


???? ????SQL???

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??SQL????????????
- ?"??"????????????
- ?"??"?????????????"?"????"??
- ?????????????????????var????? ?????????????
- ?????????????????????Prepare????Prepare????PrepareClassQuery????ExecDirect????????????SQL.Statement
Metadata????
- ?????????Prepare????SQL.Statement????
- ?????????SQL.StatementMetadata?????oref??SQL.Statement?Metadata????????????????????

```

SELECT?CALL???????????? INSERT?UPDATE?DELETE????????????????

????????

```

???SQL.Statement????Prepare????????SQL.StatementMetadata
statementType????????SQL????????????SQL.Statement?Metadata????????Prepare????????

```

```

/// d ##class(PHA.TEST.SQL).MetaData()
ClassMethod MetaData()
{
    SET tStatement = ##class(%SQL.Statement).%New()
    SET myquery1 = "SELECT TOP ? Name, Age, AVG(Age), CURRENT_DATE FROM Sample.Person"
    SET myquery2 = "CALL Sample.SP_Sample_By_Name(?)"
    SET qStatus = tStatement.%Prepare(myquery1)
    IF qStatus'=1 {
        WRITE "%Prepare failed:" DO $System.Status.DisplayError(qStatus) QUIT
    }
    SET meta1 = tStatement.%Metadata
    SET qStatus = tStatement.%Prepare(myquery2)
    IF qStatus'=1 {
        WRITE "%Prepare failed:" DO $System.Status.DisplayError(qStatus) QUIT
    }
    SET meta2 = tStatement.%Metadata
    WRITE "????query 1: ", meta1.statementType, !
    WRITE "????query 2: ", meta2.statementType, !
    WRITE "End of metadata"
}

```



```

        WRITE !,x," ",column.colName," ?????? ",column.ODBCType
        WRITE " ???? ",column.precision," ?? = ",column.scale
        SET x=x+1
    }
    WRITE !,"End of metadata"
}

```

```
DHC-APP>d ##class(PHA.TEST.SQL).MetaData2()
```

```

1 VendorName ?????? 12 ??? 50 ?? = 0
2 LastPayDate ?????? 9 ??? 10 ?? = 0
3 MinPayment ?????? 8 ??? 6 ?? = 0
4 NetDays ?????? 4 ??? 3 ?? = 0
5 Aggregate_5 ?????? 8 ??? 20 ?? = 0
6 Expression_6 ?????? 12 ??? 255 ?? = 0
7 Literal_7 ?????? 12 ??? 13 ?? = 0
End of metadata

```

????????SQL.StatementMetadata?Display????????????????

```

/// d ##class(PHA.TEST.SQL).MetaData3()
ClassMethod MetaData3()
{
    SET tStatement = ##class(%SQL.Statement).%New()
    SET qStatus = tStatement.%Prepare("SELECT %ID AS id,Name,DOB,Age,AVG(Age),CURRENT
_DATE,Home_State FROM Sample.Person")
    IF qStatus'=1 {WRITE "%Prepare failed:" DO $System.Status.DisplayError(qStatus) Q
UIT}
    DO tStatement.%Metadata.%Display()
    WRITE !,"End of metadata"
}

```

```
DHC-APP>d ##class(PHA.TEST.SQL).MetaData3()
```

Columns (SQLRESULTCOL, property 'columns'):

Column Name	Type	Prec	Scale	Null	Label	Table	Schema	CType
id	4	10	0	0	id	Person	Sample	5
Name	12	50	0	0	Name	Person	Sample	10
DOB	9	10	0	1	DOB	Person	Sample	2
Age	4	10	0	1	Age	Person	Sample	5
Aggregate_5	2	20	8	1	Aggregate_5			14
Expression_6	9	11	0	2	Expression_6			2
Home_State	12	2	0	1	Home_State	Person	Sample	10

Extended Column Info (SQLRESULTCOL)

Flags: 1:AutoIncrement, 2:CaseSensitive, 3:Currency, 4:ReadOnly, 5:RowVersion,
6:Unique, 7:Aliased, 8:Expression, 9:Hidden, 10:Identity, 11:KeyColumn,
12:RowId

Column Name	Linked Prop	Type Class	Flags
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```

-----
id                               Sample.Person                Y,N,N,Y,N,Y,Y,N,N,Y,Y,Y
Name      Sample.Person.Name    %Library.String             N,N,N,N,N,N,N,N,N,N,N,N
DOB       Sample.Person.DOB      %Library.Date               N,N,N,N,N,N,N,N,N,N,N,N
Age       Sample.Person.Age       %Library.Integer            N,N,N,N,N,N,N,N,N,N,N,N
Aggregate_5 %Library.Numeric            N,N,N,Y,N,N,Y,N,N,N,N,N
Expression_6 %Library.Date              N,N,N,Y,N,N,Y,Y,N,N,N,N
Home_State Sample.Address.State        %Library.String             N,N,N,N,N,N,N,N,N,N,N,N
-----

```

Statement Parameters (property 'parameters'):

```

Nbr. Type precision scale nullable colName      columntype
---- ----

```

Formal Parameters (property 'formalParameters'):

```

Nbr. Type precision scale nullable colName      columntype
---- ----

```

Objects:

```

Col Column Name Extent      ExportCall
-----
  1 id           Sample.Person  ##class(Sample.Person).%SQLQuickLoad

```

??
????

Column Name

Type

Prec

Scale

Null

Label

????

Table

Schema

CType

??SQLRESULTCOL????????????????????Y????N????
????

1: AutoIncrement

2: CaseSensitive

3: Currency

4: ReadOnly

5: RowVersion

6: Unique

7: Aliased

8: Expression

9: Hidden

????

10: Identity

11: KeyColumn

12: RowID

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?

- ????????SELECT Name FROM Sample.Person?? Linked Prop=Sample.Person.Name, Type Class=%Library.String.
- ??????RowID (SELECT %ID FROM Sample.Person): Linked Prop= [none], Type Class=Sample.Person.
- ??????????????HostVar???? (SELECT COUNT(Name) FROM Sample.Person): Linked Prop= [none], Type Class=%Library.BigInt.
- ?????Serial Object???????? (SELECT Home_State FROM Sample.Person). Linked Prop=Sample.Address.State, Type Class=%Library.String.
- ?????SerialObject????????(SELECT Home FROM Sample.Person). Linked Prop=Sample.Person.Home, Type Class=Sample.Address.

??????Sample.Person??Home_State?????SerialObject?Sample.Address?State???

??

```

/// d ##class(PHA.TEST.SQL).MetaData4()
ClassMethod MetaData4()
{
    SET $NAMESPACE="SAMPLES"
    SET mysql = "CALL Sample.SP_Sample_By_Name(?)"
    SET tStatement = ##class(%SQL.Statement).%New()
    SET qStatus = tStatement.%Prepare(.mysql)
    IF qStatus'=1 {
        WRITE "%Prepare failed:" DO $System.Status.DisplayError(qStatus) QUIT
    }
    DO tStatement.%Metadata.%Display()
    WRITE !,"End of metadata"
}

```

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```

/// d ##class(PHA.TEST.SQL).MetaData5()

```

```

ClassMethod MetaData5()
{
    SET $NAMESPACE="SAMPLES"
    SET mycall = "CALL personsets(?, 'MA')"
    SET tStatement = ##class(%SQL.Statement).%New(0, "sample")
    SET qStatus = tStatement.%Prepare(mycall)
    IF qStatus'=1 {WRITE "%Prepare failed:" DO $System.Status.DisplayError(qStatus) Q
UIT}
    DO tStatement.%Metadata.%Display()
    WRITE !, "End of metadata"
}

```

DHC-APP>d ##class(PHA.TEST.SQL).MetaData5()

Columns (SQLRESULTCOL, property 'columns'):

Column Name	Type	Prec	Scale	Null	Label	Table	Schema	CType
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Extended Column Info (SQLRESULTCOL)

Flags: 1:AutoIncrement, 2:CaseSensitive, 3:Currency, 4:ReadOnly, 5:RowVersion,
6:Unique, 7:Aliased, 8:Expression, 9:Hidden, 10:Identity, 11:KeyColumn,
12:RowId

Column Name	Linked Prop	Type Class	Flags
-------------	-------------	------------	-------

Statement Parameters (property 'parameters'):

Nbr.	Type	precision	scale	nullable	colName	columntype
1	12	50	0	2	name	1

Formal Parameters (property 'formalParameters'):

Nbr.	Type	precision	scale	nullable	colName	columntype
1	4	4	0	2	_isc_sp_ret_val	5
2	12	50	0	2	name	1
3	12	50	0	2	state	1

Objects:

Col	Column Name	Extent	ExportCall
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End of metadata

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