

## 文章

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[Open Exchange](#)

## 如何使用HL7相應地更新結果參考範圍和異常標誌

在本文中，我將演示以下內容：

- 使用自定義實用程序函數從數據庫更新 ReferencesRange(OBX:7) 對對 ObservationIdentifier(OBX:3.1)[TestCode]
- 根據數據庫實用程序函數中的 ObservationIdentifier(OBX:3.1)[TestCode] 和 ObservationValue(OBX:5)[Result] 更新異常標誌 (OBX:8)
- 基於異常標誌的路由消息 (OBX:8)

以下是主要和轉換後的 HL7 2.5 ORUR01 消息：

5	OBX	1   NM   1000 ^ TotalProtein   _   4.3   gm/dl   _   _   _   _   E
6	OBX	2   NM   1001 ^ Albumin   _   3.7   gm/dl   _   _   _   _   E
7	OBX	3   NM   1002 ^ Globulin   _   3.9   gm/dL   _   _   _   _   E
8	OBX	4   NM   1003 ^ A/G Ratio   _   1.2   _   _   _   _   E
9	OBX	5   NM   1004 ^ Glucose   _   71   mg/dL   _   _   _   _   E
10	OBX	6   NM   1005 ^ Sodium   _   134   mmol/L   _   _   _   _   E
11	OBX	7   NM   1006 ^ Potassium   _   4.3   mmol/L   _   _   _   _   E
12	OBX	8   NM   1007 ^ Chloride   _   96   mmol/L   _   _   _   _   E
13	OBX	9   NM   1008 ^ CO2   _   24   mmol/L   _   _   _   _   E
14	OBX	10   NM   1009 ^ BUN   _   17   mg/dl   _   _   _   _   E
15	OBX	11   NM   1010 ^ Creatinine   _   1.1   mg/dl   _   _   _   _   E
16	OBX	12   NM   2000 ^ BUN/CreatRatio   _   15.5   _   _   _   _   E
17	OBX	13   NM   2001 ^ Calcium   _   8.9   mg/dl   _   _   _   _   E
18	OBX	14   NM   2002 ^ UricAcid   _   6.2   mg/dl   _   _   _   _   E
19	OBX	15   NM   2003 ^ Iron   _   87   mcg/dl   _   _   _   _   E
20	OBX	16   NM   2004 ^ Bilirubin.Total   _   0.6   mg/dl   _   _   _   _   E
21	OBX	17   NM   2005 ^ LDH   _   190   uL   _   _   _   _   E
22	OBX	18   NM   2006 ^ AlkPhos   _   63   uL   _   _   _   _   E
23	OBX	19   NM   2007 ^ AST (SGOT)   _   33   uL   _   _   _   _   E
24	OBX	20   NM   3000 ^ Phosphorous   _   2.8   mg/dl   _   _   _   _   E
25	OBX	21   NM   3001 ^ ALT (SGPT)   _   35   uL   _   _   _   _   E
26	OBX	22   NM   3002 ^ GåGTP   _   33   uL   _   _   _   _   E

5	OBX	1   NM   1000 ^ TotalProtein   _   4.3   gm/dl   <b>5.9-8.4</b>   L   _   _   E
6	OBX	2   NM   1001 ^ Albumin   _   3.7   gm/dl   <b>3.2-5.2</b>   L   _   _   E
7	OBX	3   NM   1002 ^ Globulin   _   3.9   gm/dL   <b>1.7-3.7</b>   H   L   _   E
8	OBX	4   NM   1003 ^ A/G Ratio   _   1.2   _   <b>1.1-2.9</b>   L   _   _   E
9	OBX	5   NM   1004 ^ Glucose   _   71   mg/dL   <b>70-99</b>   L   _   _   E
10	OBX	6   NM   1005 ^ Sodium   _   134   mmol/L   <b>133-145</b>   L   _   _   E
11	OBX	7   NM   1006 ^ Potassium   _   4.3   mmol/L   <b>3.3-5.3</b>   L   _   _   E
12	OBX	8   NM   1007 ^ Chloride   _   96   mmol/L   <b>96-108</b>   L   _   _   E
13	OBX	9   NM   1008 ^ CO2   _   24   mmol/L   <b>21-29</b>   L   _   _   E
14	OBX	10   NM   1009 ^ BUN   _   17   mg/dl   <b>7-25</b>   L   _   _   E
15	OBX	11   NM   1010 ^ Creatinine   _   1.1   mg/dl   <b>6-1.3</b>   L   _   _   E
16	OBX	12   NM   2000 ^ BUN/CreatRatio   _   15.5   _   <b>10-28</b>   L   _   _   E
17	OBX	13   NM   2001 ^ Calcium   _   8.9   mg/dl   <b>8.4-10.4</b>   L   _   _   E
18	OBX	14   NM   2002 ^ UricAcid   _   6.2   mg/dl   <b>2.4-7</b>   L   _   _   E
19	OBX	15   NM   2003 ^ Iron   _   87   mcg/dl   <b>30-160</b>   L   _   _   E
20	OBX	16   NM   2004 ^ Bilirubin.Total   _   0.6   mg/dl   <b>1-1</b>   L   _   _   E
21	OBX	17   NM   2005 ^ LDH   _   190   uL   <b>94-250</b>   L   _   _   E
22	OBX	18   NM   2006 ^ AlkPhos   _   63   uL   <b>39-120</b>   L   _   _   E
23	OBX	19   NM   2007 ^ AST (SGOT)   _   33   uL   <b>0-37</b>   L   _   _   E
24	OBX	20   NM   3000 ^ Phosphorous   _   2.8   mg/dl   <b>2.6-4.5</b>   L   _   _   E
25	OBX	21   NM   3001 ^ ALT (SGPT)   _   35   uL   <b>0-40</b>   L   _   _   E
26	OBX	22   NM   3002 ^ GåGTP   _   33   uL   <b>7-51</b>   L   _   _   E

第 1 步：首先，我們需要在數據庫中保存參考範圍，為此我使用了 TestRanges 持久類：

## Table: resultVer.TestRanges

 Table Info Fields Maps

Field Name	Datatype	Column #	Required	Unique
ID	%Library.BigInt	1	Yes	Yes
TestCode	%Library.Integer	2	No	No
MinRange	%Library.Double	3	No	No
MaxRange	%Library.Double	4	No	No

第 2 步：我們需要創建一個自定義函數來獲取引用範圍，為此我在實用程序類中創建了 GetReferenceRange() ClassMethod 函數。請注意這個類應該是來自 EnsRule.FunctionSet 的擴展

```
// Get reference ranges from TestRanges table against test code
Debug this method
ClassMethod GetReferenceRange(TestCode As %String) As %String
{
  &sql(SELECT MinRange, MaxRange into :minRange,:maxRange
    FROM resultVer.TestRanges where TestCode = :TestCode)
  set minRange = $DECIMAL(minRange,3)
  set maxRange = $DECIMAL(maxRange,3)

  Set refRange = minRange _ "-" _ maxRange
  //Set refRange = "Test"
  Return refRange
}
```

我們需要創建另一個函數來設置異常標誌，為此我在實用程序類中創建了 SetAbnormalFlag() ClassMethod 函數

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```
// Get Abnormal flag based on Test Code and Result
Debug this method
ClassMethod SetAbnormalFlag(TestCode As %String, Result As %Decimal) As %String
{
  &sql(SELECT MinRange, MaxRange into :minRange,:maxRange
    FROM resultVer.TestRanges where TestCode = :TestCode)
  //Set Flag to L in case of Low Range
  if Result < minRange
  {
    Return "L"
  }
  //Set Flag to H in case of High Range
  elseif Result > maxRange
  {
    Return "H"
  }
  //Return empty strign in case of normal result
  Return ""
}
```

第3步：現在我們將在數據轉換 (UpdateReferenceRangesDTL) 中使用這些函數。我們需要對重複段使用 foreach 循環：

The screenshot shows the configuration of a foreach loop in the InterSystems Studio interface. The top part is a table for defining actions:

#	Action	Condition	Property	Value	Key / Transform
1	for each	▼	source.{PIDgrpgrp()}		k1
2	for each	▼	source.{PIDgrpgrp(k1).ORCgrp()}		k2
3	for each	▼	source.{PIDgrpgrp(k1).ORCgrp(k2).OBXgrp()}		k3
4	set		target.{PIDgrpgrp(k1).ORCgrp(k2).OBXgrp(k3)...}	##class(resultVer.Utility).GetReferenceRange(...)	""
5	set		target.{PIDgrpgrp(k1).ORCgrp(k2).OBXgrp(k3)...}	##class(resultVer.Utility).SetAbnormalFlag(...)	""
6	endeach				
7	endeach				

Below the table, there is a detailed view of the 'set' action for the third foreach loop:

Action: set

Property: target.{PIDgrpgrp(k1).ORCgrp(k2).OBXgrp(k3).OBX:ReferencesRange}

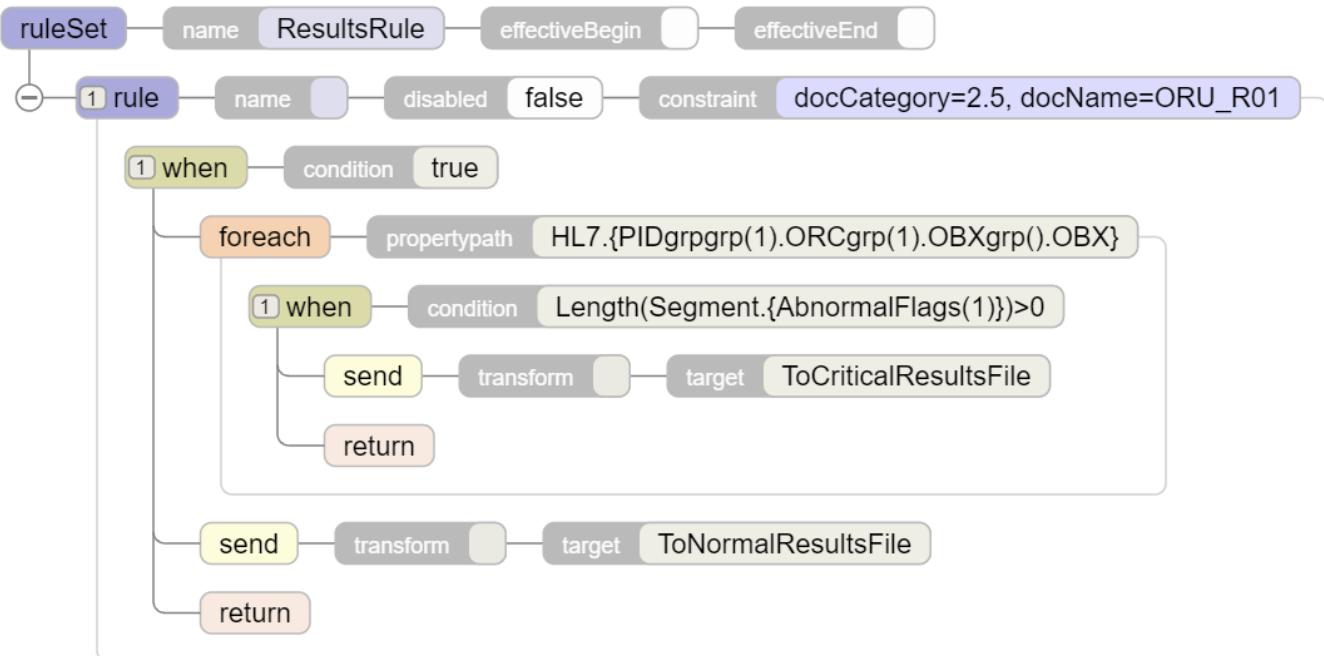
Value: ##class(resultVer.Utility).GetReferenceRange(source.{PIDgrpgrp(k1).ORCgrp(k2).OBXgrp(k3).OBX:ObservationIdentifier.Identifier})

請注意，為了獲得異常標誌，我們必須傳遞 OBX:Observation Value (Result) 和 OBX:Observation Identifier (Test Code)

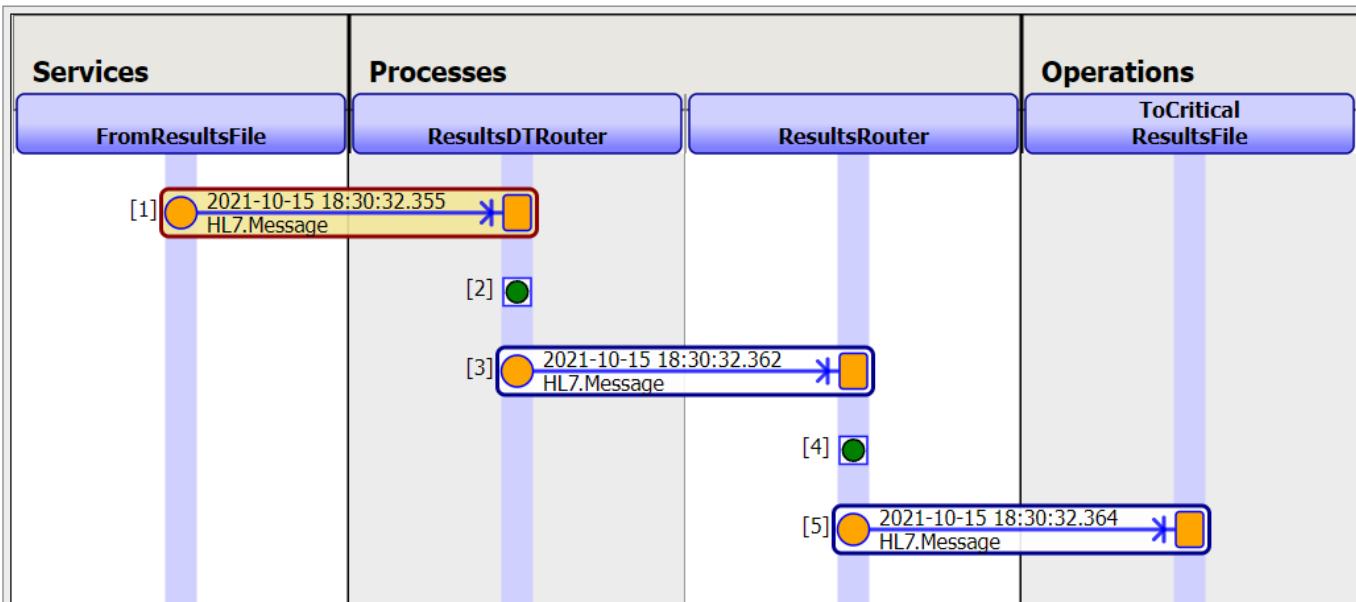
第4步：如果設置了異常標誌，我們將從“ResultsDTRule”業務規則中轉換消息並將消息再次發送到“ResultsRule”業務規則以將消息發送到“ToCriticalResultsFile”操作，否則將發送到“ToCriticalResultsFile”操作：

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跟踪視覺跟踪 下面的視覺跟踪用於消息成功發送到“ ToCriticalResultsFile ”操作



謝謝

#数据转换语言 ( DTL ) #SQL #业务规则 #Ensemble #InterSystems IRIS for Health  
在 [InterSystems Open Exchange](#) 上检查相关应用程序

## 源

URL:

<https://cn.community.intersystems.com/post/%E5%A6%82%E4%BD%95%E4%BD%BF%E7%94%A8hl7%E7%9B%8B%E6%87%89%E5%9C%B0%E6%9B%B4%E6%96%B0%E7%B5%90%E6%9E%9C%E5%8F%83%E8%80%83%E7%AF%84%E5%9C%8D%E5%92%8C%E7%95%B0%E5%B8%B8%E6%A8%99%E8%AA%8C>