| | [**Overview**](http://docs.google.com/overview-summary.html) | [**Package**](http://docs.google.com/package-summary.html) | **Class** | [**Use**](http://docs.google.com/class-use/CubicCurve2D.Float.html) | [**Tree**](http://docs.google.com/package-tree.html) | [**Deprecated**](http://docs.google.com/deprecated-list.html) | [**Index**](http://docs.google.com/index-files/index-1.html) | [**Help**](http://docs.google.com/help-doc.html) | | --- | --- | --- | --- | --- | --- | --- | --- | | | ***Java™ Platform***  ***Standard Ed. 6*** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| [**PREV CLASS**](http://docs.google.com/java/awt/geom/CubicCurve2D.Double.html)   [**NEXT CLASS**](http://docs.google.com/java/awt/geom/Dimension2D.html) | [**FRAMES**](http://docs.google.com/index.html?java/awt/geom/CubicCurve2D.Float.html)    [**NO FRAMES**](http://docs.google.com/CubicCurve2D.Float.html)     [**All Classes**](http://docs.google.com/allclasses-noframe.html) |
| SUMMARY: [NESTED](#2et92p0) | [FIELD](#tyjcwt) | [CONSTR](#3dy6vkm) | [METHOD](#1t3h5sf) | DETAIL: [FIELD](#17dp8vu) | [CONSTR](#3j2qqm3) | [METHOD](#2xcytpi) |

## **java.awt.geom**

Class CubicCurve2D.Float

[java.lang.Object](http://docs.google.com/java/lang/Object.html)  
 [java.awt.geom.CubicCurve2D](http://docs.google.com/java/awt/geom/CubicCurve2D.html)  
 **java.awt.geom.CubicCurve2D.Float**

**All Implemented Interfaces:** [Shape](http://docs.google.com/java/awt/Shape.html), [Serializable](http://docs.google.com/java/io/Serializable.html), [Cloneable](http://docs.google.com/java/lang/Cloneable.html) **Enclosing class:**[CubicCurve2D](http://docs.google.com/java/awt/geom/CubicCurve2D.html)

public static class **CubicCurve2D.Float**extends [CubicCurve2D](http://docs.google.com/java/awt/geom/CubicCurve2D.html)implements [Serializable](http://docs.google.com/java/io/Serializable.html)

A cubic parametric curve segment specified with float coordinates.

**Since:** 1.2 **See Also:**[Serialized Form](http://docs.google.com/serialized-form.html#java.awt.geom.CubicCurve2D.Float)

| **Nested Class Summary** | |
| --- | --- |

| **Nested classes/interfaces inherited from class java.awt.geom.**[**CubicCurve2D**](http://docs.google.com/java/awt/geom/CubicCurve2D.html) |
| --- |
| [CubicCurve2D.Double](http://docs.google.com/java/awt/geom/CubicCurve2D.Double.html), [CubicCurve2D.Float](http://docs.google.com/java/awt/geom/CubicCurve2D.Float.html) |

| **Field Summary** | |
| --- | --- |
| float | [**ctrlx1**](http://docs.google.com/java/awt/geom/CubicCurve2D.Float.html#ctrlx1)            The X coordinate of the first control point of the cubic curve segment. |
| float | [**ctrlx2**](http://docs.google.com/java/awt/geom/CubicCurve2D.Float.html#ctrlx2)            The X coordinate of the second control point of the cubic curve segment. |
| float | [**ctrly1**](http://docs.google.com/java/awt/geom/CubicCurve2D.Float.html#ctrly1)            The Y coordinate of the first control point of the cubic curve segment. |
| float | [**ctrly2**](http://docs.google.com/java/awt/geom/CubicCurve2D.Float.html#ctrly2)            The Y coordinate of the second control point of the cubic curve segment. |
| float | [**x1**](http://docs.google.com/java/awt/geom/CubicCurve2D.Float.html#x1)            The X coordinate of the start point of the cubic curve segment. |
| float | [**x2**](http://docs.google.com/java/awt/geom/CubicCurve2D.Float.html#x2)            The X coordinate of the end point of the cubic curve segment. |
| float | [**y1**](http://docs.google.com/java/awt/geom/CubicCurve2D.Float.html#y1)            The Y coordinate of the start point of the cubic curve segment. |
| float | [**y2**](http://docs.google.com/java/awt/geom/CubicCurve2D.Float.html#y2)            The Y coordinate of the end point of the cubic curve segment. |

| **Constructor Summary** | |
| --- | --- |
| [**CubicCurve2D.Float**](http://docs.google.com/java/awt/geom/CubicCurve2D.Float.html#CubicCurve2D.Float())()            Constructs and initializes a CubicCurve with coordinates (0, 0, 0, 0, 0, 0). |
| [**CubicCurve2D.Float**](http://docs.google.com/java/awt/geom/CubicCurve2D.Float.html#CubicCurve2D.Float(float,%20float,%20float,%20float,%20float,%20float,%20float,%20float))(float x1, float y1, float ctrlx1, float ctrly1, float ctrlx2, float ctrly2, float x2, float y2)            Constructs and initializes a CubicCurve2D from the specified float coordinates. |

| **Method Summary** | |
| --- | --- |
| [Rectangle2D](http://docs.google.com/java/awt/geom/Rectangle2D.html) | [**getBounds2D**](http://docs.google.com/java/awt/geom/CubicCurve2D.Float.html#getBounds2D())()            Returns a high precision and more accurate bounding box of the Shape than the getBounds method. |
| [Point2D](http://docs.google.com/java/awt/geom/Point2D.html) | [**getCtrlP1**](http://docs.google.com/java/awt/geom/CubicCurve2D.Float.html#getCtrlP1())()            Returns the first control point. |
| [Point2D](http://docs.google.com/java/awt/geom/Point2D.html) | [**getCtrlP2**](http://docs.google.com/java/awt/geom/CubicCurve2D.Float.html#getCtrlP2())()            Returns the second control point. |
| double | [**getCtrlX1**](http://docs.google.com/java/awt/geom/CubicCurve2D.Float.html#getCtrlX1())()            Returns the X coordinate of the first control point in double precision. |
| double | [**getCtrlX2**](http://docs.google.com/java/awt/geom/CubicCurve2D.Float.html#getCtrlX2())()            Returns the X coordinate of the second control point in double precision. |
| double | [**getCtrlY1**](http://docs.google.com/java/awt/geom/CubicCurve2D.Float.html#getCtrlY1())()            Returns the Y coordinate of the first control point in double precision. |
| double | [**getCtrlY2**](http://docs.google.com/java/awt/geom/CubicCurve2D.Float.html#getCtrlY2())()            Returns the Y coordinate of the second control point in double precision. |
| [Point2D](http://docs.google.com/java/awt/geom/Point2D.html) | [**getP1**](http://docs.google.com/java/awt/geom/CubicCurve2D.Float.html#getP1())()            Returns the start point. |
| [Point2D](http://docs.google.com/java/awt/geom/Point2D.html) | [**getP2**](http://docs.google.com/java/awt/geom/CubicCurve2D.Float.html#getP2())()            Returns the end point. |
| double | [**getX1**](http://docs.google.com/java/awt/geom/CubicCurve2D.Float.html#getX1())()            Returns the X coordinate of the start point in double precision. |
| double | [**getX2**](http://docs.google.com/java/awt/geom/CubicCurve2D.Float.html#getX2())()            Returns the X coordinate of the end point in double precision. |
| double | [**getY1**](http://docs.google.com/java/awt/geom/CubicCurve2D.Float.html#getY1())()            Returns the Y coordinate of the start point in double precision. |
| double | [**getY2**](http://docs.google.com/java/awt/geom/CubicCurve2D.Float.html#getY2())()            Returns the Y coordinate of the end point in double precision. |
| void | [**setCurve**](http://docs.google.com/java/awt/geom/CubicCurve2D.Float.html#setCurve(double,%20double,%20double,%20double,%20double,%20double,%20double,%20double))(double x1, double y1, double ctrlx1, double ctrly1, double ctrlx2, double ctrly2, double x2, double y2)            Sets the location of the end points and control points of this curve to the specified double coordinates. |
| void | [**setCurve**](http://docs.google.com/java/awt/geom/CubicCurve2D.Float.html#setCurve(float,%20float,%20float,%20float,%20float,%20float,%20float,%20float))(float x1, float y1, float ctrlx1, float ctrly1, float ctrlx2, float ctrly2, float x2, float y2)            Sets the location of the end points and control points of this curve to the specified float coordinates. |

| **Methods inherited from class java.awt.geom.**[**CubicCurve2D**](http://docs.google.com/java/awt/geom/CubicCurve2D.html) |
| --- |
| [clone](http://docs.google.com/java/awt/geom/CubicCurve2D.html#clone()), [contains](http://docs.google.com/java/awt/geom/CubicCurve2D.html#contains(double,%20double)), [contains](http://docs.google.com/java/awt/geom/CubicCurve2D.html#contains(double,%20double,%20double,%20double)), [contains](http://docs.google.com/java/awt/geom/CubicCurve2D.html#contains(java.awt.geom.Point2D)), [contains](http://docs.google.com/java/awt/geom/CubicCurve2D.html#contains(java.awt.geom.Rectangle2D)), [getBounds](http://docs.google.com/java/awt/geom/CubicCurve2D.html#getBounds()), [getFlatness](http://docs.google.com/java/awt/geom/CubicCurve2D.html#getFlatness()), [getFlatness](http://docs.google.com/java/awt/geom/CubicCurve2D.html#getFlatness(double%5B%5D,%20int)), [getFlatness](http://docs.google.com/java/awt/geom/CubicCurve2D.html#getFlatness(double,%20double,%20double,%20double,%20double,%20double,%20double,%20double)), [getFlatnessSq](http://docs.google.com/java/awt/geom/CubicCurve2D.html#getFlatnessSq()), [getFlatnessSq](http://docs.google.com/java/awt/geom/CubicCurve2D.html#getFlatnessSq(double%5B%5D,%20int)), [getFlatnessSq](http://docs.google.com/java/awt/geom/CubicCurve2D.html#getFlatnessSq(double,%20double,%20double,%20double,%20double,%20double,%20double,%20double)), [getPathIterator](http://docs.google.com/java/awt/geom/CubicCurve2D.html#getPathIterator(java.awt.geom.AffineTransform)), [getPathIterator](http://docs.google.com/java/awt/geom/CubicCurve2D.html#getPathIterator(java.awt.geom.AffineTransform,%20double)), [intersects](http://docs.google.com/java/awt/geom/CubicCurve2D.html#intersects(double,%20double,%20double,%20double)), [intersects](http://docs.google.com/java/awt/geom/CubicCurve2D.html#intersects(java.awt.geom.Rectangle2D)), [setCurve](http://docs.google.com/java/awt/geom/CubicCurve2D.html#setCurve(java.awt.geom.CubicCurve2D)), [setCurve](http://docs.google.com/java/awt/geom/CubicCurve2D.html#setCurve(double%5B%5D,%20int)), [setCurve](http://docs.google.com/java/awt/geom/CubicCurve2D.html#setCurve(java.awt.geom.Point2D%5B%5D,%20int)), [setCurve](http://docs.google.com/java/awt/geom/CubicCurve2D.html#setCurve(java.awt.geom.Point2D,%20java.awt.geom.Point2D,%20java.awt.geom.Point2D,%20java.awt.geom.Point2D)), [solveCubic](http://docs.google.com/java/awt/geom/CubicCurve2D.html#solveCubic(double%5B%5D)), [solveCubic](http://docs.google.com/java/awt/geom/CubicCurve2D.html#solveCubic(double%5B%5D,%20double%5B%5D)), [subdivide](http://docs.google.com/java/awt/geom/CubicCurve2D.html#subdivide(java.awt.geom.CubicCurve2D,%20java.awt.geom.CubicCurve2D)), [subdivide](http://docs.google.com/java/awt/geom/CubicCurve2D.html#subdivide(java.awt.geom.CubicCurve2D,%20java.awt.geom.CubicCurve2D,%20java.awt.geom.CubicCurve2D)), [subdivide](http://docs.google.com/java/awt/geom/CubicCurve2D.html#subdivide(double%5B%5D,%20int,%20double%5B%5D,%20int,%20double%5B%5D,%20int)) |

| **Methods inherited from class java.lang.**[**Object**](http://docs.google.com/java/lang/Object.html) |
| --- |
| [equals](http://docs.google.com/java/lang/Object.html#equals(java.lang.Object)), [finalize](http://docs.google.com/java/lang/Object.html#finalize()), [getClass](http://docs.google.com/java/lang/Object.html#getClass()), [hashCode](http://docs.google.com/java/lang/Object.html#hashCode()), [notify](http://docs.google.com/java/lang/Object.html#notify()), [notifyAll](http://docs.google.com/java/lang/Object.html#notifyAll()), [toString](http://docs.google.com/java/lang/Object.html#toString()), [wait](http://docs.google.com/java/lang/Object.html#wait()), [wait](http://docs.google.com/java/lang/Object.html#wait(long)), [wait](http://docs.google.com/java/lang/Object.html#wait(long,%20int)) |

| **Field Detail** |
| --- |

### x1

public float **x1**

The X coordinate of the start point of the cubic curve segment.

**Since:** 1.2

### y1

public float **y1**

The Y coordinate of the start point of the cubic curve segment.

**Since:** 1.2

### ctrlx1

public float **ctrlx1**

The X coordinate of the first control point of the cubic curve segment.

**Since:** 1.2

### ctrly1

public float **ctrly1**

The Y coordinate of the first control point of the cubic curve segment.

**Since:** 1.2

### ctrlx2

public float **ctrlx2**

The X coordinate of the second control point of the cubic curve segment.

**Since:** 1.2

### ctrly2

public float **ctrly2**

The Y coordinate of the second control point of the cubic curve segment.

**Since:** 1.2

### x2

public float **x2**

The X coordinate of the end point of the cubic curve segment.

**Since:** 1.2

### y2

public float **y2**

The Y coordinate of the end point of the cubic curve segment.

**Since:** 1.2

| **Constructor Detail** |
| --- |

### CubicCurve2D.Float

public **CubicCurve2D.Float**()

Constructs and initializes a CubicCurve with coordinates (0, 0, 0, 0, 0, 0).

**Since:** 1.2

### CubicCurve2D.Float

public **CubicCurve2D.Float**(float x1,  
 float y1,  
 float ctrlx1,  
 float ctrly1,  
 float ctrlx2,  
 float ctrly2,  
 float x2,  
 float y2)

Constructs and initializes a CubicCurve2D from the specified float coordinates.

**Parameters:**x1 - the X coordinate for the start point of the resulting CubicCurve2Dy1 - the Y coordinate for the start point of the resulting CubicCurve2Dctrlx1 - the X coordinate for the first control point of the resulting CubicCurve2Dctrly1 - the Y coordinate for the first control point of the resulting CubicCurve2Dctrlx2 - the X coordinate for the second control point of the resulting CubicCurve2Dctrly2 - the Y coordinate for the second control point of the resulting CubicCurve2Dx2 - the X coordinate for the end point of the resulting CubicCurve2Dy2 - the Y coordinate for the end point of the resulting CubicCurve2D**Since:** 1.2

| **Method Detail** |
| --- |

### getX1

public double **getX1**()

Returns the X coordinate of the start point in double precision.

**Specified by:**[getX1](http://docs.google.com/java/awt/geom/CubicCurve2D.html#getX1()) in class [CubicCurve2D](http://docs.google.com/java/awt/geom/CubicCurve2D.html) **Returns:**the X coordinate of the start point of the CubicCurve2D.**Since:** 1.2

### getY1

public double **getY1**()

Returns the Y coordinate of the start point in double precision.

**Specified by:**[getY1](http://docs.google.com/java/awt/geom/CubicCurve2D.html#getY1()) in class [CubicCurve2D](http://docs.google.com/java/awt/geom/CubicCurve2D.html) **Returns:**the Y coordinate of the start point of the CubicCurve2D.**Since:** 1.2

### getP1

public [Point2D](http://docs.google.com/java/awt/geom/Point2D.html) **getP1**()

Returns the start point.

**Specified by:**[getP1](http://docs.google.com/java/awt/geom/CubicCurve2D.html#getP1()) in class [CubicCurve2D](http://docs.google.com/java/awt/geom/CubicCurve2D.html) **Returns:**a Point2D that is the start point of the CubicCurve2D.**Since:** 1.2

### getCtrlX1

public double **getCtrlX1**()

Returns the X coordinate of the first control point in double precision.

**Specified by:**[getCtrlX1](http://docs.google.com/java/awt/geom/CubicCurve2D.html#getCtrlX1()) in class [CubicCurve2D](http://docs.google.com/java/awt/geom/CubicCurve2D.html) **Returns:**the X coordinate of the first control point of the CubicCurve2D.**Since:** 1.2

### getCtrlY1

public double **getCtrlY1**()

Returns the Y coordinate of the first control point in double precision.

**Specified by:**[getCtrlY1](http://docs.google.com/java/awt/geom/CubicCurve2D.html#getCtrlY1()) in class [CubicCurve2D](http://docs.google.com/java/awt/geom/CubicCurve2D.html) **Returns:**the Y coordinate of the first control point of the CubicCurve2D.**Since:** 1.2

### getCtrlP1

public [Point2D](http://docs.google.com/java/awt/geom/Point2D.html) **getCtrlP1**()

Returns the first control point.

**Specified by:**[getCtrlP1](http://docs.google.com/java/awt/geom/CubicCurve2D.html#getCtrlP1()) in class [CubicCurve2D](http://docs.google.com/java/awt/geom/CubicCurve2D.html) **Returns:**a Point2D that is the first control point of the CubicCurve2D.**Since:** 1.2

### getCtrlX2

public double **getCtrlX2**()

Returns the X coordinate of the second control point in double precision.

**Specified by:**[getCtrlX2](http://docs.google.com/java/awt/geom/CubicCurve2D.html#getCtrlX2()) in class [CubicCurve2D](http://docs.google.com/java/awt/geom/CubicCurve2D.html) **Returns:**the X coordinate of the second control point of the CubicCurve2D.**Since:** 1.2

### getCtrlY2

public double **getCtrlY2**()

Returns the Y coordinate of the second control point in double precision.

**Specified by:**[getCtrlY2](http://docs.google.com/java/awt/geom/CubicCurve2D.html#getCtrlY2()) in class [CubicCurve2D](http://docs.google.com/java/awt/geom/CubicCurve2D.html) **Returns:**the Y coordinate of the second control point of the CubicCurve2D.**Since:** 1.2

### getCtrlP2

public [Point2D](http://docs.google.com/java/awt/geom/Point2D.html) **getCtrlP2**()

Returns the second control point.

**Specified by:**[getCtrlP2](http://docs.google.com/java/awt/geom/CubicCurve2D.html#getCtrlP2()) in class [CubicCurve2D](http://docs.google.com/java/awt/geom/CubicCurve2D.html) **Returns:**a Point2D that is the second control point of the CubicCurve2D.**Since:** 1.2

### getX2

public double **getX2**()

Returns the X coordinate of the end point in double precision.

**Specified by:**[getX2](http://docs.google.com/java/awt/geom/CubicCurve2D.html#getX2()) in class [CubicCurve2D](http://docs.google.com/java/awt/geom/CubicCurve2D.html) **Returns:**the X coordinate of the end point of the CubicCurve2D.**Since:** 1.2

### getY2

public double **getY2**()

Returns the Y coordinate of the end point in double precision.

**Specified by:**[getY2](http://docs.google.com/java/awt/geom/CubicCurve2D.html#getY2()) in class [CubicCurve2D](http://docs.google.com/java/awt/geom/CubicCurve2D.html) **Returns:**the Y coordinate of the end point of the CubicCurve2D.**Since:** 1.2

### getP2

public [Point2D](http://docs.google.com/java/awt/geom/Point2D.html) **getP2**()

Returns the end point.

**Specified by:**[getP2](http://docs.google.com/java/awt/geom/CubicCurve2D.html#getP2()) in class [CubicCurve2D](http://docs.google.com/java/awt/geom/CubicCurve2D.html) **Returns:**a Point2D that is the end point of the CubicCurve2D.**Since:** 1.2

### setCurve

public void **setCurve**(double x1,  
 double y1,  
 double ctrlx1,  
 double ctrly1,  
 double ctrlx2,  
 double ctrly2,  
 double x2,  
 double y2)

Sets the location of the end points and control points of this curve to the specified double coordinates.

**Specified by:**[setCurve](http://docs.google.com/java/awt/geom/CubicCurve2D.html#setCurve(double,%20double,%20double,%20double,%20double,%20double,%20double,%20double)) in class [CubicCurve2D](http://docs.google.com/java/awt/geom/CubicCurve2D.html) **Parameters:**x1 - the X coordinate used to set the start point of this CubicCurve2Dy1 - the Y coordinate used to set the start point of this CubicCurve2Dctrlx1 - the X coordinate used to set the first control point of this CubicCurve2Dctrly1 - the Y coordinate used to set the first control point of this CubicCurve2Dctrlx2 - the X coordinate used to set the second control point of this CubicCurve2Dctrly2 - the Y coordinate used to set the second control point of this CubicCurve2Dx2 - the X coordinate used to set the end point of this CubicCurve2Dy2 - the Y coordinate used to set the end point of this CubicCurve2D**Since:** 1.2

### setCurve

public void **setCurve**(float x1,  
 float y1,  
 float ctrlx1,  
 float ctrly1,  
 float ctrlx2,  
 float ctrly2,  
 float x2,  
 float y2)

Sets the location of the end points and control points of this curve to the specified float coordinates.

**Parameters:**x1 - the X coordinate used to set the start point of this CubicCurve2Dy1 - the Y coordinate used to set the start point of this CubicCurve2Dctrlx1 - the X coordinate used to set the first control point of this CubicCurve2Dctrly1 - the Y coordinate used to set the first control point of this CubicCurve2Dctrlx2 - the X coordinate used to set the second control point of this CubicCurve2Dctrly2 - the Y coordinate used to set the second control point of this CubicCurve2Dx2 - the X coordinate used to set the end point of this CubicCurve2Dy2 - the Y coordinate used to set the end point of this CubicCurve2D**Since:** 1.2

### getBounds2D

public [Rectangle2D](http://docs.google.com/java/awt/geom/Rectangle2D.html) **getBounds2D**()

Returns a high precision and more accurate bounding box of the Shape than the getBounds method. Note that there is no guarantee that the returned [Rectangle2D](http://docs.google.com/java/awt/geom/Rectangle2D.html) is the smallest bounding box that encloses the Shape, only that the Shape lies entirely within the indicated Rectangle2D. The bounding box returned by this method is usually tighter than that returned by the getBounds method and never fails due to overflow problems since the return value can be an instance of the Rectangle2D that uses double precision values to store the dimensions.

**Specified by:**[getBounds2D](http://docs.google.com/java/awt/Shape.html#getBounds2D()) in interface [Shape](http://docs.google.com/java/awt/Shape.html) **Returns:**an instance of Rectangle2D that is a high-precision bounding box of the Shape.**Since:** 1.2 **See Also:**[Shape.getBounds()](http://docs.google.com/java/awt/Shape.html#getBounds())

| | [**Overview**](http://docs.google.com/overview-summary.html) | [**Package**](http://docs.google.com/package-summary.html) | **Class** | [**Use**](http://docs.google.com/class-use/CubicCurve2D.Float.html) | [**Tree**](http://docs.google.com/package-tree.html) | [**Deprecated**](http://docs.google.com/deprecated-list.html) | [**Index**](http://docs.google.com/index-files/index-1.html) | [**Help**](http://docs.google.com/help-doc.html) | | --- | --- | --- | --- | --- | --- | --- | --- | | | ***Java™ Platform***  ***Standard Ed. 6*** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| [**PREV CLASS**](http://docs.google.com/java/awt/geom/CubicCurve2D.Double.html)   [**NEXT CLASS**](http://docs.google.com/java/awt/geom/Dimension2D.html) | [**FRAMES**](http://docs.google.com/index.html?java/awt/geom/CubicCurve2D.Float.html)    [**NO FRAMES**](http://docs.google.com/CubicCurve2D.Float.html)     [**All Classes**](http://docs.google.com/allclasses-noframe.html) |
| SUMMARY: [NESTED](#2et92p0) | [FIELD](#tyjcwt) | [CONSTR](#3dy6vkm) | [METHOD](#1t3h5sf) | DETAIL: [FIELD](#17dp8vu) | [CONSTR](#3j2qqm3) | [METHOD](#2xcytpi) |

[Submit a bug or feature](http://bugs.sun.com/services/bugreport/index.jsp)

For further API reference and developer documentation, see [Java SE Developer Documentation](http://docs.google.com/webnotes/devdocs-vs-specs.html). That documentation contains more detailed, developer-targeted descriptions, with conceptual overviews, definitions of terms, workarounds, and working code examples.

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