NAME

PEXNURBCurve - Non-Uniform Rational B-spline Curve Primitive

SYNTAX

void PEXNURBCurve(Display **display*, XID *resource_id*, PEXOCRequestType *req_type*, int *rationality*, int *order*, float **knots*, unsigned int *count*, PEXArrayOfCoord *points*, double *tmin*, double *tmax*)

PARAMETERS

display	A pointer to a display structure returned by a successful **XOpenDisplay** call.
resource_id	The resource identifier of the renderer or structure.
req_type	The request type for the output command (**PEXOCRender, PEXOCStore, PEXOCRenderSingle** or **PEXOCStoreSingle**).
rationality	The type of B-spline curve, whether rational or non-rational (**PEXRational** or **PEXNonRational**).
order	The order of the polynomial expression.
knots	An array of floats specifying the B-spline curve knots.
count	The number of control points that define the curve.
points	An array of control points defining the B-spline curve.
tmin	The minimum parameter value at which to evaluate the curve.
tmax	The maximum parameter value at which to evaluate the curve.

RETURNS

None

DESCRIPTION

This function creates a non-uniform B-spline curve output primitive.

The curve order is specified as a positive number. **PEXGetImpDepConstants**(3) can be called to determine the largest supported value for curve order. The spline shape is specified using a list of knots in the parametric coordinate space and a list of control points in modeling coordinates. The number of control points must be at least as large as the order. The number of knots is the sum of the curve order plus the number of control points. The sequence of knots must be non-decreasing,

i.e. t(0) <= t(1) <= ... <= t(k-1)

where k is the number of knots.

If the rationality is **PEXRational,** the control points must be specified in homogeneous (4D) modeling coordinates. PEXlib assumes that 4D modeling coordinates (x,y,z) have already been multiplied by the homogeneous coordinate (w). If the rationality is **PEXNonRational,** the control points must be specified in non-homogeneous (3D) modeling coordinates.

Evaluation of the spline is restricted to a specific region in the parametric coordinate space. The parametric limits, tmin and tmax, specify the region in the parametric coordinate space over which the spline is to be evaluated (tmin must be less than tmax). The parametric bounds must also satisfy the restriction tmin >= t(order), tmax <= t(k+1-order).

Depending on the ASF attributes, line color, line type, line width and curve approximation attributes are obtained either directly from the current line attributes or from the line bundle.

If the specified curve order is not supported, the output primitive is stored in a structure, but when rendered, the primitive is ignored and has no visual effect.

Also, the curve order must not be less than one.

DATA STRUCTURES

```
typedef union {
        PEXCoord2D    *point_2d;
        PEXCoord      *point;
        PEXCoord4D    *point_4d;
} PEXArrayOfCoord;    /* Pointer to array of points */
```

See also **PEXlib.h.**

ERRORS

BadPEXOutputCommand
The output command contains an invalid value.

BadPEXRenderer
The specified renderer resource identifier is invalid.

BadPEXStructure
The specified structure resource identifier is invalid.

SEE ALSO

PEXSetLineType(3)
PEXSetLineWidth(3)
PEXSetLineColorIndex(3)
PEXSetLineColor(3)
PEXSetLineBundleIndex(3)
PEXSetCurveApprox(3)
PEXGetImpDepConstants(3)