Project8 Understanding document

Using XQuery

Description

The purpose of this project is to learn XQuery.

### Platform

You will do this project on your own PC/laptop. You will use Zorba, which is a free implementation of XQuery.

* [Download Zorba (Links to an external site.)](http://www.zorba.io/download). It provides binaries for Windows, Linux, and Mac OS. The link on this site is broken; use the following link to install [https://github.com/zorba-processor/zorba/releases (Links to an external site.)](https://github.com/zorba-processor/zorba/releases). On Mac, for example, after you install it, you may run it using /opt/local/bin/zorba.

Put all XQueries in a file "queries.xq" and use the [Zorba Command Line Utility (Links to an external site.)](http://www.zorba.io/documentation/latest/zorba/cli/) to evaluate the XQueries.

Note: If you get the error message on Windows: "The program can not start because libiconv.dll is missing from your computer. Try reinstalling the program to fix the problem", rename the iconv.dll library in the bin folder to libiconv.dll.

### Documentation

The following provide some tutorials. Use them as a reference only.

* [Zorba 3.0 Documentation (Links to an external site.)](http://www.zorba.io/documentation/latest)
* [XQuery: A Query Language for XML (Links to an external site.)](http://lambda.uta.edu/cse5335/spring13/sigmod03_xquery.pdf)
* [XQuery: A Guided Tour (Links to an external site.)](http://lambda.uta.edu/cse5335/spring13/Katz_xquery.pdf)

### Project Requirements

Consider the XML document available at [reed.xml (Links to an external site.)](http://aiweb.cs.washington.edu/research/projects/xmltk/xmldata/data/courses/reed.xml) with DTD [reed.dtd (Links to an external site.)](http://aiweb.cs.washington.edu/research/projects/xmltk/xmldata/data/courses/reed.dtd) used in Project #7. Express the following queries using XQuery and run them against the file reed.xml using Zorba:

1. For each MATH course taught in room LIB 204, return an element tagged course with the title, the instructor, the start, and the end times of the course.
2. For each different course, return an element tagged course with the course title and all the instructor names that teach this course.
3. For each different department, display the department code and the number of courses taught by the department.
4. For each different instructor, return an element tagged instructor that contains the name of the instructor and the number of courses taught by the instructor.
5. For each different instructor, return an element tagged instructor that contains the name of the instructor and the titles of all courses taught by the instructor.

### What to Submit

Submit your XQuery file or zip all XQuery files and submit the zipped file.

**XQUERY:**

It’s a superset of XPATH, it is used to extract elements/attributes or information from XML.

It allows us to write SQL like procedures (FLOWR syntax) to extract information from XML.

XQuery extensively uses XPATH.

Text

Description automatically generated

I have installed zorba:

Executed below on command line:

export PATH=/opt/local/bin/zorba:$PATH

Echo $PATH

/opt/local/bin/zorba:/usr/local/bin:/usr/bin:/bin:/usr/sbin:/sbin:/Library/Apple/usr/bin

I have to create a .xq file with xqueries and run it on reed.xml on zorba command line: follow the instructions below

<https://courses.cs.washington.edu/courses/csep544/10au/hw/hw6/instructions.txt>

# I have tried [Zorba Live Demo](http://try.zorba.io/): <http://try.zorba.io/>

We can execute and check the xquery commands here:

Graphical user interface, text, application, email

Description automatically generated

Expected:

1. For each MATH course taught in room LIB 204, return an element tagged course with the title, the instructor, the start, and the end times of the course.

Return the below for all 13 math courses taught in LIB204

<course>

<title>Introduction to Anthropology</title>

<instructor>Brightman</instructor>

<time>

<start\_time>03:10PM</start\_time>s

<end\_time>04:30</end\_time>

</time>

</course>

XQUERY:

for $x in doc("http://aiweb.cs.washington.edu/research/projects/xmltk/xmldata/data/courses/reed.xml")//course

where $x/subj="MATH" and $x/place/building ="LIB" and $x/place/room ="204"

return

<course>

{

$x/title,

$x/instructor,

$x/time

}

</course>

1. For each different course, return an element tagged course with the course title and all the instructor names that teach this course.

Return all instructor names that teach each different course in the below format

<course>

<title>Introduction to Anthropology</title>

<instructor>Brightman</instructor>

</course>

**XQUERY:**

for $d in distinct- values(doc("http://aiweb.cs.washington.edu/research/projects/xmltk/xmldata/data/courses/reed.xml")//course/title)

let $courses:= doc("http://aiweb.cs.washington.edu/research/projects/xmltk/xmldata/data/courses/reed.xml")//course[title = $d]

return

<course>

<title>{$d}</title>

{

for $i in distinct-values($courses/instructor)

return <instructor> {$i} </instructor>

}</course>

**OUTPUT:**

<?xml version="1.0" encoding="UTF-8"?>  
<course>

<title>Introduction to Anthropology</title>

<instructor>Brightman</instructor>

<instructor>Makley</instructor>

<instructor>Stasch</instructor>

<instructor>Silverstein</instructor>

</course>

<course>

<title>Sex and Gender</title>

<instructor>Makley</instructor>

</course>

1. For each different department, display the department code and the number of courses taught by the department.

Return number of courses taught by each different department in the below format

Subj: MATH

Count: 45

XQuery:

for $d in

distinct-values(doc("http://aiweb.cs.washington.edu/research/projects/xmltk/xmldata/data/courses/reed.xml")//course/subj)

let $courses:= doc("http://aiweb.cs.washington.edu/research/projects/xmltk/xmldata/data/courses/reed.xml")//course[subj = $d]

let $count := count(distinct-values($courses/title))

let $subj:= concat(codepoints-to-string(10),'Department: ',$d,codepoints-to-string(10))

let $numcourses:= concat('No of courses offered: ',$count,codepoints-to-string(10))

return

{

$subj,

$numcourses

}

o/p

Department: ANTH  
No of courses taught:16  
  
Department: BIOL  
No of courses taught:15

1. For each different instructor, return an element tagged instructor that contains the name of the instructor and the number of courses taught by the instructor

Return number of courses taught by each different instructor in the below format

**XQUERY:**

for $d in

distinct-values(doc("http://aiweb.cs.washington.edu/research/projects/xmltk/xmldata/data/courses/reed.xml")//course/instructor)

let $courses:= doc("http://aiweb.cs.washington.edu/research/projects/xmltk/xmldata/data/courses/reed.xml")//course[instructor = $d]

let $count := count(distinct-values($courses/title))

let $subj:= concat(codepoints-to-string(10),' Name: ',$d,codepoints-to-string(10))

let $numcourses:= concat('No of courses taught: ',$count,codepoints-to-string(10))

return

<instructor>

{

$subj,

$numcourses

}

</instructor>

**O/P:**

<instructor>  
 Name: Brightman  
 No of courses taught:4  
</instructor>

<instructor>  
 Name: Makley  
 No of courses taught:4  
</instructor>

1. For each different instructor, return an element tagged instructor that contains the name of the instructor and the titles of all courses taught by the instructor

Return titles of all courses taught by each different instructor in the below format

**XQUERY:**

for $d in

distinct-values(doc("http://aiweb.cs.washington.edu/research/projects/xmltk/xmldata/data/courses/reed.xml")//course/instructor)

let $courses:= doc("http://aiweb.cs.washington.edu/research/projects/xmltk/xmldata/data/courses/reed.xml")//course[instructor = $d]

let $instructor:= concat(codepoints-to-string(10),' Name: ',$d,codepoints-to-string(10))

let $heading := concat('courses taught: ',codepoints-to-string(10))

return

<instructor>

{

$instructor,

$heading,

for $i in distinct-values($courses/title)

let $coursetitles:= concat($i,',',codepoints-to-string(10))

return $coursetitles

}

</instructor>

**O/P:**

<instructor>  
 Name: Brightman  
 courses taught:  
 Introduction to Anthropology  
 Indians and Northrn NativeAmers  
 Nature, Cult and Envirnmentalism  
 Theories of Culture  
</instructor>

<instructor>  
 Name: Makley  
 courses taught:  
 Sex and Gender  
 Gender and Ethnicity China, Tibet  
 Media and Culture Post-MaoChina  
 Introduction to Anthropology  
</instructor>

<course>Introduction to Anthropology Sex and Gender Field Biology of Amphibians Bacterial Pathogenesis Seminar in Biology MolecularStructure and Properties Languages the Americas:Mayan Chemical Reactivity Anthropology of Europe Organic Chemistry I Organic Chemistry II Prob in IndonesianEthnography Intro Inorganic Chemistry Gender and Ethnicity China, Tibet Environmental Chemistry Analytical Chemistry Physical Chemistry Laboratory Computational Organic Chem Statistical Thermodynamics Quantum Mechanics and MolStruct Advanced Inorganic Chemistry Adv Synth Organic Chemistry Myth Structural Biochemistry Metabolic Biochemistry Biochemical Methods First Year Chinese Second Year Chinese Third Year Chinese Media and Culture Post-MaoChina Classical Chinese 20 Cent Chin Fiction, 1919-49 Chinese Narrative Tradition Yijing: Text and Tradition 20th Century Chinese Poetry Greek Tragedy Ancient History: Rome Specl Topics in Roman History Intro to Creative Writing Intro Poetry Writing Indians and Northrn NativeAmers Intro to Fiction Writing Intermediate Poetry: StudioII Intro to ScreenwritingWrkshop Adv Poet Writng: SequentVoice Adv Poet Writing:NaturalVoice Advanced Fiction Writing Basic Technique Technique, Design and Compostion Urban Anthropology Improvisation Adv Techniques and CompositionI Adv Technique and CompositionII Dance Theory and Criticism Intro to Economic Analysis Nature, Cult and Envirnmentalism Survey of Econometric Methods Theory and Practice Econometrics Microeconomic Theory Macroeconomic Theory History of Economic Thought Monetary and Fiscal Policy International Macroeconomics Economics of the PublicSector Structuralism and Semiotics Environment and Nat Resrce Econ Economics of Development International Trade Seminar: Unemployment Economics and Game Theory Econ Envirn, Intl Trade,Devel Economic Growth Intro Narr:Native AmericanLit Intro Narr: Telling Lives Intro Narrative: The Essay Intro Fict:Colonl and LaterNovels Intro Fict:Portraits ofLadies Intro Fict: The Short Story Intro to Poetry and Poetics Intro to Drama: The 1990s Intro Drama:Conventn and Inovatn Jun Sem: Epic and Novel Theories of Culture Jun Sem:Irony, Allegory, Epic Amer. Studies Seminar: TheEnd Fict:Wolff,Forster,Bloomsbury Fict: Novel and Theory Mimesis Mod Fict:Representing Mothers American Lit: Race in America Amer Lit: The James Brothers American Lit: Speaking ofRace 20th Cent African-Amercan Lit Love in Shakespeare Introductory Drawing Skepticism in Shakespeare Poetry: Pound and H.D. Poetry and History:Contemp Amer Literary Theory:EthicsReading First Year French Second Year French Stylistics and Composition Lit and Society (16th Century) Lit and Society (18th Century) Early Modern French Narrative 17th Cent French Drama 20th C French Poetry and Poetics 20th Century French Theatre Seminar:Uses of Literature Frst Yr German:A Foundation Figure Drawing Secnd Yr Ger:CultralPerspctvs Adv Conversation and Writing Advancd Conversation and Writing Modernism: Berlin Contemporary German Prose Modern German Theatre German Thought Postmodrn Era German Theory II: Body Media First Year Greek Second Year Greek Printmaking Advanced Greek Late Imperial China Modern China Cultr and Society 19 CentAmerca Culture and Society 20 Cent Amer Introduction to Judaism Spcl Tops: Vietnam War Subaltern Stds Historiography Introduction to Art History The Family in China and Japan Devel of Britain 1700-1830 The Third Reich The Russian Revolution Weimar:State,Society and Culture Old Regime France 1600-1750 The French Enlightenment Civil War and Reconstruction Gender and History American Slavery Mexico: Indepdence toRevolutn Mexico and the Spanish Conquest Jun Sem: Depression Era U.S. Sem: Comty, Auth, Cult15-1700 West Humanities: Greece and Rome Introductory Painting Introductory Painting II Early Modern Europe Sculpture Modern Humanities Foundatns ChineseCivilization Sculpture II First Year Latin Second Year Latin Advanced Latin General Linguistics Language and Society Introductory Syntax Morphosyntactic Typology Early Medieval Art Psycholinguistics Psych of Language Acquisition Russian Short Fiction 20-Cent Chin Fiction, 1919-49 Medieval Manuscript Illumin 20-Century Chinese Poetry Russian Lit:Chekhov toPresent The Myth of St. Petersburg German Thought Postmod Era Russian Lit:Gogol and Dostoevsky Russ Decadent/SymbolistCultur Divine Comedy and Visualizations 20th C Russian CriticalTheory Calculus I Calculus II Art and Politics in France Introduction to Computing Introduction to Combinatorics Pol Hist of Art Between Wars Intro to Probability and Statist Introduction to Analysis I Introduction to Analysis II Art and Pol in Weimar Republic Complex Analysis Advanced Calculus Linear Algebra Abstract Algebra Geometry Combinatorics Data Structure and Algorithm Computer Graphics New West in Amer Photography Probability Topics in Advanced AnalysisII Elemetary Number Theory Algebraic Structures Topics In Computer Theory Chamber Orchestra Chorus Collegium Musicum Intermed Paint,Draw,PrintmakI Intro to Music Listening Music Theory I Theory II:IntermediateHarmony IntermedPaint,Draw,PrintmakII Survey of Western Music Theory III: BaroqueCounterpnt The String Quartet Representation in Music Romantic Music Jazz Modernism in Music Medieval and RenaissanceMusic Advanced Analysis Intermed Sculp and Multimedia I Aerobics African Dance Aikido Archery Bellydance Ballroom Dance-Beginning Ballroom Dance-Intermediate Canoeing Intermed Sculp and MultimediaII Self Defense Fencing Folkdance Golf Yoga-Hatha Judo Juggling Jitterbug Yoga-Kundilini Kayaking-Intermediate Leonardo, Raphael,Michelangel Lifeguard Training Yoga-Relaxaion Rock Climbing Rugby-Men and Women Rowing-Beginning Rowing-Intermediate Softball Squash-Beginning Squash-Intermediate Sailing Intro Biology Lect and Lab Tai Chi-Beginning Tai Chi-Intermediate Tennis-Advanced Tennis-Beginning Tennis-Intermediate Ultimate Frisbee White Water Rafting Badminton Basketball-Coed Backcountry Navigation Bowling Folkdancing Hiking Around Portland Yoga-Kundlini Modern Dance Yoga-Relaxation Raquetball-Beginning Squash-beginning Introduction to Philosophy Logic Ancient Philosophy Post-Kantian Continental Phil Metaphysics Epistemology Ethics Philosophy of Mind Adv Topics:APrior,Nec,Anlytic Advanced Topics:Phil of Mind Advanced Topics: Epistemology Adv Topics: Ethics Major Figures:Existentialists Major Figures: Davidson Major Figures: Hume General Physics I Introduction to Physics General Physics II Classical Mechanics I Electrodynamics I Electrodynamics II Optics Advanced Laboratory I Advanced Laboratory II Quantum Mechanics I Thermal Physics Solid State Physics Elementary Particles Scientific Computation Classical Mechanics II Quantum Mechanics II Intro Political Analysis Empirical Political Theory Classical PoliticalPhilosophy Modern Political Philosophy Comparative Politics Research Methods Democratic Theory Politics of Globalization Environmental Politics Pol of Democratic Participatn States and Illegal Markets Approaches to Violence Pol of Border and US-Mexico Con. Law and JudicialPolitics Systems of Justice International CriminalJustice Machiavelli Political Philosophies ofWork Intro to Psychology I Intro to Psychology Intro to Psychology II Social Psychology Health Psychology Social Development Community Psychology Psychobiology Neuropsychology Psychopharmacology Thinking Research Design and DataAnalysi Psychopathology Human Development Cognitive Processes Learning Music Perception Cross-Cultural Psychology Junior Seminar Psychobiology Research Clinical Psychology Intro to Religions of Asia Introduction to Islam Theory and Method in RelStudies Theory and Methods in RelStudies History of Religion Chinese Mahayana Texts Missing Persons World ofIslam Romanticism and Religion Spcl Top Ancient Christianity First Year Russian Second Year Russian Vascular Plant Diversity Advanced Russian 20th Century Russian Poetry Mod Russ Lit:Chekov toPresent Russ Lit: Gogol and Dostoevsky Introduction to Sociology Race and Ethnicity Sociology of Religion American Capitalism Sociology of Culture First Year Spanish Second Year Spanish Theory and Practice HispanicLit Spanish Short Story Animal Behav. and Behav.Ecology Modern Peninsular Drama Mod Spanish American Drama Penin Lit: Dogma and Disbelief Spl Tops Span Amer Lit:Borges The City in Span Amer Lit Lit Responses to Dictatorship Introduction to Theatre Masks and Make-up Design Design for the Theatre: Sets Costume History and Design Design for Theatre: Lights Acting Laboratory Plays and Playhouses Intercultr ExperimentsTheatre Playwriting Techniques of Acting Directing I Special Problems in Directing Topics in FrenchEnlightenment Greek Humanities ColonizingAfrica:Conrad and Congo Don Quixote and Narr. Theory Ornamental Art Experiments Intercult Theatre Developmental Biology Genetics and Gene Regulation Microbiology Language in Society Genetics and MolecularBiology Population Bio:Ecolgy and Evolutn Ethnic and Nation France and NAfr Cellular Biology Animal Physiology Evolutionary Biology</course>