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**Observation:**

Although some basic information doesn’t appear in the ppt, after searching for the technology of the Xquery and Xpath. I have got something more like the following:

1. The “book//name” operator can find all the element name under the book element wherever the name is.
2. We can use the operator “/..” to return to the parent element
3. We can use the **item**()\* as the return type of the function. In this way, we can output the xml without the “xmlns” head.
4. In a function there should not exist more than 1 return to output the xml, so we just need to use the “typeswitch” to return some information in a definite situation.

**Video Position**:/record.mp4

**Test Program Position:**/workspace/\*

**Test Data: ClinicData.xml**

<?xml version="1.0" encoding="UTF-8"?>  
<clinic:Clinic xmlns:clinic="http://www.example.org/clinic" xmlns:pat="http://www.example.org/schemas/clinic/patient" xmlns:prov="http://www.example.org/schemas/clinic/provider" xmlns:trmt="http://www.example.org/schemas/clinic/Treatment" xmlns:tns="http://www.example.org/schemas/clinic/clinic\_Ids" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://www.example.org/Clinic file:/E:/universityGraduate/CS548EnterpriseSoftwareSystem/Assignment/Assignment3/workspace/Clinic.xsd">  
   
 <pat:patients>  
 <pat:PatientId>12345678</pat:PatientId>  
 <pat:name>jane</pat:name>  
 <pat:dob>1995-06-08</pat:dob>  
 <pat:treatments>  
 <pat:treatment>  
 <trmt:ProviderId>87654321</trmt:ProviderId>  
 <trmt:diagnosis>migraine</trmt:diagnosis>  
 <trmt:Surgery>  
 <trmt:surgeon>Eason</trmt:surgeon>  
 <trmt:data>2017-09-12</trmt:data>  
 </trmt:Surgery>  
 </pat:treatment>  
 <pat:treatment>  
 <trmt:ProviderId>76543218</trmt:ProviderId>  
 <trmt:diagnosis>Asthma</trmt:diagnosis>  
 <trmt:DrugTreatment>  
 <trmt:name>panadol</trmt:name>  
 <trmt:dosage>50.0</trmt:dosage>  
 <trmt:physician>Albert</trmt:physician>  
 </trmt:DrugTreatment>  
 </pat:treatment>  
 </pat:treatments>  
 </pat:patients>   
   
 <pat:patients>  
 <pat:PatientId>23456781</pat:PatientId>  
 <pat:name>jhon</pat:name>  
 <pat:dob>1995-08-08</pat:dob>  
 <pat:treatments>  
 <pat:treatment>  
 <trmt:ProviderId>76543218</trmt:ProviderId>  
 <trmt:diagnosis>hiv/aids</trmt:diagnosis>  
 <trmt:DrugTreatment>  
 <trmt:name>replax</trmt:name>  
 <trmt:dosage>35.0</trmt:dosage>  
 <trmt:physician>Eason</trmt:physician>  
 </trmt:DrugTreatment>  
 </pat:treatment>  
 <pat:treatment>  
 <trmt:ProviderId>87654321</trmt:ProviderId>  
 <trmt:diagnosis>hurt</trmt:diagnosis>  
 <trmt:Surgery>  
 <trmt:surgeon>Irving</trmt:surgeon>  
 <trmt:data>2000-03-08</trmt:data>  
 </trmt:Surgery>  
 </pat:treatment>  
 <pat:treatment>  
 <trmt:ProviderId>76543218</trmt:ProviderId>  
 <trmt:diagnosis>cancer</trmt:diagnosis>  
 <trmt:DrugTreatment>  
 <trmt:name>panacea</trmt:name>  
 <trmt:dosage>100.0</trmt:dosage>  
 <trmt:physician>Eason</trmt:physician>  
 </trmt:DrugTreatment>  
 </pat:treatment>  
 <pat:treatment>  
 <trmt:ProviderId>65432187</trmt:ProviderId>  
 <trmt:diagnosis>cancer</trmt:diagnosis>  
 <trmt:Radiology>  
 <trmt:data>2017-09-20</trmt:data>  
 <trmt:radiologist>Albert</trmt:radiologist>  
 </trmt:Radiology>  
 </pat:treatment>  
 </pat:treatments>  
 </pat:patients>  
   
 <prov:providers>  
 <prov:ProviderId>87654321</prov:ProviderId>  
 <prov:name>Irving</prov:name>  
 <prov:specialization>Surgery</prov:specialization>  
 </prov:providers>  
   
 <prov:providers>  
 <prov:ProviderId>76543218</prov:ProviderId>  
 <prov:name>Eason</prov:name>  
 <prov:specialization>Oncology</prov:specialization>  
 </prov:providers>  
   
 <prov:providers>  
 <prov:ProviderId>65432187</prov:ProviderId>  
 <prov:name>Albert</prov:name>  
 <prov:specialization>Radiology</prov:specialization>  
 </prov:providers>  
</clinic:Clinic>

**Xquery Code: testing1.xqm**

**import schema namespace p**="http://www.example.org/schemas/clinic/patient" **at** "Patient.xsd";  
**import schema namespace t**="http://www.example.org/schemas/clinic/Treatment" **at** "Treament.xsd";  
**import schema namespace c**="http://www.example.org/clinic" **at** "Clinic.xsd";  
**declare namespace ps**="http://www.example.org/schemas/clinic/patients";  
  
**declare function** *local:getPatientTreatments* (**$pid** **as xs:integer**,**$database** **as** *element*(**c:Clinic**)) **as item** ()\*  
{  
**for $treatment** **in $database**/**p:patients**  
**where $treatment**/**p:PatientId**=**$pid**  
**return**   
<ps:patients>  
<ps:pid>{**$treatment**/**p:PatientId**/*text*()}</ps:pid>  
<ps:treatments>{**$treatment**/**p:treatments**}</ps:treatments>  
</ps:patients>   
};  
**let $clinic** :=*doc*("ClinicData.xml")/**c:Clinic**  
**for** **$patient** **in** *doc*("ClinicData.xml")/**c:Clinic**/**p:patients**  
**where $patient**/**p:PatientId**/*text*()=23456781  
  
 **return** <ps:patients>{*local:getPatientTreatments*(**$patient**/**p:PatientId**,**$clinic**)}</ps:patients>

**Xquery Code: testing2.xqm**

(:module namespace gpd='http://www.example.org/xquery/clinic/getProviderInfo' :)  
  
**import schema namespace p**="http://www.example.org/schemas/clinic/patient" **at** "Patient.xsd";  
**import schema namespace t**="http://www.example.org/schemas/clinic/Treatment" **at** "Treament.xsd";  
**import schema namespace c**="http://www.example.org/clinic" **at** "Clinic.xsd";  
**declare namespace d**="http://www.example.org/schemas/clinic/drug";  
**declare function** *local:getPatientDrugs*(**$patient-id** **as xs:integer**,  
**$database** **as** *element*(**c:Clinic**))  
**as** *element*(**d:drug**)\*  
{  
 **for $patient** **in $database**/**p:patients**  
 **where $patient**/**p:PatientId** = **$patient-id**  
 **for** **$treatment** **in $patient**/**p:treatments**/**p:treatment**  
 **where $treatment**//**t:DrugTreatment**  
 **return**  
 <d:drug>  
 <d:name>{**$treatment**/**t:DrugTreatment**/**t:name**/*text*()}</d:name>  
 <d:dosage>{**$treatment**/**t:DrugTreatment**/**t:dosage**/*text*()}</d:dosage>  
 <d:diagnosis>{**$treatment**/**t:diagnosis**/*text*()}</d:diagnosis>  
 </d:drug>  
};  
**let $clinic** :=*doc*("ClinicData.xml")/**c:Clinic**  
**for** **$patient** **in** *doc*("ClinicData.xml")/**c:Clinic**/**p:patients**  
**where $patient**/**p:PatientId**/*text*()=23456781  
 **return** <d:drug>{*local:getPatientDrugs*(**$patient**/**p:PatientId**,**$clinic**)}</d:drug>

**Xquery Code: testing3.xqm**

**import schema namespace p**="http://www.example.org/schemas/clinic/patient" **at** "Patient.xsd";  
**import schema namespace t**="http://www.example.org/schemas/clinic/Treatment" **at** "Treament.xsd";  
**import schema namespace c**="http://www.example.org/clinic" **at** "Clinic.xsd";  
**declare namespace ti**="http://www.example.org/schemas/clinic/treatmentInfo";  
**declare function** *local:getTreatmentInfo*(**$database** **as** *element*(**c:Clinic**))  
**as item**()\*  
{  
 **for $patient** **in $database**/**p:patients**  
   
 **for** **$treatment** **in $patient**/**p:treatments**/**p:treatment**/*node*()  
 **return**   
 **typeswitch**(**$treatment**)  
 **case $Drug** **as** *element*(**t:DrugTreatment**)  
 **return**<ti:treatmentInfo>  
 <ti:name>DrugTreatment</ti:name>  
 <ti:pid>{**$patient**/**p:PatientId**/*text*()}</ti:pid>  
 <ti:ProviderId>{**$treatment**/../**t:ProviderId**/*text*()}</ti:ProviderId>  
 </ti:treatmentInfo>  
   
 **case $Surgery** **as** *element*(**t:Surgery**)  
 **return**<ti:treatmentInfo>  
 <ti:name>Surgery</ti:name>  
 <ti:pid>{**$patient**/**p:PatientId**/*text*()}</ti:pid>  
 <ti:ProviderId>{**$treatment**/../**t:ProviderId**/*text*()}</ti:ProviderId>  
 </ti:treatmentInfo>  
 **case $Radiology** **as** *element*(**t:Radiology**)  
 **return**<ti:treatmentInfo>  
 <ti:name>Radiology</ti:name>  
 <ti:pid>{**$patient**/**p:PatientId**/*text*()}</ti:pid>  
 <ti:ProviderId>{**$treatment**/../**t:ProviderId**/*text*()}</ti:ProviderId>  
 </ti:treatmentInfo>  
 **default**  
 **return** ""  
};  
  
**let $clinic** :=*doc*("ClinicData.xml")/**c:Clinic**  
 **return** <t:drug>{*local:getTreatmentInfo*(**$clinic**)}</t:drug>

**Xquery Code: testing4.xqm**

**import schema namespace p**="http://www.example.org/schemas/clinic/patient" **at** "Patient.xsd";  
**import schema namespace t**="http://www.example.org/schemas/clinic/Treatment" **at** "Treament.xsd";  
**import schema namespace pr**="http://www.example.org/schemas/clinic/provider" **at** "Provider.xsd";  
**import schema namespace c**="http://www.example.org/clinic" **at** "Clinic.xsd";  
**declare namespace ph**="http://www.example.org/schemas/clinic/providerHistory";  
**declare function** *local:getProviderInfo*(**$database** **as** *element*(**c:Clinic**))  
**as item**()\*  
{  
 **for $provider** **in $database**/**pr:providers**  
 **where $provider**/**pr:ProviderId**  
 **for** **$treatment** **in $database**/**p:patients**/**p:treatments**/**p:treatment**/*node*()  
 **where $treatment**/../**t:ProviderId**=**$provider**/**pr:ProviderId**  
 **return typeswitch**(**$treatment**)  
 **case $Drug** **as** *element*(**t:DrugTreatment**)  
 **return**  
 <ph:providerHistory>   
 <ph:providerId>{**$provider**/**pr:ProviderId**/*text*()}</ph:providerId>  
 <ph:providerName>{**$provider**/**pr:name**/*text*()}</ph:providerName>  
 <ph:pid>{**$treatment**/../../../**p:PatientId**/*text*()}</ph:pid>  
 <ph:treatment>drugTreatment</ph:treatment>  
 </ph:providerHistory>  
 **case $Surgery** **as** *element*(**t:Surgery**)  
 **return**  
 <ph:providerHistory>   
 <ph:providerId>{**$provider**/**pr:ProviderId**/*text*()}</ph:providerId>  
 <ph:providerName>{**$provider**/**pr:name**/*text*()}</ph:providerName>  
 <ph:pid>{**$treatment**/../../../**p:PatientId**/*text*()}</ph:pid>  
 <ph:treatment>surgery</ph:treatment>  
 </ph:providerHistory>  
 **case $Radiology** **as** *element*(**t:Radiology** )  
 **return**  
 <ph:providerHistory>   
 <ph:providerId>{**$provider**/**pr:ProviderId**/*text*()}</ph:providerId>  
 <ph:providerName>{**$provider**/**pr:name**/*text*()}</ph:providerName>  
 <ph:pid>{**$treatment**/../../../**p:PatientId**/*text*()}</ph:pid>  
 <ph:treatment>radiology</ph:treatment>  
 </ph:providerHistory>  
 **default**  
 **return** ""  
};  
  
**let $clinic** :=*doc*("ClinicData.xml")/**c:Clinic**  
 **return** <ph:drug>{*local:getProviderInfo*(**$clinic**)}</ph:drug>

**Xquery Code: testing5.xqm**

**import schema namespace p**="http://www.example.org/schemas/clinic/patient" **at** "Patient.xsd";  
**import schema namespace t**="http://www.example.org/schemas/clinic/Treatment" **at** "Treament.xsd";  
**import schema namespace c**="http://www.example.org/clinic" **at** "Clinic.xsd";  
**declare namespace di**="http://www.example.org/schemas/clinic/drugInfo";  
**declare function** *local:getDrugInfo*(**$database** **as** *element*(**c:Clinic**))  
**as item**()\*  
{  
 **for $patient** **in $database**/**p:patients**  
 **for** **$treatment** **in $patient**/**p:treatments**/**p:treatment**  
 **where $treatment**//**t:DrugTreatment**  
 **return**  
 <di:drugInfo>  
 <di:patients>{**$treatment**/../../**p:PatientId**/*text*()}</di:patients>  
 <di:name>{**$treatment**/**t:DrugTreatment**/**t:name**/*text*()}</di:name>  
 <di:diagnosis>{**$treatment**/**t:diagnosis**/*text*()}</di:diagnosis>  
 <di:dosage>{**$treatment**/**t:DrugTreatment**/**t:dosage**/*text*()}</di:dosage>  
 <di:physician>{**$treatment**/**t:DrugTreatment**/**t:physician**/*text*()}</di:physician>  
 </di:drugInfo>  
};  
  
**let $clinic** :=*doc*("ClinicData.xml")/**c:Clinic**  
 **return** <di:drug>{*local:getDrugInfo*(**$clinic**)}</di:drug>