

Extending Quickdraw 3D Groups

Registering

First define your unique object type by calling "Q3_OBJECT_TYPE"

```
#define kQ3XXXGroup      Q3_OBJECT_TYPE('X','X','X','G')
```

Declare any private data structure you would need.

```
typedef struct XXXGroupPrivate{
    // XXX Private Data
} XXXGroupPrivate;
```

```
TQ3objectClass XXXGroupClass;
```

```
TQ3Status XXXGroup_Register(void)
{
    XXXGroupClass =
        Q3objectHierarchy_RegisterClass(
            kQ3GroupTypeDisplay,          // Parent Type
            kQ3XXXGroup,                  // Group Type
            "XXXGroup",                   // Group Name
            XXXGroup_MetaHandler,         // MetaHandler
            NULL,                         // VirtualMetaHandler
            0,                            // Methods Size
            sizeof(XXXGroupPrivate));     // Instance Size

    if (XXXGroupClass == NULL)
        return kQ3Failure;

    return kQ3Success;
}
```

MetaHandler

```
static TQ3FunctionPointer XXXGroup_MetaHandler(
    TQ3MethodType      methodType)
{
    switch (methodType) {
        case kQ3MethodTypeObjectNew:
            return (TQ3FunctionPointer) XXXGroup_New;

        // IO methods

        case kQ3MethodTypeObjectRead:
            return (TQ3FunctionPointer) XXXGroup_Read;
        case kQ3MethodTypeObjectTraverse:
            return (TQ3FunctionPointer) XXXGroup_Traverse;
        case kQ3MethodTypeObjectWrite:
            return (TQ3FunctionPointer) XXXGroup_Write;

        // Group methods that you are overriding

        case EcMethodType_GroupAcceptObject:
            return (TQ3FunctionPointer) XXXGroup_AcceptObject;
    }
}
```

```

        case EcMethodType_GroupRemovePosition:
            return (TQ3FunctionPointer) XXXGroup_RemovePosition;
        case EcMethodType_GroupStartIterate:
            return (TQ3FunctionPointer) XXXGroup_StartIterate;
        case EcMethodType_GroupEndIterate:
            return (TQ3FunctionPointer) XXXGroup_EndIterate;
        default:
            return (TQ3FunctionPointer) NULL;
    }
}

```

Calling your parent's method

```

TQ3Object XXXGroup_RemovePosition
    TQ3GroupObject    group,
    TQ3GroupPosition position)
{
    EtGroupRemovePositionMethod method;
    TQ3ObjectClass objectClass;

    objectClass =
        Q3ObjectHierarchy_FindClassByType(
            kQ3GroupTypeDisplay // Parent Method
        );

    method = (EtGroupRemovePositionMethod)
        Q3ObjectHierarchy_GetMethod(
            objectClass,
            EcMethodType_GroupRemovePosition
        );

    // call parent's remove position method
    (*method)(group, position);
}

```

Accessing your private data

To access your private data in your group, you can call "Q3Object_GetPrivate".

```

XXXGroupPrivate data;

data = (XXXGroupPrivate *)
    Q3Object_GetPrivate(XXXGroupClass, group);

```

Initialization & Termination

Initialization Routine

```

long XXXGroup_Init(void)
{
    // Initialize QuickDraw 3D if not already done
}

```

```

    if (!Q3IsInitialized())
    {
        if (Q3Initialize() == kQ3Failure)
        {
            DebugStr("\pQD3D fail to initialize");
            return 1;
        }
    }

    // Register the new group

    if (XXXGroup_Register() == kQ3Failure)
    {
        DebugStr("\pXXX init failed");
        return 1;
    }
    return 0;
}

```

Termination Routine

```

long XXXGroup_Exit(void)
{
    if (Q3IsInitialized())
        Q3Exit();

    return 0;
}

```

Setting Up CodeWarrior

PPC Linker

```

Initialization : XXXGroup_Init
Termination   : XXXGroup_Exit

```

Preferences

Apply to open project.

▼ Editor

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Access Paths

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PPC Project

Target

▼ Language Settings

C/C++ Language

C/C++ Warnings

Rez

▼ Code Generation

PPC Processor

▼ Linker

PPC Linker

PPC PEF

Link Options:

☒ Generate SYM File

☒ Use Full Path Names

☐ Generate Link Map

☐ Suppress Warning Messages

☒ Dead-strip Static Initialization Code

Normal Linking ▼

Entry Points:

Initialization: XXXGroup_Init

Main:

Termination: XXXGroup_Exit

Factory Settings Revert Panel Cancel **OK**

PPC Project

Project Type : Shared Library
Creator : Q3XT
Type : shlb

Preferences

Apply to open project.

▼ Editor

Editor

Font

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Access Paths

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C/C++ Language

C/C++ Warnings

Rez

▼ Code Generation

PPC Processor

▼ Linker

PPC Linker

PPC PEF

Project Type: Shared Library ▼

Shared Library Info:

File Name: XXX Group Lib

Creator: Q3XT

Type: shlb

Factory Settings Revert Panel Cancel **OK**

Group Methods

Method Name kQ3MethodType_GroupAcceptObject

Return Value TQ3Boolean

Argument List

TQ3GroupObject
TQ3Object

Description

Return TQ3True if the group will accept a particular object type.

Method Name kQ3MethodType_GroupAddObject

Return Value TQ3GroupPosition

Argument List

TQ3GroupObject
TQ3Object

Description

Add an object into a group and returns the new position of the object in the group. Returns NULL if unsuccessful.

Method Name kQ3MethodType_GroupAddObjectBefore

Return Value TQ3GroupPosition

Argument List

TQ3GroupObject
TQ3GroupPosition
TQ3Object

Description

Add an object into a group before a given group position and returns the new position of the object in the group. Returns NULL if unsuccessful.

Method Name kQ3MethodType_GroupAddObjectAfter

Return Value TQ3GroupPosition

Argument List

TQ3GroupObject
TQ3GroupPosition
TQ3Object

Description

Add an object into a group after a given group position and returns the new position of the object in the group. Returns NULL if unsuccessful.

Method Name kQ3MethodType_GroupSetPositionObject

Return Value TQ3Status

Argument List

TQ3GroupObject
TQ3GroupPosition
TQ3Object

Description

Replace an object at a given group position with the new object. Return kQ3Failure if the given group position is not in the group.

Method Name kQ3MethodType_GroupRemovePosition

Return Value TQ3Object

Argument List

TQ3GroupObject
TQ3GroupPosition

Description

Remove the object at a given group position. Return the deleted object if successful otherwise return NULL.

Method Name kQ3MethodType_GroupGetFirstPositionOfType

Return Value TQ3Status

Argument List

TQ3GroupObject
TQ3ObjectType
TQ3GroupPosition *

Description

Return the position of the first object of a specified type.

Method Name kQ3MethodType_GroupGetLastPositionOfType

Return Value TQ3Status

Argument List

TQ3GroupObject
TQ3ObjectType
TQ3GroupPosition *

Description

Return the position of the last object of a specified type.

Method Name kQ3MethodType_GroupGetNextPositionOfType

Return Value TQ3Status

Argument List

TQ3GroupObject
TQ3ObjectType
TQ3GroupPosition *

Description

Return the position of the next object of a specified type in the group given a group position. Returns NULL in the position parameter if there is no more objects.

Method Name kQ3MethodType_GroupGetPrevPositionOfType

Return Value TQ3Status

Argument List

TQ3GroupObject
TQ3ObjectType
TQ3GroupPosition *

Description

Return the position of the previous object of a specified type in the group given a group position. Returns NULL in the position parameter if there is no more objects.

Method Name kQ3MethodType_GroupCountObjectsOfType

Return Value TQ3Status

Argument List

TQ3GroupObject
TQ3ObjectType
unsigned long

Description

Return the number of objects of specified type in the group.

Method Name kQ3MethodType_GroupEmptyObjectsOfType

Return Value TQ3Status

Argument List

TQ3GroupObject
TQ3ObjectType

Description

Disposes all the objects of a specified type in the group.

Method Name kQ3MethodType_GroupGetFirstObjectPosition

Return Value TQ3Status

Argument List

TQ3GroupObject
TQ3Object
TQ3GroupPosition *

Description

Returns the group position of the first instance of a specified object in the group.

Method Name kQ3MethodType_GroupGetLastObjectPosition

Return Value TQ3Status

Argument List

TQ3GroupObject
TQ3Object
TQ3GroupPosition *

Description

Returns the group position of the last instance of a specified object in the group.

Method Name kQ3MethodType_GroupGetNextObjectPosition

Return Value TQ3Status

Argument List

TQ3GroupObject
TQ3Object
TQ3GroupPosition *

Description

Returns the group position of the next instance of a specified object in the group from the given position.

Method Name kQ3MethodType_GroupGetPrevObjectPosition

Return Value TQ3Status

Argument List

TQ3GroupObject
TQ3Object
TQ3GroupPosition *

Description

Returns the group position of the previous instance of a specified object in the group from the given position.

Method Name kQ3MethodType_GroupPositionSize

Return Value unsigned long

Argument List**Description**

Returns the size of a group position.

Method Name kQ3MethodType_GroupPositionNew

Return Value TQ3Status

Argument List

void *
TQ3Object
const void *

Description

Make a new group position.

Method Name kQ3MethodType_GroupPositionCopy

Return Value TQ3Status

Argument List

void *
void *

Description

Copy a group position.

Method Name kQ3MethodType_GroupPositionDelete

Return Value TQ3Status

Argument List

void *

Description

Delete a group position.

Method Name kQ3MethodType_GroupStartIterate

Return Value TQ3Status

Argument List

TQ3GroupObject
TQ3GroupPosition *
TQ3Object *
TQ3ViewObject

Description

Pass back *object = NULL to NOT call EndIterate iterate
Pass back *object != NULL to draw object
(other side will pass it to EndIterate for deletion!)

*iterator is uninitialized, use for iteration state. Caller should ignore it.

Method Name kQ3MethodType_GroupEndIterate

Return Value TQ3Status

Argument List

TQ3GroupObject
TQ3GroupPosition *
TQ3Object *
TQ3ViewObject

Description

*object is previous object, dispose it or play with it.
Pass back NULL when last iteration has occurred
*iterator is previous value, use for iteration state Caller should ignore it.

Method Name kQ3MethodType_GroupEndRead

Return Value TQ3Status

Argument List

TQ3GroupObject

Description

Called when a group has been completely read. Group should perform validation and clean up any reading caches.