yd(n)
      plot5(xx(n),yy(n),0)
      xx(n)=xx(n)+xd(n)-1
      plot5(xx(n),yy(n),2)
      RETURN
   ELSEIF Rand(2) THEN
      xd(n)=2-xd(n)
   ELSE
      yd(n)=2-yd(n)
      RETURN
   FI
FI
RETURN


PROC cleanup()
BYTE a,b

FOR b=1 TO 19 DO
   FOR a=1 TO 78 DO
      IF locate5(a,b)=1 THEN
         plot5(a,b,0)
      FI
      IF locate5(a,39-b)=1 THEN
         plot5(a,39-b,0)
      FI
   OD
OD
RETURN


PROC bounce()
CARD i
BYTE n

ballinit()
bouncedoc()
audball=0
dist=0
IF num THEN
   DO
      FOR i=0 TO num-1 DO
         moveball(i)
         IF CH<>255 THEN
            IF CH=62 THEN
               audball==+1
               IF audball=num THEN
                  audball=0
               FI
               dist=0
            ELSEIF CH=35 THEN
               xd(audball)=2-xd(audball)
            ELSE
               n=number()
               IF n<99 THEN
                  ballspeed=n*n*100
               FI
            FI
            CH=255
         FI
         IF CONSOL=5 THEN
            EXIT
         FI
      OD
      pauz(ballspeed)
      IF TIME THEN
         SndRst()
      FI
      UNTIL CONSOL=5
   OD
   SndRst()
FI
cleanup()
RETURN


PROC MFWB()

intro()
gr5init()
hline(0,3)
hline(39,3)
vline(0,3)
vline(79,3)
DO
   drawdoc()
   xc=39
   yc=19
   hidden=locate5(xc,yc)
   cmode=1
   plot5(xc,yc,1)
   DO
      cursor()
      CURSC=TIME
      pauz(curspeed)
      Sound(0,0,0,0)
      pauz(curspeed)
      UNTIL CONSOL=6
   OD
   plot5(xc,yc,hidden)
   CH=255
   bounce()
OD
RETURN
```

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