# D1

## COS 基础

### COS基本语法- 命令

d ##class(%SYSTEM.License).ShowSummary()

s x=“hospital”

w x

w !

w x,!

W #

k x

q x

### Hello World

SET Hello = "Hello World”

WRITE Hello

S Hello = "Hello 2"

w hello

### COS基本语法- COS函数

* 字符串类型与日期类型相互转换:$ZDH/$ZD

w $ZDH("2017-03-13",3)

w $zd(0)

* 字符串截取函数$piece

W $P("This is training", " ",3)

* 字符串比较替换函数$Case

W $CASE(x,1:"single",2:"double",3:"triple",:"input error")

### COS基本语法- 多维数组&global

Set a = 1

Set a(1) = "a"

Set a(1,1) = "b"

Set a(1,1,"wow") = "foo"

Set a(1,2) = "c"

Set a(2) = 0

zw a

### Exercise 3-1

w $zt($p($h,",",2),3)

f i=1:1:10{w "x="\_i,!}

if $R(2){w "TRUE"}else{w "FALSE"}

## Cache面向对象

### 创建HIS.Patient类

### Class HIS.Patient Extends (%Persistent, %XML.Adaptor) { Property IDCard As %String; Property PatNo As %String; Property Name As %String; Property Gender As %String; Property DOB As %Date; Property Citizenship As %String; Property PhoneNumber As %String; }

### 新增一个Patient

### set p = ##class(HIS.Patient).%New()

### set p.PatNo = "234567”

### set p.Name = "Li Xunhuan”

### set p.Gender = "Male”

### set p.DOB = $zdh("1980-10-01",3)

### w p.%Save()

### w p.%Id()

### 为该类添加一个类方法

ClassMethod FindPatient(id As %String) As HIS.Patient

{

Set patient= ##class(HIS.Patien).%OpenId(id)

Quit patient

}

set p = ##class(HIS.Patien).FindPatient(1)

zw p

### 增加HIS.Patient的父类

Class HIS.Patient Extends (%Persistent, %Populate, %XML.Adaptor)  
{…}

d ##class(HIS.Patient).Populate(100)

### XML基本操作

Do ##class(HIS.Patient).XMLDTD()

Do ##class(HIS.Patient).XMLSchema()

set x=##class(HIS.Patient).%OpenId(20)

d x.XMLExport()

### XML输出

Set Patient=##class(HIS.Patient).%OpenId(1)

Set XMLWriter=##class(%XML.Writer).%New()

Do XMLWriter.OutputToFile("C:\Patient.XML")

Do XMLWriter.RootObject(Patient)

### Dynamic SQL

ClassMethod GetPatientsByName(name As %String) As %ListOfObjects{

set queryStr = "SELECT \* FROM HIS.Patient WHERE Name like ?"

set nameParameter = "%"\_name\_"%"

SET tStatement = ##class(%SQL.Statement).%New()

SET qStatus = tStatement.%Prepare(queryStr)

IF qStatus'=1 { WRITE "%Prepare failed:" DO $System.Status.DisplayError(qStatus) QUIT ""}

#Dim rset As %SQL.StatementResult = tStatement.%Execute(nameParameter)

if 0'=rset.SQLCODE{quit ""}

Write "Counts: ", rset.%ROWCOUNT(),!

#Dim rtnList as %Library.ListOfObjects = ##class(%Library.ListOfObjects).%New()

WHILE rset.%Next() {

#dim patInst As HIS.Patient = ##class(HIS.Patient).%New()

set patInst.Name = rset.%Get("Name")

set patInst.Gender = rset.%Get("Gender")

set patInst.DOB = rset.%Get("DOB")

do rtnList.Insert(patInst)

}

quit rtnList

}

### %SYSTEM包(cont.)

do $SYSTEM.Status.Help()

do $SYSTEM.Status.Help("OK")

## Cache对JSON的支持

### JSON支持

Class JSONAndREST.DynamincObjectDemo Extends %RegisteredObject

{

ClassMethod FromJSONDemo()

{

Set str = "[{""Time"":""20170301002"",""Value"":""4""},{""Time"":""20170301005"",""Value"":""2""}]"

Set tOBJ = {}.%FromJSON(str)

Set iter = tOBJ.%GetIterator()

while iter.%GetNext(.key, .value)

{

write "key = " \_key\_ ", value = "\_value.Time\_":"\_value.Value,!

}

}

}

### %DynamicObject

set dynObject1 = ##class(%DynamicObject).%New()

set dynObject1.SomeNumber = 42

set dynObject1.SomeArray = ["an array element",123]

set dynObject2 = {"SomeNumber":42,"SomeString":"a string"}

set dynObject1.child = dynObject2

set str = dynObject1.%ToJSON()

w str ,!

set obj = {}.%FromJSON(str)

zw obj

### JSON与Caché对象的相互转换

Set tObj=##class(HIS.Patient).%OpenId(1),tStream = ""

d ##class(%ZEN.Auxiliary.jsonProvider).%WriteJSONStreamFromObject(.tStream,tObj)

Set tJSONStr = "{""BirthDay"":58466,""CellPhone"":""B6693"",""FirstName"":""li"",""Gender"":""F"",""IDNo"":""713-26-9090"",""LastName"":""Wells"",""PatientNumber"":1,""UnpaidBill"":0}"

Set tSC = ##class(%ZEN.Auxiliary.jsonProvider).%ConvertJSONToObject(tJSONStr, "HIS.Patient",.tOBJ)

w tOBJ.FullName

### REST In Cache

HIS.REST.Service

XData UrlMap [ XMLNamespace = "http://www.intersystems.com/urlmap" ]

{

<Routes>

<Route Url="/Patient/:Id" Method="GET" Call="GetPatientById"/>

<Route Url="/Patient" Method="POST" Call="CreatePatient" />

</Routes>

}

ClassMethod GetPatientById(pID As %String) As %Status

{

#dim tSC As %Status = $$$OK

#dim e As %Exception.AbstractException

#dim tStream As %Stream.Character

Try{

Set tObj=##class(HIS.Patient).%OpenId(pID),tStream = "“

d ##class(%ZEN.Auxiliary.jsonProvider).%WriteJSONStreamFromObject(.tStream,tObj)

w tStream.Read()

} Catch (e) {

Set tSC=e.AsStatus()

}

Quit tSC

}

ClassMethod CreatePatient() As %Status{

#dim tSC As %Status = $$$OK

#dim e As %Exception.AbstractException

Try {

//Retrieve data from request content and tranfer it into an entity instance

set tSc = ##class(%ZEN.Auxiliary.jsonProvider).%ConvertJSONToObject(%request.Content,"HIS.Patient", .instance)

//save data

do instance.%Save()

//As recommended by REST Practice, return the saved instance

//Build json response

Set %response.ContentType="application/json”

//write the object as a client json string to client browser

do ##class(%ZEN.Auxiliary.jsonProvider).%ObjectToJSON(instance)

} Catch (e) {

Set tSC=e.AsStatus()

}

Quit tSC

}

### REST服务器端设计与发布

{

"BirthDay": 58466,

"CellPhone": "B6693",

"FirstName": "Donald",

"Gender": "F",

"IDNo": "713-26-9090",

"LastName": "Trump",

"PatientNumber": 1,

"UnpaidBill": 0

}