Wine / GDI+

GDI – Graphical Device Interface

what goes here?

You've been using it all along!
GDI – Graphical Device Interface

GDI is kinda old and crufty
Wine / GDI+

GDI+++ ... GDI+

- Anti-aliasing
- Float point coordinates
- Gradient shading
- JPEG / PNG support
- Matrix transformations
- Alpha Blending

The plus means better
GDI+ API

- Flat C API
  - 600 functions
  - Implemented in gdiplus.dll
- C++ API
  - Class based – 40 classes, 50 enums, 12 functions...
  - Wrappers around Flat API, also available in .NET form

GDI+ is everywhere!
GDI+ C++ Example

HDC hdc;
PAINTSTRUCT ps;
Pen* myPen; // Pen is a class
Graphics* myGraphics; // Graphics is a class
hdc = BeginPaint(hWnd, &ps);
myPen = new Pen(Color(255, 255, 0, 0), 3);
myGraphics = new Graphics(hdc);
myGraphics->DrawLine(myPen, 20, 10, 200, 100);
delete myGraphics;
delete myPen;
EndPaint(hWnd, &ps);

I invented the term Object-Oriented, and I can tell you I did not have C++ in mind. (Alan Kay)
GDI+ C Example

HDC hdc;
PAINTSTRUCT ps;
GpPen* myPen; // GpPen is a struct
GpGraphics* myGraphics; // GpGraphics is a struct
hdc = BeginPaint(hWnd, &ps);
GdipCreatePen1(0xffffffff00, 3, UnitPixel, &myPen);
GdipCreateFromHDC(hdc, &myGraphics);
GdipDrawLine(myGraphics, myPen, 20, 10, 200, 100);
GdipDeleteGraphics(myGraphics);
GdipDeletePen(myPen);
EndPaint(hWnd, &ps);

C makes it easy to shoot yourself in the foot; C++ makes it harder, but when you do, it blows away your whole leg. (Bjarne Stroustrup)
GDI+ Overloading Example

C++ API:
Graphics::DrawLine(Pen, Point, Point)
Graphics::DrawLine(Pen, PointF, PointF)
Graphics::DrawLine(Pen, int, int, int, int)
Graphics::DrawLine(Pen, float, float, float, float)

C API:
GdipDrawLine(GpGraphics, GpPen, float, float, float, float)
GdipDrawLineI(GpGraphics, GpPen, int, int, int, int)

*Within C++, there is a much smaller and cleaner language struggling to get out.* (Bjarne Stroustrup)
GDI+ Flat API Functions Organization

- Bitmap / Image – decoding, format conversion
- Brushes / Pens – painting
- Fonts / Text – rendering text
- Graphics – drawing lines, shapes
- Matrix – transformations
- Regions – combining, clipping

Not enough room to list them all
Wine / GDI+

• Dan should have already told you about Wine
• Skip to next slide

Wine / GDI+ for President?
Wine Development

- You'll work with open source developers
- You'll have to meet real world requirements
- Your code will be heavily scrutinized
- You'll learn to use git, a source control system
- You'll have to work with both Linux and Windows

Wine is delicious
GdiPlus For Wine

1 intern + 12 weeks
+ free food = GdiPlus?

• Dealt with C / C++ header file issues
• ~280 patches
• Implemented more than 100 functions
• Wrote lots of tests

Evan reminds me of a young Pete Sampras
Wine / GDI+

GdiPlus For Wine ... and you

1 student + 10 weeks
+ SEAS cafe = GdiPlus!

• 400 unimplemented functions
• Many applications currently do not work

• Dan and I are here to help
• Lots of online resources

http://source.winehq.org/source/dlls/gdiplus/
Questions?

You can ask me anything!