Article
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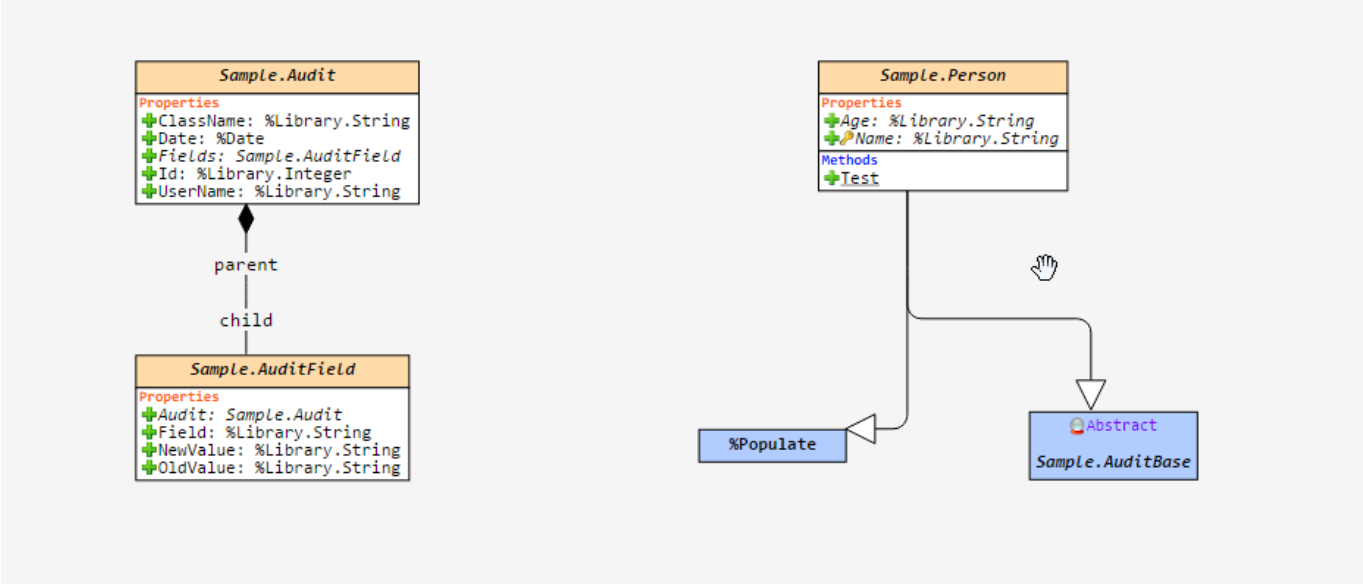
Tracking Data Changes - Audit Log - 2 of 2

In the previous article, I have demonstrated a simple way to record data changes. At this time I have changed the "Audit Abstract Class" which is responsible for recording audit data and the data structure where the audit log will be recorded.

I have changed the data structure to a parent and child structure where there will be two tables to record the "transaction" and the "fields its values" changed on that transaction.

Take a look at the new data model:



Take a look at the code changed from "Audit Class":

```
 Class Sample.AuditBase [ Abstract ]
{

Trigger SaveAuditAfter [ CodeMode = objectgenerator, Event = INSERT/UPDATE, Foreach =
row/object, Order = 99999, Time = AFTER ]
{
  #dim %compiledclass As %Dictionary.CompiledClass
  #dim tProperty As %Dictionary.CompiledProperty
  #dim tAudit As Sample.Audit

  Do %code.WriteLine($Char(9)_"; get username and ip adress")
  Do %code.WriteLine($Char(9)_"Set tSC = $$$OK")
  Do %code.WriteLine($Char(9)_"Set tUsername = $USERNAME")

  Set tKey = ""
  Set tProperty = %compiledclass.Properties.GetNext(.tKey)
  Set tClassName = %compiledclass.Name

  Do %code.WriteLine($Char(9)_"Try {")
  Do %code.WriteLine($Char(9,9)_"; Check if the operation is an update - %oper = UPDATE")
```

```
  Do %code.WriteLine($Char(9,9)_"if %oper = ""UPDATE"" { ")


  Do %code.WriteLine($Char(9,9,9)_"Set tAudit = ##class(Sample.Audit).%New()")
  Do %code.WriteLine($Char(9,9,9)_"Set tAudit.Date = +$Horolog")
  Do %code.WriteLine($Char(9,9,9)_"Set tAudit.UserName = tUsername")
  Do %code.WriteLine($Char(9,9,9)_"Set tAudit.ClassName = """_tClassName_"""")
  Do %code.WriteLine($Char(9,9,9)_"Set tAudit.Id = {id}")
  Do %code.WriteLine($Char(9,9,9)_"Set tSC = tAudit.%Save()")
  do %code.WriteLine($Char(9,9,9)_"If $$$ISERR(tSC) $$$ThrowStatus(tSC)")
  Do %code.WriteLine($Char(9,9,9)_"Set tAuditId = tAudit.%Id()")

  While tKey '= "" {
  set tColumnNbr = $Get($$$EXTPROPsqlcolumnnumber($$$pEXT,%classname,tProperty.Name))
  Set tColumnName = $Get($$$EXTPROPsqlcolumnname($$$pEXT,%classname,tProperty.Name))

  If tColumnNbr '= "" {

  Do %code.WriteLine($Char(9,9,9)_";")
  Do %code.WriteLine($Char(9,9,9)_";")
  Do %code.WriteLine($Char(9,9,9)_"; Audit Field: "_tProperty.SqlFieldName)
  Do %code.WriteLine($Char(9,9,9)_"if {" _ tProperty.SqlFieldName _ "*C} {")

  Do %code.WriteLine($Char(9,9,9,9)_"Set tAuditField = ##class(Sample.AuditField).%New()")
  Do %code.WriteLine($Char(9,9,9,9)_"Set tAuditField.Field = """_tColumnName_"""")
  Do %code.WriteLine($Char(9,9,9,9)_"Set tAuditField.OldValue = {"_tProperty.SqlFieldName_"*O}")
  Do %code.WriteLine($Char(9,9,9,9)_"Set tAuditField.NewValue = {"_tProperty.SqlFieldName_"*N}")
  Do %code.WriteLine($Char(9,9,9,9)_"Do tAuditField.AuditSetObjectId(tAuditId)")
  Do %code.WriteLine($Char(9,9,9,9)_"Set tSC = tAuditField.%Save()")
  do %code.WriteLine($Char(9,9,9,9)_"If $$$ISERR(tSC) $$$ThrowStatus(tSC)")
  Do %code.WriteLine($Char(9,9,9)_"}")
     }
  Set tProperty = %compiledclass.Properties.GetNext(.tKey)
   }

  Do %code.WriteLine($Char(9,9)_"}")

  Do %code.WriteLine($Char(9)_"} Catch (tException) {")

  Do %code.WriteLine($Char(9,9)_"Set %msg = tException.AsStatus()")
  Do %code.WriteLine($Char(9,9)_"Set %ok = 0")
  Do %code.WriteLine($Char(9)_"}")

  Set %ok = 1
}

}
```

By changing data through the Test() classmethod, now you can see the "parent record" from the Audit Class (Sample.Audit) and the "children fields" changed from "Audit Field" class. (Sample.AuditField).

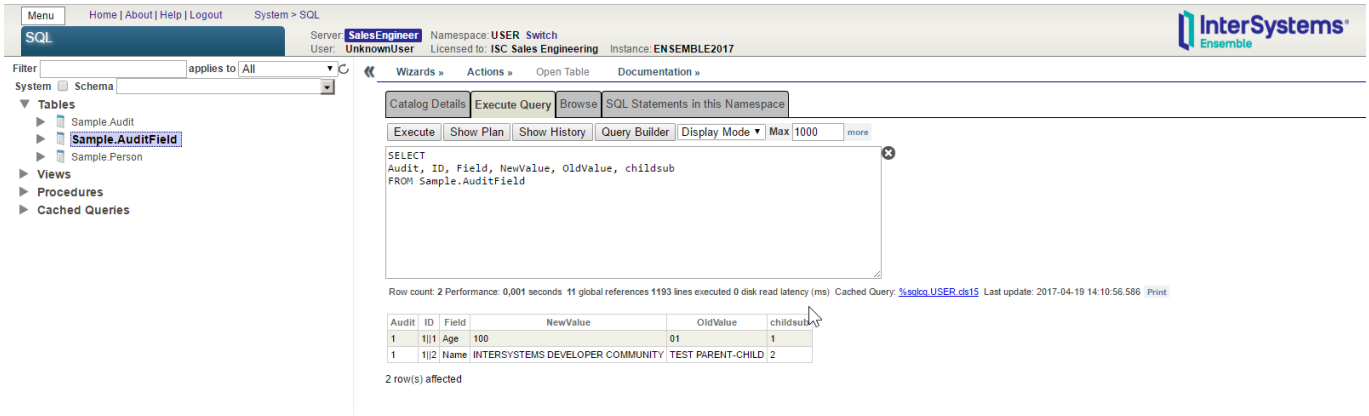
```
 d ##class(Sample.Person).Test(1)
INSERT INTO Sample.Person (Name, Age) VALUES ('TEST PARENT-CHILD', '01')
SQLCODE: 0


ID Age Name
1 01 TEST PARENT-CHILD

1 Rows(s) Affected
```

UPDATE Sample.Person SET Name = 'INTERSYSTEMS DEVELOPER COMMUNITY', Age = '100' WHERE Name = 'TEST PARENT-CHILD'
SQLCODE:0

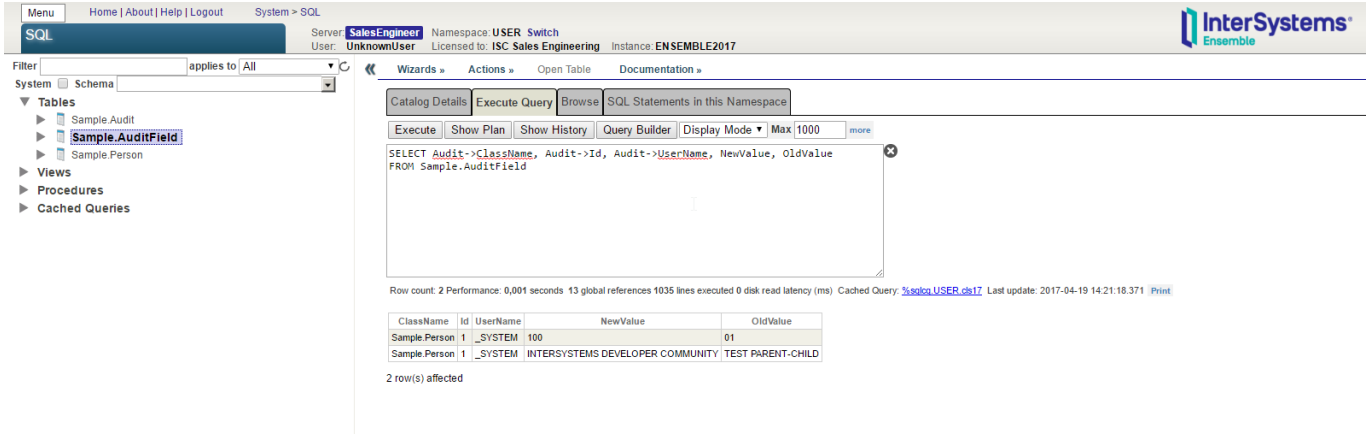
ID Age Name
1 100 INTERSYSTEMS DEVELOPER COMMUNITY

1 Rows(s) Affected

Audit classes:



Note that the Sample.AuditField records have references to the Sample.Audit class through Audit field = 1. You can query data by using the relationship from both classes as follows:



That's it. As a result we have a different audit log data structure.

#Object Data Model #ObjectScript #Caché

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