

School of Information Technology

Department of Computer Science



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA
Faculty of Engineering, Built Environment and
Information Technology

COS326 Database Systems: Practical 6 2022

Release Date: 16 September 2022

Submission Date: 02 October 2022

Lecturer: Mr S.M Makura

Total: 50 Marks

Objectives

In this practical you will use BaseX to execute XQuery queries on XML data. As you know, XQuery uses Xpath and FLWOR expressions. The objectives of this practical are to learn how to query data in an XML database and appreciate the difference between structured and semi-structured data.

Submission Procedure:

When you are done:

1. You must submit the file named:
 - a. **FLWORQueries.txt** which contains all your queries.
 - b. Compress the above document into an archive and upload it to the ClickUP link for practical submissions **before** the due date/time. The file name for the archive must have your student number as part of the file name, e.g. **uXXXXXXXXX.zip** (*XXXXXXXXX is your student number*).

Preparation

For this practical exercise, you will use the BaseX XML database software to execute XQuery queries on XML data. The BaseX software version that you will be using is BaseX 10.1. It is available on ClickUP and can also be downloaded from <http://www.basex.org> . You will also find documentation and a demo section at the URL.

If you need more information on XPath and XQuery, you can visit the <http://www.w3schools.com> website.

Tasks

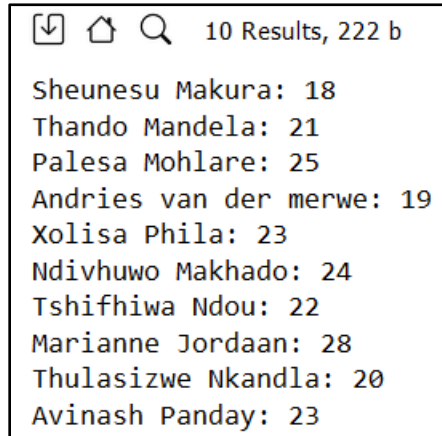
You are provided with the *Students.xml* file. Use BaseX to create a new database for the *Students.xml* file and write FLWOR expressions for the tasks listed below.

Question 1: List the names of all the students in the database. [4 Marks]

Question 2: Count the number of all students. [4 Marks]

Question 3: Count the number of all students studying honours modules. [4 Marks]

Question 4: List the names and ages of all students as shown below



10 Results, 222 b

Sheunesu Makura:	18
Thando Mandela:	21
Palesa Mohlare:	25
Andries van der merwe:	19
Xolisa Phila:	23
Ndivhuwo Makhado:	24
Tshifhiwa Ndou:	22
Marianne Jordaan:	28
Thulasizwe Nkandla:	20
Avinash Panday:	23

Question 5: List the names of all students whose age is greater than 23. [5 Marks]

Question 6: List the names of all students whose age is less than 30 in descending order [8 Marks]

Question 7: List the student names and modules of all students doing third year modules [5 Marks]

Question 8: Calculate the average age of all the students [5 Marks]

Question 9: List the student names studying third year modules whose age is less than 22. [10 Marks]