

ExtCreatePen

The **ExtCreatePen** function creates a logical cosmetic or geometric pen that has the specified style, width, and brush attributes.

```
HPEN ExtCreatePen(  
    DWORD dwPenStyle,           // pen style  
  
    DWORD dwWidth,             // pen width  
    CONST LOGBRUSH * lpLb,     // address of structure for brush attributes  
    DWORD dwStyleCount,        // length of array containing custom style bits  
    CONST DWORD * lpStyle       // optional array of custom style bits  
);
```

Parameters

dwPenStyle

Specifies a combination of type, style, end cap, and join attributes. The values from each category are combined by using the bitwise OR operator (|).

The pen type can be one of the following values:

Type	Description
PS_GEOMETRIC	Pen is geometric.
PS_COSMETIC	Pen is cosmetic.

The pen style can be any one of the following values:

Style	Description
PS_ALTERNATE	Windows NT: Pen sets every other pixel. (This style is applicable only for cosmetic pens.)
PS_SOLID	Pen is solid.
PS_DASH	Pen is dashed.
PS_DOT	Pen is dotted.
PS_DASHDOT	Pen has alternating dashes and dots.
PS_DASHDOTDOT	Pen has alternating dashes and double dots.
PS_NULL	Pen is invisible.
PS_USERSTYLE	Windows NT: Pen uses a styling array supplied by the user.
PS_INSIDEFRAME	Pen is solid. When this pen is used in any graphics device interface (GDI) drawing function that takes a bounding rectangle, the dimensions of the figure are shrunk so that it fits entirely in the bounding rectangle, taking into account the width of the pen. This applies only to geometric pens.

The end cap is only specified for geometric pens. The end cap can be one of the following

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End cap	Description
PS_ENDCAP_ROUND	End caps are round.
PS_ENDCAP_SQUARE	End caps are square.
PS_ENDCAP_FLAT	End caps are flat.

The join is only specified for geometric pens. The join can be one of the following values:

Line join	Description
PS_JOIN_BEVEL	Joins are beveled.
PS_JOIN_MITER	Joins are mitered when they are within the current limit set by the SetMiterLimit function. If it exceeds this limit, the join is beveled.
PS_JOIN_ROUND	Joins are round.

dwWidth

Specifies the width of the pen. If the *dwPenStyle* parameter is PS_GEOMETRIC, the width is given in logical units. If *dwPenStyle* is PS_COSMETIC, the width must be set to 1.

lpIb

Points to a [LOGBRUSH](#) structure. If *dwPenStyle* is PS_COSMETIC, the **IbColor** member specifies the color of the pen and the **IbStyle** member must be set to BS_SOLID. If *dwPenStyle* is PS_GEOMETRIC, all members must be used to specify the brush attributes of the pen.

dwStyleCount

Specifies the length, in doubleword units, of the *lpStyle* array. This value must be zero if *dwPenStyle* is not PS_USERSTYLE.

lpStyle

Points to an array of doubleword values. The first value specifies the length of the first dash in a user-defined style, the second value specifies the length of the first space, and so on. This pointer must be NULL if *dwPenStyle* is not PS_USERSTYLE.

Return Value

If the function succeeds, the return value is a handle that identifies a logical pen.

If the function fails, the return value is zero.

Remarks

A geometric pen can have any width and can have any of the attributes of a brush, such as dithers and patterns. A cosmetic pen can only be a single pixel wide and must be a solid color, but cosmetic pens are generally faster than geometric pens.

The width of a geometric pen is always specified in world units. The width of a cosmetic pen is always 1.

End cap and join are only specified for geometric pens.

After an application creates a logical pen, it can select that pen into a device context by calling the [SelectObject](#) function. After a pen is selected into a device context, it can be used to draw lines and curves.

If *dwPenStyle* is PS_COSMETIC and PS_USERSTYLE, the entries in the *lpStyle* array specify lengths of dashes and spaces in style units. A style unit is defined by the device where the pen is used to draw a line.

If *dwPenStyle* is PS_GEOMETRIC and PS_USERSTYLE, the entries in the *lpStyle* array specify lengths of dashes and spaces in logical units.

If *dwPenStyle* is PS_ALTERNATE, the style unit is ignored and every other pixel is set.

If the **lbStyle** member of the **LOGBRUSH** structure pointed to by *lpfb* is BS_PATTERN, the bitmap pointed to by the **lbHatch** member of that structure cannot be a dib section. A dib section is a bitmap created by **CreateDibSection**. If that bitmap is a dib section, the **ExtCreatePen** function fails.

When an application no longer requires a given pen, it should call the **DeleteObject** function to delete the pen.