

Digital Display Test Slide

Stay tuned for the following
Feature Presentation

by Landon Curt Noll

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IOCCC

The 19th International Obfuscated C Code Contest winners



by Landon Curt Noll

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<http://www.ioccc.org>



The Unofficial Mascot of the IOCCC

Obfuscate: tr.v. -cated, -cating, -cates. 1. a. To render obscure.
b. To darken. 2. To confuse: his emotions obfuscated his judgment.
[LLat. obfuscare, to darken : ob(intensive) + Lat. fuscare, to darken < fuscus, dark.] -obfuscation n. obfuscatory adj

Goals of the Contest

- To write the most Obscure/Obfuscated C program
 - under the obfuscated contest rules
 - *4k bytes of source code, complete working program, etc.*
- To show the importance of programming style
 - in an ironic way
 - *“it works” is not sufficient in the real world*
- To stress C compilers with unusual code
- To illustrate some of the subtleties of the C language
- To provide a safe forum for poor C code :-)

Most Useful - borsanyi

- Szabolcs Borsanyi
United Kingdom

Most Useful - borsanyi (2)

```
#include <pthread.h>
#include <string.h>
#include <stdio.h>
#include <ctype.h>
#undef D
#undef E
#undef U
#ifdef C
#define I int n,r;
#define D(N) void*N(void*);
#define C pthread_create
#define E int l;char *ak(char *u){return (*u=(l+=6,*u)=\
='@'?'K':*u=='.'?'P':*u=='-'?'M':tolower(*u))?ak(u+1)-1:u;}
#define U int
#elif ! defined J
#define H "x\b\020\1\0\0\0\377\377\377,\0\0\0x\0\b\0\03"
#define E tn; char h[30]="GIF87a" H;void *(*fn[25])(void*)={
#define U };
#define D(N) N,
#define L return fwrite("\1\t\0;",1,4,stdout)!=4;
#define K {I for(r=0;r<8;r++)for(n=0,putchar(1);n<1;n++)putchar(B[r][n]|8)
#define J h[6]=h[24]=l=1-3;fwrite(h,1,30,stdout);K
#else
#define T pthread_t
#define E char B[8][256];
#define U int main(int c,char **a) { bdefhklmnpqrtuvwx57(ak(a[1]));J;}L}
#define D(N) void *N(void *y) {\
    static I char *x=y;\
    T t=0;\
    if(!n && (r=tn)<24) C(&t,NULL,fn[++tn],y);\
    if(*x&&strchr("# N,*x)) B[2+r/5][2+n*6+r%5]=16;\
    n++;\
    if(*x) N(x+1);\
    if(t) pthread_join(t,&y);\
    return y;\
}
#endif
```

Most Useful - borsanyi (3)

E

```
D (bdefhklmnpqrtuvwxyz57)
D (bcdefgiopqrstz23567890K)
D (abcdefgjopqrstz123567890K)
D (cefgkhoqstz23457890K)
D (mntuvwxyz7)
```

```
D (bcdefghklmnopqrsuvw256890K)
D (aimnxy1)
D (jkt14)
D (abdhmprxyz0)
D (mnoquvw237890K)
```

```
D (abcdefghklmnopqruvw560K)
D (befhikprs45689MK)
D (befghjmnqprstwxyz156890MK)
D (dghs234789M)
D (amnoquvw90K)
```

```
D (abcdefghjklmnopqrw4680K)
D (aivxz40PK)
D (ajkrtwy1247PK)
D (abdghnqvx456K)
D (amnosuw34890K)
```

```
D (abdefhklmnprrxz25_)
D (bcdegijloqsuwz12356890_PK)
D (bcdegloqstuvyz123567890_PK)
D (cehklorsuwz1234890_K)
D (amnqxx2_K)
```

U

```
#ifndef T
#include __FILE__
#endif
```

Most Useful - borsanyi (4)

- usage:

- ./borsani judges@ioccc.org > email.gif

J U D G E S @ I O C C C . O R G

- multi-threaded program (25 threads)

Best Abuse of Computation - night

- Christopher Night
USA

Best Abuse of Computation - night (2)

```
#include <ncurses.h>

#define T typedef unsigned
T long G;
T short CT;
#define ATG srand(time(0)); initscr(); cbreak(); noecho(); start_color();
#define GG(T,C) attrset(A_BOLD*!(T)|COLOR_PAIR(C%2+1));
#define AC(G) init_pair(G/2,G,nodelay(stdscr,G/3));
#define TCT(A,G,C) mvaddch(A+CTT*6+4,CGA*12+G,C)
#define AGG A&2?119:115:A&1?100:97
#define CAT mvprintw(2,40,"%d",TC)
#define GAT int main()
#define AAA refresh()
#define TAG endwin()
#define GCA clear()
#define TCA clock()
#define CCC rand()
#define CC getch()
#define GA return
#define T(T) #T#T#T#T#T#T T
#define G(G) while(G)
#define A(A) A { A }

G AA[1<<16]; G GT[1<<16];
G CAA, CA, CTG, TA, CG, CTT, CGA, TC, T, GTC;
char *ACG="HXXTPO2^OCBHL\\XP` `T^NDP800SQSW\\X@@@0c13RZLLH<WWWWWWW^@^@.jW^@^@^@
^@^@^@^@Wq.^@'9W^@^@^@^@^@^@^@WP'^@^@jb^@^@WW^@^@7F^@^@WWWWWWWBjPWWbo^^WW^^9WWP
^__WW__6,D:^HrioV;:VztZ", *GCC,*AGT,GTT[]=T(
```

Best Abuse of Computation - night (3)

```

; G AG; G TG;
G AC; G C; G
A=0; G AAG; G TT; G GG; G AT(CT A){ GA A%4>>A%4-1
; } CT GC(){ AC=(AAG&(CA/=2)); CTG=15*CA*CA/4; G
A=TG; GA AC||A&&
AT(A /CA/CA); }
CT GTCA (G C,G A,G
CG){ GG(C>=A,C)G(!A)GA (C&&CC,CG^TAG); CG
+=(C<A)<<20; G T=TCT(0,C%16*3-34,302
[C%16*2+ GTT]); AAA: G(
CG>TCA)A; GA CG^GTCA(C+
3,A-1,CG ); } G CGAC(CT
T,G A,G C,G AA,G
AG){ GA(AA&&
(CA=4)&& ( CGAC(
1+T,1+A,C, --AA, AG)?
CGAC(ACG[ T ],AG,0,C,A):
ACG[T]&&TCT(AG,A,ACG[T]),C); }
CT TGA(G A){ CT T=1; CT C=-T; *AA=A;
*GT=3; G(++C^T){ G(
(TA=AA [C])/2&! (TT
=(TG= GT[C]+16)&
15)GA TG>>4; CA=4; AAG=TA>>2*TT; A(GC())&&(AA[T
]=TA^1<<2*TT<<AT(AAG),GT[T++]=TG^CTG>>AC); )} GA
0 ; } G ACC(){
G T=4; G A=1;
G C=1; TC=TGA
(GG=CCC); G((A*=2)<C|| (C<<=A=1)<T|| (T*=C=2)) { G (
TGA(AG=GG^T^C^A)>TC) { G((TC=TGA(GG=AG))>CAA) {
CAA=TC; CAT; } G (
TC>>6)GA 1; C = 1;
T=2; } G(1+ CC) GA
1; } GA 0; } GAT{ AGT=GCC=GTT; G(T=*
++GCC)72&T^64||(*AGT^=T/4%2<<A%8
,7&(A+=5)|| ( *++AGT=CAA
=C=0); ATG AC(4); G(!
ACC ()); AC(2); G
(C+1){ G(!C){
C=TG=3; CG= 1; TA
=GG; TC=CAA; } GCA; TT=
TG; A(A(A(A( ++TT; A=CG
^(TT&=15) &3? 1:2; CTT
=TT/4 ; CGA=CTT%2*3^3^TT%4 ; AAG=TA>>
2*TT; A=CG^AAG; GG(TT^TG,GTCT=TT) CGAC(GTC
&&A&2?134: 138,TT
&0,6,6,A&1 ?0 :5)
; CGAC(128 |A %2*
3,A&2?3:0,11,3,0) ; ))))CAT ; G(TA/2&!TG)GA GTCA(
GCA,CAA/4&16, TCA); )C=CC-114; TT=0; A(G(GC())&&TC
&&C+114 == ( CA&
2?AGG) ) { --TC;
TG&1&& (A^=2-AT(A
)); C=TCA; A(A(T=0; { GG(1,TG); G C; A(A(A(A(A
A(TCT(T%6,T%11,32+55*(ACG[11*AT(TT)+22*AT(A)+(
(A^2)& (C=TT/2^TG&
1?2:1) ?65-T:T)%11]
>>(3-A&3 -C?65-T:T)%6&
1)); T++; ))))TT++; AAA; } C+=1
<<16; G(C>TCA); )CG^=CA; TA
^=1<<AT (AAG)+TG*2; TG
^= CTG>>AC; } )
} GA TAG; }

```



```

...
15) )GA TG>>4; CA=4; AAG=TA>>2*TT; A(GC())&&(AA[T
]=TA^1<<2*TT<<AT(AAG),GT[T++]=TG^CTG>>AC); )} GA
0 ; } G ACC(){
G T=4; G A=1;
G C=1; TC=TGA
(GG=CCC); G((A*=2)<C|| (C<<=A=1)<T|| (T*=C=2)) { G (
TGA(AG=GG^T^C^A)>TC) { G((TC=TGA(GG=AG))>CAA) {
...

```

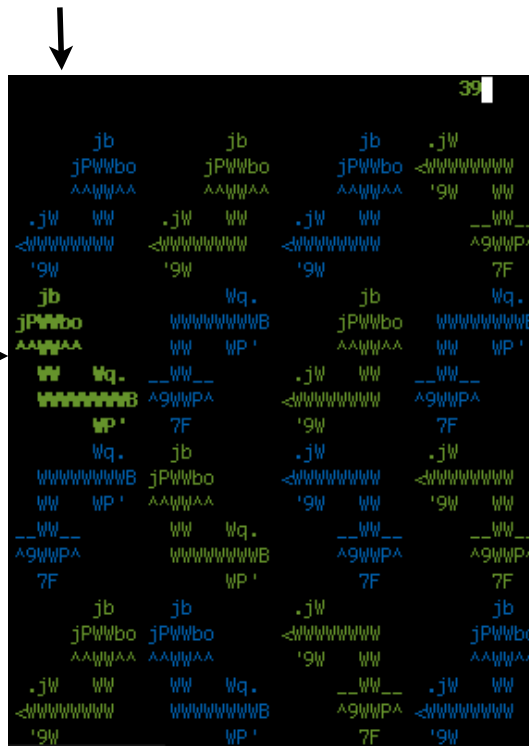
Best Abuse of Computation - night (5)

w
 move by: a d
 s

repeat: r

quit: q

move from
 upper left to
 lower right



space to stop

s

d

Best Abuse of Computation - night (4)

- Very long compile time!
 - 12 minutes on a 266 MHz Pentium II
- genetic algorithm
 - maze layout's DNA is represented as a 32-bit integer
 - mutations consist of flipping three different bits
 - doesn't employ sexual reproduction, only mutations :-)
 - takes 1/4 hour on average to find a solution
 - *can press space to stop evaluation*
- ./demo1 (IBM demo)

Best Assembler - sykes1

- Stephen Sykes
Finland

Best Assembler - sykes1 (2)

```
/* <body bgcolor = 0 >
<img src= cube.gif><!-- */
#define _ ] [ /* ; ; ; ; */
#include <string.h> /* ; ; */
#include <stdio.h> /* ; ; ; */
#define K(o,O) L o=0; o<O ; o++)
#define H unsigned long long
#define /* ; ; ; ; ; ; } */ W ]=
#define /* ; ; ; ; ; ; */ L for(
#define /* ; ; ; ; ; ; */ J if (
#include <stdlib.h> /* ; ; ; ; */
#define Z (j*3+j/9*3+2)%10+j/9*9
int s[ ] = { 186, 94, 1426, 3098
,1047 , 122 , 1082 , 3083 , 1039
, 569 , 527 , 1054 , 531 } ;
#define P( o , O ,l) K(C,o)\
fputc ( ( O ) [ C ] -1, G);
#define Y strcpy( /* */
```

```
int j,k,l,v,c,C,O[64],n[
64],*o,q[13 _ 13],u,d,f,g[
W{ 8,7,6,6,6,6 } ; H p [13 _
#define M memset(E[c]+j*298+v\
*a+88-u*5+586*( u*5+152-i/16*a+C
13 _ 432],r,w,t,b,S[13]; FILE*G;
char E[13 _ 168840],*A="|||||",
*D=" { ; wb; aa; aaaa}a \
Oz00Zzz} { z0z} " ,Q[64 _ 60
],*F =" + " ,T [43]; int main(
int I,char**V){ int i,h,B,a,m; H
#define R(z){ x=h=0; K(j,27)h|= \
(c>> j&1 )<<z ; ; ; } c=h; ; ; ;
x; J I>1)B=C=atoi(V[1]); J !d)K(
v,13){ h=s[v]; J B<0){ k=h>>18
^h&511; h^= k<<18|k; C=-C; }
K(k,7){ J k==4)R(Z)R(j+(j-
" /@"[j/9]+38)/3*6-6)K(1
```

```
,4){ R(Z)K(a,9) x|=(H)c
>>a*3&7)<<a*4 +a/3*4; K(a,
96){ m=a-37; r=m<0?x>>-m:x<<
m; J!(x!=(m<0?r<<-m:r>>m)||r&r
/2&0x8888888888888888ULL||r&r>>4&
0xF000F000F000ULL){ p[0 _ v _ q
[v _ 0]++W r; K(j,q[v _ 0]-1)J p
[0 _ v _ j]==r)q[v _ 0]--; } } }
} } h=d; x=w; m=q[f _ h]; a=f; u
|=1<<a; B=u; K(i,m){ w|=S[a W p[
d _ a _ i]; r: d++; v=*s; t=w; L
j=1; j<13; j++){ J u>>j&1^1){ b=
c=k=0; l=q[j _ h]; L; k<1; k++){
r=p[h _ j _ k]; J!(w&r))b|=p[d _
j _ c++W r; } J!c) goto n; J c
==1){ w|=S[j W b; u|=1<<j; J
d==12){ J--C<1){ K(c,64)O[
c W-1; x=0; K(c,13){ r=~
```

```
0; K(j,13)J S[j]<r&&S[j]
>x)r=S[j]; K(i,64){ n[i W-
1; memset(Q[i],32,59); } K(i
,64){ J r>>i&1)O[i W n[i W c ;
K(j,2){ o=j?O:n; k=o[i]; u=i&d ;
v=i&3; a=48; J k+1){ C=k==c; Y T
,"+----+ / /|+----+ || | +\
| /+----+",43); J!C&&v&&o[i-
1]==k)T[6 W T[21 W T[29 W 32 ; J
u&&o[i-4]==k){ Y T,C?"/"////":F,
6); J v==3||o[i-3]<0)T[d W T [20
W C?47:32; } J i&a&&o[i-16]==k){
J u==d||o[i-d]<0)Y T+36,C?A:F,6
; J!C)J v==3|| o[i-15]<0) T[35 W
32; } J C){ Y T+7,""////",4); T
[19 W T[27 W 47; Y T+22,A,4)
; Y T+30,A,4); } K(C,6)Y Q
[9-i/16*3+u/2+C]+v*5-u/2
```

```
+j*30+g[C],T+"06=EMT"[C]
-a,20-g[C]-g[5-C]); K(C,a)
{ M)+28,m=k+33,h=20); M+h)-h
,k+49+u/4*16,a); } K(C,h){ M)-
C,k+17,a); M)+a-C,m,C); M+a)+28,
m,h-C); } } } K(i,21)puts(Q[i]
); x=r; } G=fopen("cube.gif", D+
11); P(13,"qspbc\213t,J+ **",42)
K(i,8)P(a,D,h+" H Zbjm "[i]+C)P(
19,"F$0sjyxhfujWSU(&%%",37)K(i,
13){ P(19,"K#.3 ***v****t,J+*1",
42)K(j,1340){ P(2," !",161)P(126
,E[i]+j*126,0)}P(3+i/d,"!\241 ["
,32 ) } exit(0); } goto n; }else
goto r; } J c<v) { f=j; v=c; }
q[j _ d W c; t|=b; } } J!~t)
main(0,0); n:u=B; w=x; d=h
; } u^=1<<a ; } /*--> */
```

Best Assembler - sykes1 (3)

- To use:
 - ./sykes1 skip
- ./demo1

(OS X demo)

Best Compiled Graphics - monge

- Maurizio Monge
Italy

Best Compiled Graphics - monge (2)

```
#include <stdlib.h>
#include <SDL.h>

#include <sys/mman.h>
#define M(a) mmap(0, a, PROT_EXEC|PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANON, -1, 0)

#define W 400
#define H 300
#define I 128

#define L char*
#define _ Sint32
#define h(a,b) for(a=0; a<b; a++)
#define O while(
#define b D[j][i][
#define J(b) a(#b)
```

Best Compiled Graphics - monge (3)

```

SDL_Event
e;
SDL_Surface
*F; float f, m,
n,d,D[H][W][6],
v; L A; L X; L
V,G[H][W]; L
E ; L Q; double
R=2/( W-1. ),T=2/(H-1. ),c,g, z=2 ,*
K,*Z,*S; _ B, C, o,i,j,q,k,l,x,y,*u,Y=512; P(
L f){ *(u=V)=f-X-5; V+=4; } a(L e){ O l=e++
1-38?l==36?s(2),o--:l-37?*v++=l==35?k*e++
,k* 16+*e++-81:l^128:o>7?J(Yv)#JJ, P(S++):o++
:s(4); } s(_ n){ O o<n){ J[#IB]; P(--S); J[];
++=217+o++; } } p(L e,_ q,L *t){ _ x=9; do{ A="%#IB"
=*e; 5==q?*K=strtod(e,t),e-*t?e=*t,a(A),P(K++), J(%Yn)
e+1,4,t),i-5||J(Y`YIY`YI), e=*t:i>96?a(A),P(Z+i-97),a
(A),P (Z+*e++-71) : (p(index( e, 40)+1,1,t), i^82?i^73?i^65?i^69?i^76?1:J
(%YhY`%YmY})YYB%YBXHYIXH$^A$YqYJ$Ys):J(%Y{YJ%Yj^IY@Y\\iYIYp%Yh$^AY}$Y\\J$^I)
: J(XHYIXH^AYn):J([Yn) : J ([Xn),e= index (*t,41)+1): p ( e , q+ 1, &e); A
=&%YCXJYLXIYK\\J$^I$^k$^A"; (x --=3)<1?J(&X)Y,1L <<31<0? J(Zi_#JO):J(i_X),x
?J (#HH):J(#HC),J(#AD#IJPC) ,o=-4:--x?--x?x-3?J(&%YA%YAXHYIXH^AYh$^q\\J$^IY`)
a(A): 1:a(A):J(&$^j$^j):J(&$^B$^B); } O q==(x*(t=e++))/2); } main(_ r,L*U){
X =v=(Z =(S=(K=M(Y*32))+Y)+Y)+Y; J(h#AA#AA#AA#AA#FJ:++*/); h(q,2){ A =E =Q=U[ q+1]; O * A=*A^B++
[ "<>+*/" ]?*A:B,(B%=7)|| (isspace(*E=*A)||++E,*A++); E=V; O B=*Q}{ if(Q[1]-61)p(
Q,1,&Q); else{ p(Q+2,1,&Q); h(j,2){ J[#JJ]; P(Z+B-71-j*26); o--; } } *Q&&Q++; }
} J(#PPJ#AP#IF); P (E -V+X +1); J(#IJPC); O[u =X+7] =I; SDL_Init( 32 ); F=
SDL_SetVideoMode(W,H,8 ,0); A=F->pixels; B=F->pitch; O l){ C^=3; h(j,H)h(i,
W )b C+2]=9; if(r=(k =SDL_GetMouseState(&x,&y))&5){ f=z/50; f=k&l ?f:-f ;
c+=(x*T-T/R)*f; g += f*y*T-f; z*=f-1-f/z; v=1/f; h(j,H)h(i,W)h(q,4){ k=
x+(i- x)* f +q/2; l=y+(j-y)*f+q%2; if(k>=0&k<W&l>=0&l<H){ m=x+(k+D[
l][k ])[ 3-C]-x)*v-i; n=y+( l+D[l][k][4 -C]-y)*v-j; d= m*m+ n*n;
if ( d<b C+2]){ b C]=m; b C+1]=n; b C+2]=d; G[j][i]=A[1*B+
k ]}; } } } h(j,H)h(i,W)if(q=b C+2){ Z[2]=(i *T-T /
R)*z+c; Z[28]=z-j *T*z-g; Z[8]= 0; Z[34]=1; q =(( (*
) ( )X)()); A[j* B+i]=q? *u-q:0; h(q,3)b C+q]=0;
} else A[j*B+i]=G[j][i]; SDL_UpdateRect(F,
0,0,W,H); O(x?SDL_PollEvent:SDL_WaitEvent)(&e
)) { k=e.type; l=e.key.keysym.sym; if ( k==
12|k== 2& l ==27)return; if(
e.type-5?k==
2&(l==270|l==
269)?*u=1-270
?*u/2:*u*2:0:1
) break;
}
} }

```

Best Compiled Graphics - monge (4)

- Mandelbrot

- ./monge "z=0" "z=z*z+c; Abs2(z)<4"

- Julia, for $c=0.31+i*0.5$

- ./monge "z=c; c=0.31+i*0.5" "z=z*z+c; Abs2(z)<4"

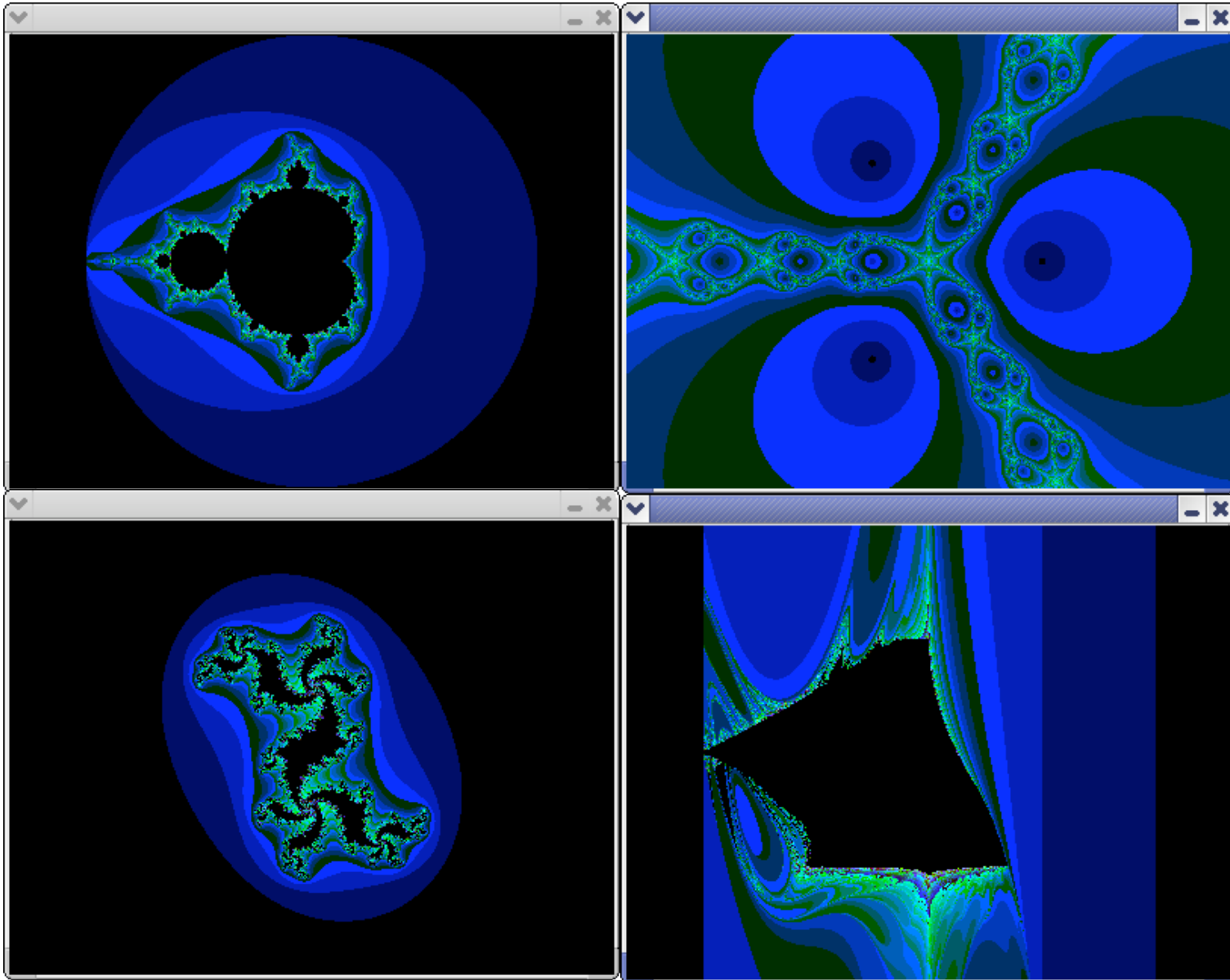
- Newton, for x^3-1

- ./monge "z=c" "p=z; z=0.6666*z+0.3333/(z*z); Abs2(p-z) > 0.001"

- Phoenix, Mandelbrot version

- ./monge "z=0; q=0" "t=z; z=z*z+Re(c)+Im(c)*q; q=t; Abs2(z)<4"

Best Compiled Graphics - monge (5)



Best Computed Graphics - stewart

- Thomas Stewart
USA

Best Computed Graphics - stewart (2)

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#define P printf
#define F(x,y) ((FILE*)Z(x,y))
#define U(x,y) ((unsigned char*)Z(x,y))
#define X(x,y,z) ((double*)x+y+7*z)
#define Y(x,y) ((double*)x+y)
#define Z(x,y) *(long*)Y(x,y)
#define R(x,y) (x=y,y^=(y<<11),y^=(y>>15),y^=(y<<3),(x+y)&0x7fffffff)

int main(int c,char**o)
{
    void* v=malloc(0170UL);
    memset(v,0,0170UL);
    if(c!=4)P("bad args\n"),exit(1);
    Z(v,2)=atoi(o[1]);
    Z(v,1)=atoi(o[2]);
    Z(v,0)=Z(v,2)*Z(v,2)>>3;
    Z(v,6)=(long)malloc(Z(v,0));
    memset((void*)Z(v,6),0,Z(v,0));
    Z(v,13)=(long)fopen(o[3],"r");
    fscanf(F(v,13),"%ld", (long*)Y(v,3));
    Z(v,8)=(long)malloc(050+Z(v,3)*070);
    Z(Z(v,8),0)=Z(v,3);
    fscanf(F(v,13),"%lf %lf %lf %lf",Y(Z(v,8),1),Y(Z(v,8),2),Y(Z(v,8),3),Y(Z(v,8),4));
    for(Z(v,3)=0;Z(v,3)<Z(Z(v,8),0);
        fscanf(F(v,13),"%lf %lf %lf %lf %lf %lf %lf",X(Z(v,8),5,Z(v,3)),
            X(Z(v,8),6,Z(v,3)),X(Z(v,8),7,Z(v,3)),X(Z(v,8),8,Z(v,3)),
            X(Z(v,8),9,Z(v,3)),X(Z(v,8),10,Z(v,3)),X(Z(v,8),11,Z(v,3))),
        ++Z(v,3));
    fclose(F(v,13));
    Z(v,14)=8675309;
}
```

Best Computed Graphics - stewart (3)

```
for (Z(v,3)=0;Z(v,3)<Z(v,1);++Z(v,3))
{
    *Y(v,7)=(R(Z(v,4),Z(v,14))/(double)0x7fffffff),Z(v,5)=0;
    for (Z(v,4)=0;Z(v,4)<Z(Z(v,8),0);++Z(v,4),++Z(v,5))
        if (*Y(v,7)<*X(Z(v,8),11,Z(v,5)))
            break;
        else
            *Y(v,7)-=*X(Z(v,8),11,Z(v,5));
    *Y(v,11)=*X(Z(v,8),5,Z(v,5))*Y(v,9)+*X(Z(v,8),6,Z(v,5))*Y(v,10)+*X(Z(v,8),9,Z(v,5));
    *Y(v,12)=*X(Z(v,8),7,Z(v,5))*Y(v,9)+*X(Z(v,8),8,Z(v,5))*Y(v,10)+*X(Z(v,8),10,Z(v,5));
    *Y(v,9)=*Y(v,11);
    *Y(v,10)=*Y(v,12);
    if (Z(v,3)>10)
        if ((*Y(v,9)>=*Y(Z(v,8),1))&&(*Y(v,9)<=*Y(Z(v,8),3))&&(*Y(v,10)>=*Y(Z(v,8),2))&&(*Y(v,10)<=*Y(Z(v,8),4)))
            *Y(v,11)=(*Y(v,9)+-*Y(Z(v,8),1))/(*Y(Z(v,8),3)-*Y(Z(v,8),1)),
            *Y(v,12)=(*Y(v,10)+-*Y(Z(v,8),2))/(*Y(Z(v,8),4)-*Y(Z(v,8),2)),
            *(U(v,6)+(((long)(Z(v,2)-*Y(v,12)*Z(v,2))*Z(v,2))+long(*Y(v,11)*Z(v,2)))>>3)|=
            1<<(((long)(Z(v,2)-*Y(v,12)*Z(v,2))*Z(v,2))+long(*Y(v,11)*Z(v,2)))&7);
}
P("#define x_width %ld\n#define x_height %ld\nstatic char x_bits[] = {\n",Z(v,2),Z(v,2));
for (Z(v,3)=0;Z(v,3)<Z(v,0);++Z(v,3))
{
    if (Z(v,3))
        P(",");
    P("0x%02x",*(U(v,6)+Z(v,3)));
}
P("};\n");
free(Y(Z(v,6),0));
free(Y(Z(v,8),0));
free(v);
return 0;
}
```

Best Computed Graphics - stewart (4)

- To use:

- ./gasket size iterations input_file

- Gasket example:

- 3 0 0 1 1
.5 0 0 .5 0 0 .33
.5 0 0 .5 .5 0 .33
.5 0 0 .5 .25 .433 .34

- ./demo1

(OS X demo)

Best Game - meyer

- Raphael Meyer
USA?

Best Game - meyer (2)

```
#include <stdlib.h>
#include <stdio.h>

#define JF 0
#define JG 1
#define JH 2
#define JI 3

#define a(p,q,r,s) s=(p<r)?s:(p=q,s+1)
#define b(p,q,r,s,t,u,v) a(p,q,r,s),a(s,t,u,v)
#define c(p,q,r) for(p=q; p<r; p++)
#define d(p,q,r,s,t,u) for(p=q,s=t; s<u; p++,a(p,q,r,s))
#define e(p,q,r,s,t,u,v,w,x) for(p=q,s=t,v=w; (v<x); p++,b(p,q,r,s,t,u,v))

#define f
#define g(p) ,p
#define h(p) j(p,f,f)
#define i(p,q) j(p,q r,g(r))
#define j(p,q,r) p* N##p(q) { p* s=(p*)malloc(sizeof(p)); s->M=L[J##p]; ((p##0)s->M[0])(s r); U s; }

#define k(p, q) C struct { K* M; q } p

#define l(p) printf(O+p

#define m(p, q) (_->P+(q<<4&0360))[017&p]

#define n void
#define o int

#define A char
#define B const
#define C typedef

#define D C n
#define E C o

#define U return
#define V(p) (p<3)?0:(p<6)?3:6
#define W(p,q,r) ((p)q->M[r])(q)
```

Best Game - meyer (3)

```
B A* B O = " %c%s\n0 1 2 3 4 5 6 7 8\n\n0%s\n\0you win\0you: \0%1s\0%d %d\0you lose\0cpu: %c %d %d\n\0 \0";

D (*K) (n);

k(F, o P[00400]; );
k(G, F* Q; B A* R; );
k(H, F* Q; B A* R; );
k(I, F* Q; B A* R; );

D (*F0) (F*);
E (*F1) (F*);
D (*F2) (F*, o, o, o);
E (*F3) (F*, o, o, o);
D (*F4) (F*);
D (*G0) (G*, F*);
E (*G1) (G*);
E (*G2) (G*, o*, o*, o*);
E (*G3) (G*);
D (*H0) (H*, F*);
D (*I0) (I*, F*);

n 0000(F* _) {
  o p;
  c(p, 0, 0xFF) _->P[p] = 0;
}

o 0001(F* _) {
  o p, q, r;
  e(p, 0, 9, q, 0, 9, r, 1, 10) if(((F3)_->M[3])(_, p, q, r)) U 1;
  U 0;
}
```

Best Game - meyer (4)

```
n OO1O(F* _, o p, o q, o r) {
  m(p,q) = r;
}

o OO11(F* _, o r, o s, o t) {
  o u = 0;
  if(t > 0 && t < 10 && r >= 0 && r < 9 && s >= 0 && s < 9 && m(r,s) == 0) {
    o p, q;
    o w = V(r);
    o x = V(s);
    c(p, 0, 9) if(m(p,s) == t || m(r,p) == t) goto v;
    d(p, w, w+3, q, x, x+3) if(m(p,q) == t) goto v;
    u = 1;
    v: U u;
  }
  goto v;
}

n O1OO(F* _) {
  o p, q;
  for(q = 0, l(28)), p = 0; q < 9; p++, q = (p < 9)?q:(p=0,l(0), q+'a', O+((q == 2 || q == 5) ? 27 : 28)),q+1)) {
    l(2), m(p,q) == 0 ? '.' : '0' + m(p,q), O+((p == 2 || p==5) ? 82 : 83));
  }
  l(7));
}

n lO11(G* _, F* p) {
  _->Q = p;
  _->R = O+6;
}

o O1O1(G* _) {
  o p, q, r;
  if(((G2)_->M[2])(_, &p, &q, &r)) {
    ((F2)_->Q->M[2])(_>Q, p, q, r);
    U 1;
  }
  U 0;
}
```

Best Game - meyer (5)

```
n O110(G* _) {
  l(30), _->R);
}

n O111(H* _, F* p) {
  lO11((G*)__, p);
  _->R = O+34;
}

o 1000(H* _, o* p, o* q, o* r) {
  do {
    A s[3];
    l(42));
    fflush(stdout);
    scanf(O+48, s);
    if(*s == 'q') U 0; else *q = (*s >= 'a' && *s <= 'i') ? *s - 'a' : 9;
    scanf(O+52, p, r);
  } while(!((F3)_->Q->M[3]) (_->Q, *p, *q, *r));
  U 1;
}

n 1001(I* _, F* p) {
  lO11((G*)__, p);
  _->R = O+58;
}

o 1010(I* _, o* p, o* q, o* r) {
  o s, t, u;
  o v = 0;
  o w[01331];
  e(s, 0, 9, t, 0, 9, u, 1, 10) if(((F3)_->Q->M[3]) (_->Q, s, t, u)) w[v++] = s | (t << 5) | (u << 10);
  s = rand() % v;
  *p = w[s] & 0x1f;
  *q = (w[s] & 0x3e0) >> 5;
  *r = (w[s] & 0x7c00) >> 10;
  l(67), *q + 'a', *p, *r);
  U 1;
}
```

Best Game - meyer (6)

```
K M[17] = {
    (K) OOOO,
    (K) OOO1,
    (K) OO1O,
    (K) OO11,
    (K) O1OO,
    (K) O000,
    (K) O1O1,
    (K) O000,
    (K) O11O,
    (K) O111,
    (K) O1O1,
    (K) 1OOO,
    (K) O11O,
    (K) 1OO1,
    (K) O1O1,
    (K) 1O1O,
    (K) O11O
};

K* L[4] = {
    M+0x0,
    M+0x5,
    M+0x9,
    M+0xD
};

h(F)
i(G, F*)
i(I, F*)
i(H, F*)
```

```
o main(o s, A** t) {
    o p = 42;

    F* q = 0;
    G* r[2] = { 0, 0 };

    if(s-- > 1) {
        srand(atoi(t[s]));
        U main(s, t);
    }

    q = NF();
    r[0] = (G*)NH(q);
    r[1] = (G*)NI(q);

    for(p&=1; !(p&4); p&=5) {
        W(F4,q,4);
        if(W(G1,r[p],1)) {
            if(!W(F1,q,1)) {
                W(F4,q,4);
                W(G3,r[p],3);
                p = 4;
            }
        } else {
            p = 4;
        }
        p++;
    }

    free((n*)q);
    free((n*)r[0]);
    free((n*)r[1]);

    U 0;
}
```

Best Game - meyer (7)

- To use:

- ./meyer seed

- Input:

- row(a-i) column(0-8) number(1-9)

- Goal:

- last one who moves wins

- ./demo1

(IBM demo)

Best Small Program - toledo1

- Óscar Toledo
Mexico

Best Small Program - toledo1 (2)

```

char      *e,t      [366      ],*f
,*g,      *h,*      i;d,      m      ;
      main      (c,b)      char      **b;{
      for(      ;d[t]      =d%3      ?60<d
&300      >d&6      <d %      30?0
:32:      d%30      ?32:      10      ,
      366>      ++d;);      ;for      (g=3*
atoi      (*++      b) +      34+t;
i=f=      "\1"      "\7"      "(d"
"\177"      "yX"      "\34"      ,e=g
      ;      )      for(      *e++      =++m/
      10 +      48,g      =c=0      ,*e =
48+m      %10;      h=e-      65+*
i,d=      *h,*      i++;      f--=8
      ,g=d      <c?c      =d,h:      g) for
      (; d      -=!!      h[*f      ++-64
],*f      ;);      puts      (t);}

```

Best Small Program - toledo1 (3)

- To use:

- ./toledo1 [1-8][1-8]

- ./toledo1 11

```
01 16 27 22 03 18 47 52
26 23 02 17 46 51 04 19
15 28 25 50 21 48 53 56
24 35 30 45 62 55 20 05
29 14 61 34 49 44 57 54
36 31 38 41 60 63 06 09
13 40 33 64 11 08 43 58
32 37 12 39 42 59 10 07
```

- ./toledo1 46

```
43 14 31 26 45 16 33 20
30 27 44 15 32 19 02 17
13 42 29 52 25 46 21 34
28 51 54 47 56 01 18 03
41 12 57 62 53 24 35 22
50 63 48 55 38 59 04 07
11 40 61 58 09 06 23 36
64 49 10 39 60 37 08 05
```

EDAMAME Award - birken

- Michael Birken
USA?



EDAMAME Award - birken (2)

```

#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#define PI 314
#define Z if
#define P a->b
#define Q else
#define W =f();
#define X char
#define J while
#define N return
#define V struct e

#define g(_ ,a)((_ &&a)?!strcmp(_ ,a):0)
typedef V*d; V{ d o,_; X*b; int c; };
d f() { d _=(d)malloc(sizeof(V)); _
->b=0; _->o=_->_ =0; _->c=1>>1>1;
N _; } d k,l,m,n,o,p,q,r; d j
() { d _=1; d a W a->o W
l->o=a; l W l-> _=_;
N a; } d u(d _ ,
X*a){ J(_){
Z(g(a,_
->b)
){
N
_ ;
} _ =
_>_ ; }
N 0; } d s
(X*q){ d _=n; Z
(g("q", q)){ N o; }
J(PI){ _=u(_ , "cde"); _ =
-> _ ; Z ( g (q, _->b) ){ N _
->_ ; } } void t(d a, d _ ) { d
S,I,M,U,L,A,T,O,R ; Z(a==o){ S W
S->o W m->o=S; I=m; m W m->_ =I; _ =_>
_ ; J(_ ) { S->o->o=_->o; I=S->o; S->o W

```

```

S->o->_ =I; _->o->o->o=S; I=_->o->o; _
->o->o W _->o->o->_ =I; _ =_>_ ; } }
Q { M W _=->_ ; J(57-*P){ U=M; U
->b=P; U->o=_->o; M W M->_ =U;
_ =_>_ ; a=a->_ ; } a=a->_
; J(a&&!g("qtm",P)&&
!g("cde",P)){ L
=s (P); a=a
->_ ; A=
L; T
W
O=
T;
J(*L
->b-57){ R
=g("/",P)?j():g
(P,"0")?p:g("b",P)?
q:g(P,"j")?r:0; Z(!!!R){
R=u(M,P); Z(!R) { R=j(); U=M;
U->b=P; U->o=R; M W M->_ =U; } Q{
R=R->o; } } O=O->_ W O->o=R; O->b=L
->b; L=L->_ ; a=a->_ ; } t(A, T); } } }
void h(d e){ d _ ,a,c, z=e->o->_ ; J(z){
_ =z->o; c=_->o->_ ; a= c->_>_>o; c=_
->c?c->_>o :c->o; Z(c->c<a->c) { c
->c++; h(c); } Q Z(a->c<c->c){ a
->c++; h(a); } z=z->_ ; } } X*
v(X*_ ,int O){ X*s=(X*)m\
alloc(strlen(_)*siz\
eof(X)); X*l=s;
J((*l++=* _?
*_ -O:0)
)_++
;N
s;
}

```

EDAMAME Award - birken (3)

```
/**/
int ma\
in(){d a, _
,b;d   T,O,F,U
,   R,   E, L, A, Y
; X c[PI],x[PI],w[PI],*y
,*B,*d,*K=v("Cvjme!dpnqmfuf;\
!&e!dpnqpfout-!&e!opeft/\x0b",1
),*e=v("&e;!&t\x0b\0nbjo)*|jou!j>1\
<gps><j=51<j,,*qsjoug)#&e!#-j+j,j,52\
*<~",1); int i,z,C,G,H,D,I ; k W l W m
W n W o W p W q W r W b=o; for(*x=D=I
=i=0; 5-i; i++){ b->b=i&4?v(";",2):
v("s",2); b=b->_ W } H=p->c=1; p
->o W r->o W q->o W a=n; J(g\
ets(c)){ d=c; J(*d){ *d=
*d<65||*d>90 ?*d:*d+
32; d++; } y=s\
trchr(c,35)
; Z(y){
*y=0
;
}
B
=st\
rtok(c,
" "); J(B)
{ a=a->_ W P=v(
B,1); Z(g("qtm",P))
{ _a; } B= strtok(0," ")
; } } _=->_ ; z=atoi(v(_->b,-
1)); _=->_ ; C=atoi(v(_->b,-1));
G=C; _=->_ ; T=s(_->b); _=->_ ; O W
F=O; U=k; J(_&&!g("cde",_->b)){ i=*_
```

```
->b; R=i-47?48-i?i-98?106-i?0:r:q:p:j(
); Z(!R){ R=j(); U=U->_ W U->o=R; } F
= F->_ W F->o=R; _=->_ ; } t(T, O);
E=m->_ ; J(E){ D++; E=E->_ ; } L=1
->_ ; J(L){ I++; L=L->_ ; } p\
rintf(K,D,I); for(i='\''
/'\'' ; z>i; i++){ J(
!--G){ G=C; H=1
-H ; break;
} r->c=
! (q
->
c=
H)
; L=
l->_ ; J
(L) { L->o
->c=!1; L=L->_ ;
} h(p); Z(q->c){ h(
q); } Q{ h(r); } E=m->_ ;
J(E){ A=E->o; A->c=A->o->_ ->_
->_ ->_ ->o->c; E= E->_ ; } Y=k->_ ;
d=w; J(Y){ *d+=48+Y->o->c; Y=Y->_ ;
} *d=0; Z(!g(w,x)){ strcpy(x,w); pri\
ntf(e, i, w ) ; } } N 0 ; }
```

EDAMAME Award - birken (4)

- tofu hotdogs is to simulated meat as
tofu circuitry is to simulated circuits
- Electronic Design Automation - Mechanical Abstract
Machine Emulator Award
 - Edamame (made from soy beans) is to tofu as
the award name is to the IOCCC :-)
- Tribute to the early computer pioneer: Konrad Zuse

EDAMAME Award - birken (5)

- To use:

- ./birken < data.tofu

- ./demo1

(OS X demo)

Homer's Favorite - sloane

- Andy Sloane
USA

Homer's Favorite - sloane (2)

```

_,x,y,o      ,N;char      b[1840]      ;p(n,c)
{for(;n      --;x++)      c==10?y      +=80,x=
o-1:x>=      0?80>x?      c      !='~'?b
[y+x]=c      :0:      0:0;}c(
    q,l,r)      char*l,*r;{while      (q>=0)q
    =("E"      "?yYrIxC{e^KhE>[|LXbj}"      "dOVsJ"
    "@"      "idOV{Yab[bW}[bW]\\qFywyv{D"      "ma\\A"
    ""      "Ztq?Lyw>e{|Zq>Y\\gq\\qI[tYBe{w"      "yvDZE\
vBA[`_"      "Lo>}KcqdYrWqKxzKtW]|DXRwsfcUaT\\
KXw{Y"      "RsFwsFwsFw{zaqyaz|FmMpyaoyI\\}cuUw{J"
[_/6]      -62>>_+;%6&1?r[q]:l[q])-99;return q;}E(a
){for      (o=x=a,y=0,_=0;_      <1006;)a=" /\\n"
    "~|_."[c(6,"b"      "cd\\a[g","^`"      "_e"
    "]fh")+8], p(      "#$%"      "&'()*+,-.1"[      c(11
    ,"_ac[]\\YZi"      "jkm",      "`bd^efghXWlV"      )+13
    ]-34,a);}main      (k,Z){      float z[1840]      ,A=0
,B=0      ,i,j; puts("")      "\x1b"      "[2J");for(;;
) { float e=sin(A      ), n=      sin(B),g=cos(
A),m      =cos(B);for(k      =0;k<      1840;k++)y=-k
/80-      10,o=41+(k%80-      40)*1.3/y+n,N=
    A-100.0/y, b[k]=      ".#[o+N&1],z[k]      =0;E(
    80-(int)(9*B)%250);for(j=0;6.28>j;j+=0.07      )for(
    i=0;6.28>i;i+=0.02) { float c=sin(i),d      =cos(j
    ),f=sin(j),h=d+2,D=15/(c*h*e+f*g+5      ),l=cos
    (i),t=c      *h*g-f*e;x=40+2*D*(l*h*m-t*n),y=      12
    +D*(l*h      *n+t*m),o=x+80*y,N=8*((f*e-c      *d*
    g)*m-c*      d*e-f*g-l*d*n);if(D>z[o]      )z[o]
    =D,b[o]      =" .,,-++=#$@[      N>0?N:0
    ]      ;      }      printf(
    "\x1b["      "H"      )};for(k      =1;1841
    >k;k++)      putchar      (k%80?b      [k]:10)
    ;      A +=      0.053;B      +=0.037      ;      }      }

```

~

Homer's Favorite - sloane (2)

- ./demo1

(OS X demo)

Most Irrational - hamre

- Steinar Hamre
Norway

Most Irrational - hamre (2)

```
#define          q [v+a]
#define          c b[1]
#define          O 1 q
#define          o 0 q
#define          r(v,a\
)v<O&&(          v*=-1,          a*=-1);
#define          p(v,m,          s,w)*c==*#v?2 q\
<m?(c++          ,d=1,3          q=0,5          q=m,main\
(a+3,b)          ,o=o*s          q,O=O*          w q):0:
static          d,v[99          ];main          (int a,
char**b          ){d=7;          if(*c?!          (p(+,3
,4 q+O*          3,4)p(          -, (o?3
:(O=1,6          )),4 q          -O*3,4)
p(*,4,3          ,4)p(/          ,5,4,3)
p(( ),d,          0+3,0+          04)*c==
)'?2 q          <O2?(c          ++,0):0
:(o=O12          *o+*c-          '0',c++
,O=1)):          2 q?3-          2:printf(
"%d/%d"          "\n",o          ,O))return
1;d=a,r          (o,d)r          (O,d)3 q
=o<O?(4          q=o,O)          :(4 q=O,
o);r(d,          o)a+=3;O?
1:(O=1,2
q=1);while
(2 q=o%1 q)a++;v[d]/=O;d[
v+1]/=O;return main(d,b);}
```

Most Irrational - hamre (3)

- calculator for rational numbers
- supports:
 - +, - (binary and unary), *, / and ()
 - up to 31 levels of ()'s support by default
- example:
 - `./hamre '-1+4/3*(2+1/(3/2*(7/2-7/3+1/6)))/2'`
`2/3`
- Question: Uses a macro to define new operators, can you figure out the macro arguments?

Most Portable Chess Set - toledo3

- Óscar Toledo
Mexico

Most Portable Chess Set - toledo3 (2)

```
#include <X11/Xlib.h>
char *l="dbcefcdbddabccddcba~WAB+ +BAW~ +-84HLSU?A6J57IKJT576,",
 *F=" ,>>, > x1~w/? ,>>>,s m\177>>\177\177 mm2>>> >uk>>> ",*f;y,u;
#define v for (i=0,b=0;b>511?b=0,i+=64:0,i<512;b+=64) A=i/64*10+b/64+21,XCopy\
Plane(d, r[I[A]+7+14*(i+b)>>6&1]+28*(A==z)],w,C,0,0,64,64,b,i,1); XFlush(d);
#define _(a) *f++=a&*F?-(z%14<7):"U\252U\0DDDD"[z/14*2|u&1],
#define G(p) p##Pixel(d,DefaultScreen(d))
#define R(a) |(a==0|p==a)*
#define P return y=~y,
#define a X(0,0,0,
#define H while(
#define D ;if(

I[304],b,i,z;main(x,W) char**W; { Display *d =
 XOpenDisplay(""); Window w = XCreateSimpleWindow
 (d, DefaultRootWindow(d), 64,64,512,512,2,G(Black)
 ,G(Black)); XGCValues g; XButtonEvent e; int A,r
 [56],Z,* m = I , C ,Y; XSelectInput(d,w,32772);
 XMapWindow( d, w); g. foreground = G(White);
 C=XCreateGC(d,w,4,&g); F+=48; H f=I,i=0,z<56){
 H u=0,i++<8){ H _(0)_( 64)_(16)_(8)_(4)_(2)_(1
 )_(0)++u<8); F++; } F-= z%7-6?z%14<6?16:0:8; r[
 z++]=XCreateBitmapFromData(d,w,I,64,64); } srand(
 time(z=u=0)); H I[z]=-( z>98|z<21|(z+1)%10<2),
 ++z<120); H ++m<9+I) 80 [m]=-2,90[m]=~(20[m]=7&*
 1++),30[m]=1; D 1<x) Z= *W[1]-45; D 2<x){ a u,1
 ,Z); a u,0,1); z=0; } H 1){ XNextEvent(d,&e); D
 e.type==12){ v } D e. type==4){ b=e.y/64*10+e
 .x/64+21; D(b[I]^y)<-1 { z=b; v } else{ i=(b<29
 |b>90)&((b[I]^y)==-2)?- 6^y:z[I]; Y=y; a u,0,1);
 z=0; v D 1<x&&Y-y){ a u ,1,Z); a u,0,1); } z=0;
 v } } } }
```

Most Portable Chess Set - toledo3 (3)

X(w,c,h,e,S,s)

```
{ int p,O= *l,t,d,o,C ,*g,E,n,*m =I,N=-1e8,
  A,L,r,x = 10,q; y=~y ; H--O>20)
{ o=I[p=O] D q=o^y,q> 0){ q+=(q< 2)*y,C=q
  ["51#/+++"], A=q["95+3/33"]; do { m=0,
r=I[p+=C[l ]-64] D !w |p==w&&q>1 |C+2<A|!r)
  { d=abs(O- p) D g=q<2 &e>>6==p+(
y?x:-x)?I+ (e>>6):0, !r&(q>1|d% x<1||g)|(r
  ^y)<-1){ n =o,t=q<2&( 89<p|30>p)
?n+=y|1,6^ y:o+(y|1) D (r^y)<-6 ) P 1e7-811
  *h; H n-t) { O[I]=0,p [I]=n,m?*g
=*m,*m=0:g ?*g=0:0; E=e&63 R( 91)16 R(28)
  4 R(21)2 R (98)32; L= (q>1?6-q?1
[p/x-1]-1[ O/x-1]-q+2 : (E|=y?8:1 ,!!m)*9:(E
  |=20-d?0: 64*p,n-o?( 1[15+n]-' '
)*9:d/8+!! g*99))+ (1[ r+15]-' ') *9+1[p*x]-
  h-1[O%x]; L--s>h||s== h&L>49&1<s
?X(s>h?0:p ,L,h+1,E,N ,s):0 D !( z-O|i-n|h|
  p-b|S|L<- 1e6))return u=E; O[I]=
o,p[I]=r,m ?*m=*g,*g= 0:g?*g=-2^ y:0 D S|h&&
  (L>N||!h&N ==L&&rand( )&4)){ N=L
D !h&&s) i =n,z=0,b=p D h&&c-L<S ) P L; } q
  >5&d<2&C+6 <A&&(g=I+p ,r=I[p+=p-
O],m=p<O?g -3:g+2,! (e &(p<O?3:5) <<3*-y|*g|
  r|m[p<O?1: -1])&&L>- 1e6&&1e6>a
63,1,0))?d ++:(n+=y|1 );} } } C +=q<2&C+3>
  A&( (y?O<80 :39<O)||r) ; } H!r&q>
2&q<6|| (p= O,++C<A) ; } } P N+ 1e8?N:0; }
```

Most Portable Chess Set - toledo3 (3)

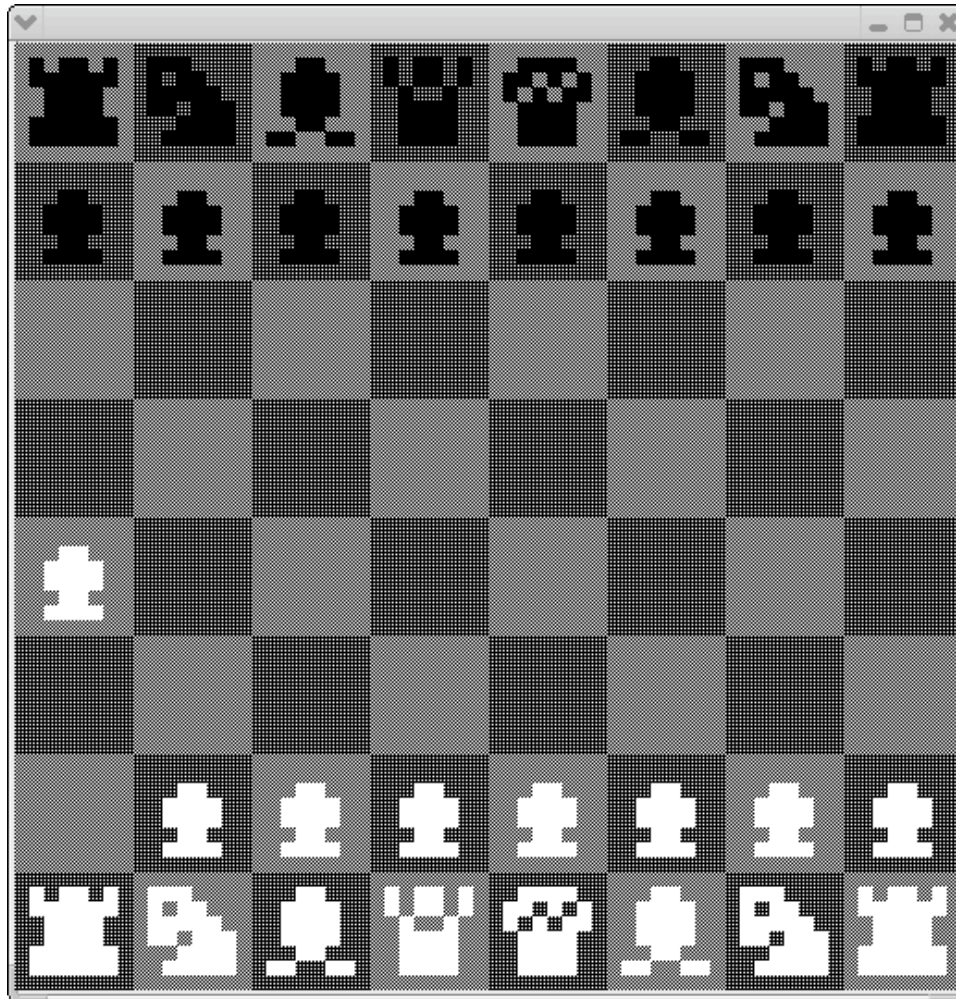
- Usage:

- ./toledo3 Two human players

- ./toledo3 1 Human white, computer **black** & fast
 - ./toledo3 2 Human white, computer **black** & medium
 - ./toledo3 3 Human white, computer **black** & slow
 - ./toledo3 1 b Human **black**, computer white & fast
 - ./toledo3 2 b Human **black**, computer white & medium
 - ./toledo3 3 b Human **black**, computer white & slow

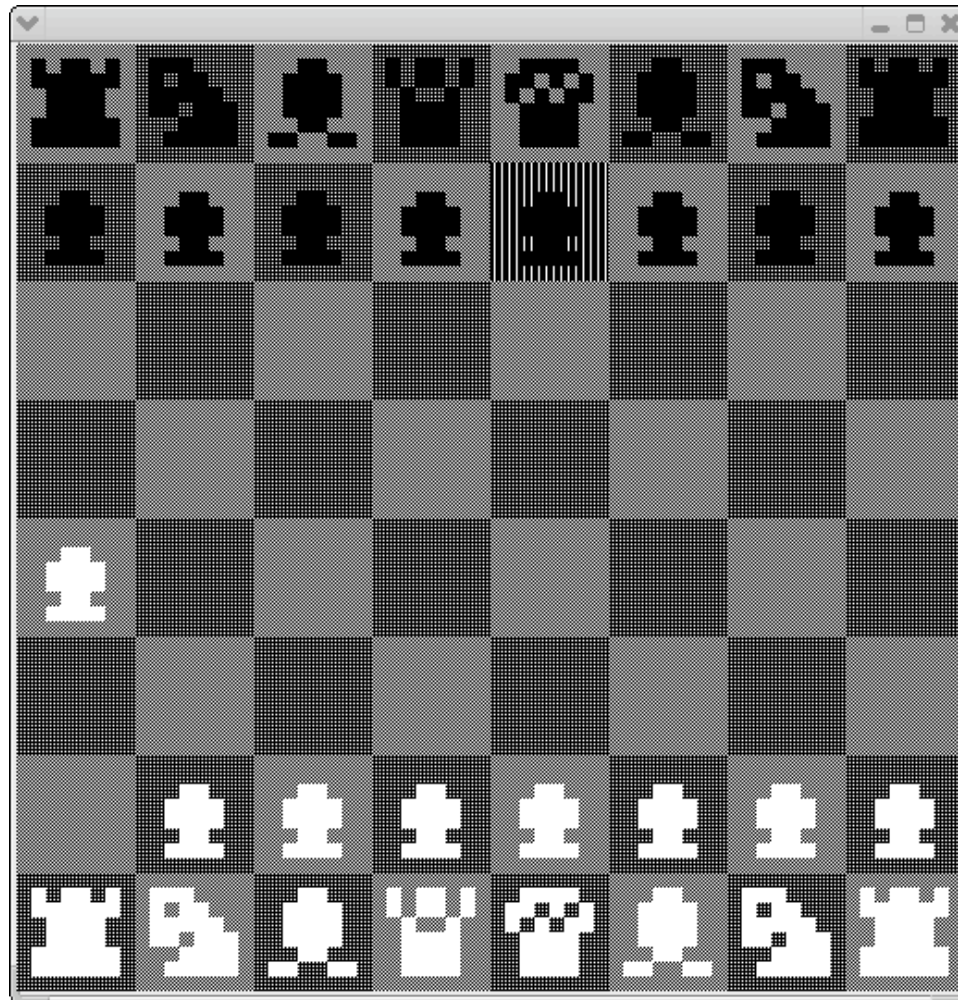
Most Portable Chess Set - toledo3 (4)

```
./toledo3 1 b
```



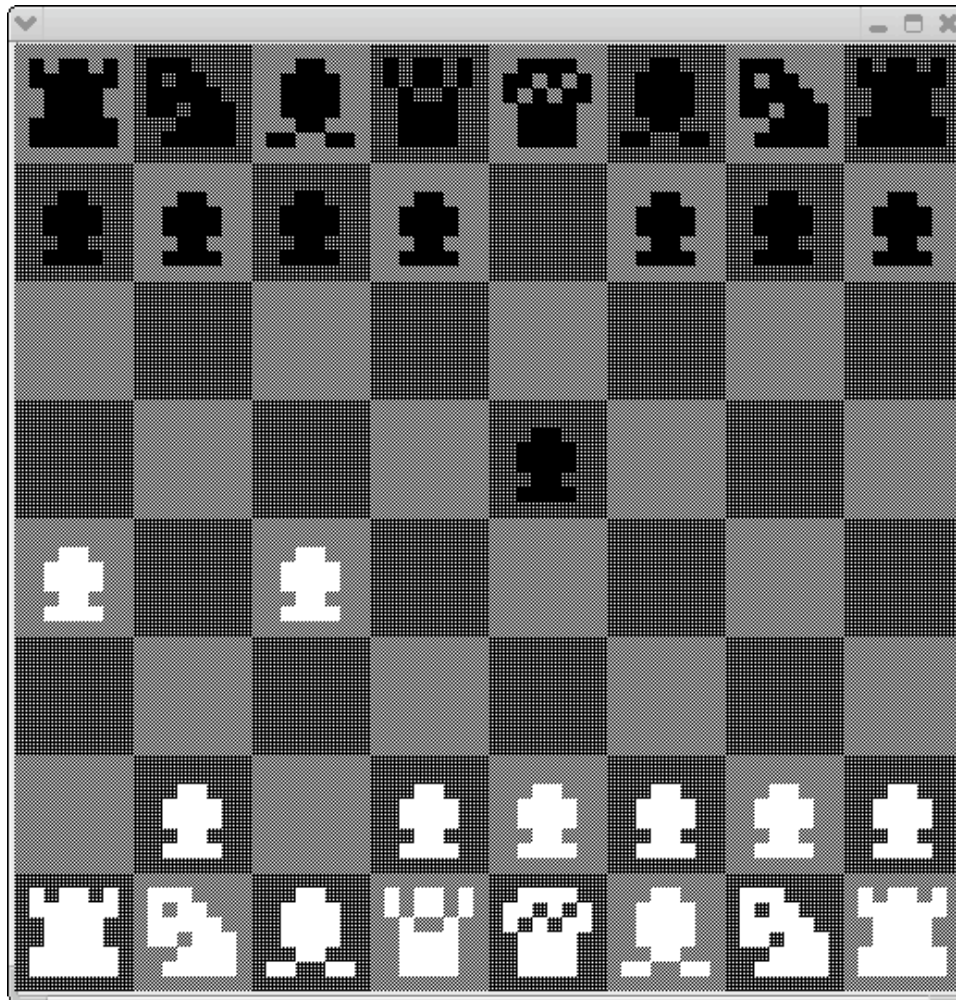
Most Portable Chess Set - toledo3 (4)

click on pawn at e7



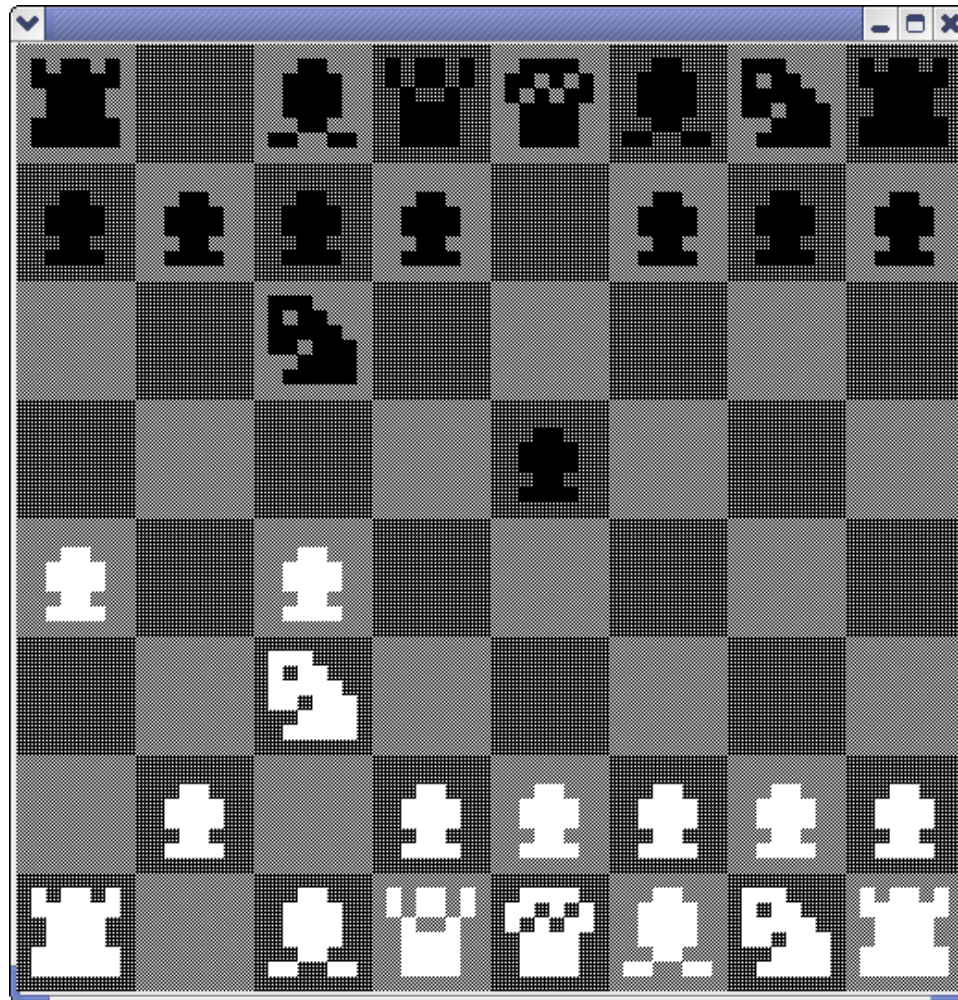
Most Portable Chess Set - toledo3 (4)

drag pawn to e5, computer replies with c4



Most Portable Chess Set - toledo3 (4)

c6, computer replies c3 ...



Best One-liner - sykes2

- Stephen Sykes
Finland

Best One-liner - sykes2 (2)

```
main(_){_^448&&main(--_);putchar(--_%64?32|~7[__TIME__-_/8%8] [ ">'txiZ^ (~z?"-48]>>" ; ; ; == ~$ : : 199" [_*2&8|_/64]/ (_&2?1:8)%8&1:10);}
```

Best One-liner - sykes2 (3)

```
main ( __ ) {
    __ ^448 && main ( - ~ __ ) ;
    putchar ( -- __ %64 ?
        32 | - ~ 7 [ __ TIME __ - __ / 8 % 8 ]
                [ ">'txiZ^ (~z?" - 48 ]
        >> " ; ; ; ===== ~ $ : : 199 " [ __ * 2 & 8 | __ / 64 ]
        /
        ( __ & 2 ? 1 : 8 ) % 8 & 1
        : 10
    ) ;
}
```

Best One-liner - sykes2 (4)

```
while true;do cc sykes2.c;clear;./a.out; done
```

```
while true; do
    cc sykes2.c;
    clear;
    ./a.out;
done
```

- ./demo1

(OS X demo)

Most Obfuscated Audio - grothe

- Aaron Grothe
USA

Most Obfuscated Audio - grothe (2)

```
#include<stdio.h>
#include<X11/Xlib.h>
#include<stdlib.h>
#include<sys/time.h>
#include<time.h>
#include<string.h>

static
Display
*b;static
Window d; static GC e;
static int f,g,i;static
double j,k;static void l
(int m){int _=00,__,x;double
y, _x;y=m/j*02.0; _x=k/j*02.0;(void)
XSetForeground(b,e,BlackPixel(b,DefaultScreen
(b)));(void)XFillRectangle(b,d,e,00,00,(unsigned
int)g,(unsigned int)f);if(m==00){for(_=0x0;__<g;__++)
for(x=0;x<f;)(void)XDrawPoint(b,d,e,__,x),x++;return;}(void)XSetForeground
(b,e,WhitePixel(b,DefaultScreen(b)));for(x=00;x<f;x++){__=0x0;if(((int)
(_*y)%2)==0)for(;__<g;__++){if(((int)(_*_x)%2)==1)(void)XDrawPoint(b,
d,e,__,x);_++;}_+=i-__;}}int main(int __x,char* __[]){if(__x!=4)
fprintf(stderr,"usage:%spixelclockcarrier_freghorizontal_total"
"\n",__[00]),exit(EXIT_FAILURE);j=atof(__[1]),k=atof(
__[1+1]),i=atoi(__[1+1+1]),b=XOpenDisplay("");
if(!b)exit(EXIT_FAILURE);XSetWindowAttributes X;
X.event_mask=ExposureMask|ButtonPressMask,
X.override_redirect=True,
g=WidthOfScreen(ScreenOfDisplay
(b,DefaultScreen(b))),f=HeightOfScreen
(ScreenOfDisplay(b,DefaultScreen(b))),d
=XCreateWindow(b,RootWindow(b,DefaultScreen(b)),
00,00,(unsigned int)g,(unsigned int)f,00,CopyFromParent,
InputOutput,(Visual*)CopyFromParent,(unsigned long int)CWOVERRIDE_REDIRECT
|CWEventMask,&X);} (void)XMapWindow(b,d),(void)XRaiseWindow(b,d),e=
XCreateGC(b,d,0,0);{static int _X_[0377];int _x; _X_[061]=948,
_X_[0x32]=01763,_X_[043]=0x4b9,52[_X_]=0x3dd,_X_[063]=1082,
_X_[0x36]=02143,_X_[42]=02063,_X_[070]=1094,065[_X_]=0x41d,
_X_[48]=02162,_X_[0x39]=02214,55[_X_]=0x406;while((_x=
getchar())!=EOF){l(_X_[_x]);{static struct timespec
_l; _l.tv_nsec=03563262400,nanosleep(&_l,00);}}
(void)XDestroyWindow(b,d),(void)XCloseDisplay
(b),exit(EXIT_SUCCESS);}
```

Most Obfuscated Audio - grothe (3)

- ./demo1

(IBM demo)

Most Obfuscated Audio - grothe (4)

- usage:

- `./grothe carrier_freq pixelclock horizontal_total < input.txt`

- To compute pixelclock and horizontal_total:

- `xvidtune -show | head -n 1 |
awk '{ print "pixelclock " $2 * 1000000 "
print "horizontal_total = " $6; }'`

- example:

- `./grothe 65000000 10000000 1344 < twinkle.txt`

- where twinkle.txt is:

- 1199##9-6633221-9966332-9966332-1199#9-6633221-

Best of Show - toledo2

- Óscar Toledo
Mexico

Best of Show - toledo2 (2)

```
#include <stdio.h>
#define n(o,p,e)=y=(z=a(e)%16 p x%16 p o,a(e)p x p o),h(
    #define s 6[o]
    #define p z=1[d(9)]|1[d(9)+1]<<8,1<(9[o]+=2)|++8[o]
    #define Q a(7)
#define w 254>(9[o]-=2)|--8[o],1[d(9)]=z,1[1+d(9)]=z>>8
    #define O )):((
    #define b (y&1?~s:s)>>"\6\0\2\7"[y/2]&1?0:(
    #define S )?(z-=
    #define a(f)*((7&f)-6?&o[f&7]:&1[d(5)])
    #define C S 5 S 3
    #define D(E)x/8!=16+E&198+E*8!=x?
    #define B(C)fclose((C)
    #define q (c+=2,0[c-2]|1[c-2]<<8)
    #define m x=64&x?*c++:a(x),
    #define A(F)=fopen((F),"rb+")
    unsigned char o[10],l[78114],*c=1,*k=1
    #define d(e)o[e]+256*o[e-1]
#define h(1)s=1>>8&1|128&y|!(y&255)*64|16&z|2,y^=y>>4,y^=y<<2,y^=~y>>1,s|=y&4
+64506; e,V,v,u,x,y,z,Z; main(r,U)char**U;{
```

```
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```

Best of Show - toledo2 (3)

```
for(v A((u A((e A((r-2?0:(V A(1[U])), "C")
),system("stty raw -echo min 0"),fread(1,78114,1,e),B(e),"B"),"A")); 118-(x
=*c++); (y=x/8%8,z=(x&199)-4 S 1 S 1 S 186 S 2 S 2 S 3 S 0,r=(y>5)*2+y,z=(x&
207)-1 S 2 S 6 S 2 S 182 S 4)?D(0)D(1)D(2)D(3)D(4)D(5)D(6)D(7)(z=x-2 C C C C
C C C C+129 S 6 S 4 S 6 S 8 S 8 S 6 S 2 S 2 S 12)?x/64-1?((0 O a(y)=a(x) O 9
[o]=a(5),8[o]=a(4) O 237==*c++?((int (*)())(2-*c++?fwrite:fread))(1+*k+1[k]*
256,128,1,(fseek(y=5[k]-1?u:v,((3[k]|4[k]<<8)<<7|2[k])<<7,Q=0),y)):0 O y=a(5
),z=a(4),a(5)=a(3),a(4)=a(2),a(3)=y,a(2)=z O c=l+d(5) O y=l[x=d(9)],z=l[++x]
,x[1]=a(4),l[--x]=a(5),a(5)=y,a(4)=z O 2-*c?Z||read(0,&Z,1),1&*c++?Q=Z,Z=0:(
Q=!!Z):(c++,Q=r=V?fgetc(V):-1,s=s&~1|r<0) O++c,write(1,&7[o],1) O z=c+2-l,w,
c=l+q O p,c=l+z O c=l+q O s^=1 O Q=q[1] O s|=1 O q[1]=Q O Q=~Q O a(5)=l[x=q]
,a(4)=l[++x] O s|=s&16|9<Q%16?Q+=6,16:0,z=s|=1&s|Q>159?Q+=96,1:0,y=Q,h(s<<8)
O l[x=q]=a(5),l[++x]=a(4) O x=Q*2,Q=Q/2+s%2*128,s=s&~1|x O Q=l[d(3)]O x=Q /
128,Q=Q*2+s%2,s=s&~1|x O l[d(3)]=Q O s=s&~1|1&Q,Q=Q/2|Q<<7 O Q=l[d(1)]O s=~1
&s|Q>>7,Q=Q*2|Q>>7 O l[d(1)]=Q O m y n(0,-,7)y) O m z=0,y=Q|x=h(y) O m z=0,
y=Q^=x,h(y) O m z=Q*2|2*x,y=Q&=x,h(y) O m Q n(s%2,-,7)y) O m Q n(0,-,7)y) O
m Q n(s%2,+,7)y) O m Q n(0,+,7)y) O z=r-8?d(r+1):s|Q<<8,w O p,r-8?o[r+1]=z,r
[o]=z>>8:(s=~40&z|2,Q=z>>8) O r[o]--||--o[r-1]O a(5)=z=a(5)+r[o],a(4)=z=a(4)
+o[r-1]+z/256,s=~1&s|z>>8 O ++o[r+1]||r[o]++O o[r+1]=*c++,r[o]=*c++O z=c-1,w
,c=y*8+1 O x=q,b z=c-1,w,c=l+x) O x=q,b c=l+x) O b p,c=l+z) O a(y)=*c++O r=y
,x=0,a(r)n(1,-,y)s<<8) O r=y,x=0,a(r)n(1,+,y)s<<8)))));
system("stty cooked echo"); B((B((V?B(V):0,u)),v)); }
```

Best of Show - toledo2 (4)

Registers:

o[0] = B register o[1] = C register
o[2] = D register o[3] = E register
o[4] = H register o[5] = L register
o[6] = Flags o[7] = A or accumulator

c = program counter

The following instructions do peripheral operation:

76	Quits emulator
DB 00	Reads key pressed status
DB 01	Reads key
DB 02	Reads byte from file (Carry=EOF)
D3 xx	Writes byte from acc. to console
ED ED 02	Reads sector
ED ED 03	Writes sector

Memory addresses:

FBFA = Low source/target direction
FBFB - High source/target direction
FBFC - Sector
FBFD - Low cylinder
FBFE - High cylinder
FBFF - Drive.

Best of Show - toledo2 (5)

- Press Ctrl+Z to quit
 - the segmentation fault is normal (and documented)

- `./demo1`

(IBM demo)

- `10 A= ... RUN`

- `XXX: TBD: ./demo2 CPM`

Best of Show - toledo2 (6)

- <http://www.retroarchive.org/cpm/os/KAYPROII.ZIP>
 - Extract CPM64.COM
 - *save as files A and B (dual disk drives)*
 - Extract “source” files:
 - *ASM.COM DDT.COM DUMP.COM ED.COM LOAD.COM*
 - *PIP.COM STAT.COM SUBMIT.COM XSUB.COM*
 - Load each into A: Drive
 - *./toledo2 DDT.COM*
 - *A> IMPORT DDT.COM*
 - *A> HALT*
 - Load other CPM software
 - *<http://www.retroarchive.org/cpm/lang/c80v30.zip>*
 - *<http://www.retroarchive.org/cpm/lang/Mbasic.com>*
 - *<http://www.retroarchive.org/cpm/business/MULTPLAN.ZIP>*

Any Questions?

- Look for the source in a few weeks on:



<http://www.ioccc.org>