X Acceleration that Finally Works

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X Graphics
NAME

xset - user preference utility for X

SYNOPSIS


DESCRIPTION

This program is used to set various user preference options of the display.

OPTIONS

-display display

- This option specifies the server to use; see X(7).

-b The b option controls bell volume, pitch and duration. This option accepts up to three numerical parameters, a preceding dash(-), or a 'on/off' flag. If no parameters are given, or the 'on' flag is used, the system defaults will be used. If the dash or 'off' are given, the bell will be turned off. If only one numerical parameter is given, the bell volume will be set to that value, as a percentage of its maximum. Likewise, the second numerical parameter specifies the bell pitch in hertz, and the third numerical parameter specifies the duration in milliseconds. Note that not all hardware can vary the bell characteristics. The X server will set the characteristics of the bell as closely as it can to the user's specifications.

-bc The bc option controls bug compatibility mode in the server, if
Problem Space
Core Xlib drawing primitives

- Solid fills
- Bitwise raster operations
- Non-antialiased lines/arcs
- Server-side fonts
Render extension primitives

- Image compositing
- Client-side font support
- Trapezoid rasterization
- Gradients
Past attempts
• fills, copies, stipple fills, bresenham lines
• 2D rectangular memory manager
• almost no pixmap caching
KAA

- fills, copies
- linear memory manager
- caches all pixmaps
EXA

- fills, copies, textured blending
- linear memory manager
- caches all pixmaps, migration heuristics
Hardware
Graphics device support

- Provides fills, copies, textured blending
- Has no local memory
- Aperture reads still expensive
- GART binding is cheap
Recent Work
• kernel graphics memory manager
• buffer objects
• fences
EXA with TTM

- fills copies, textured blending
- all pixmaps in buffer objects
- migration by GART binding
965 Render acceleration

- Accumulates operations in batchbuffer
- Enumerate all programs and state
Status
Demo
Future work

- Cache flushing reduction
- Surface state caching
- Gradients acceleration