Student Online Teaching Advice Notice

The materials and content presented within this session are intended solely for use in a context of teaching and learning at Trinity.

Any session recorded for subsequent review is made available solely for the purpose of enhancing student learning.

Students should not edit or modify the recording in any way, nor disseminate it for use outside of a context of teaching and learning at Trinity.

Please be mindful of your physical environment and conscious of what may be captured by the device camera and microphone during videoconferencing calls.

Recorded materials will be handled in compliance with Trinity's statutory duties under the Universities Act, 1997 and in accordance with the University's policies and procedures.

Further information on data protection and best practice when using videoconferencing software is available at https://www.tcd.ie/info_compliance/data-protection/.

© Trinity College Dublin 2020

CSU22041: Information Management I

Points on Exam Paper and Study Approaches

2020-2021

Gaye Stephens gaye.stephens@tcd.ie

Express
UML in XML

Document Type Definition(DTD)
Element Declarations
Element Occurances
Entity Declarations
Attribute List Declarations
……..

XML Schemas Definitions (XSD)
Simple Type/Complex Types
Structure
Attributes/Attribute Groups
Mixed Content
Empty Elements
……..Lots more

UML Diagrams
Class Diagram
Use Case
….
Ethics Canvas

Validated Using DTDs

XML Schemas are also used for validation

BaseX
XML Database
and processor

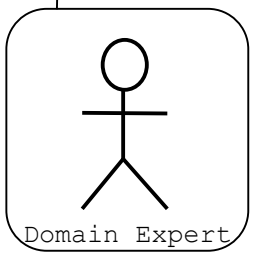
XML
User Defined Tags
hierarchical Structure
Prolog
Document Type Declaration
Elements
Attributes
Entities
Cdata Sections
Processing Instructions
Comments

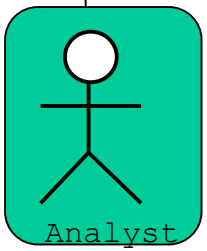
NameSpaces

Not supported in DTDs

XPath

XQuery





Well-Formed

- Your Exam is a Take Home Exam that can be answered in a 3 hour slot over a 24 hour period.
- The exam will be provided via blackboard.
- The exam duration is 3 Hours plus 30 minutes additional time for students registered with the disability services.
- There are 3 questions on the Exam paper
  - One covering UML
  - One covering XML
  - One on Linked data
- You are required to attempt 2 of the 3 questions.
- You are permitted to use the XML tools that you used during the module.

Coláiste na Tríonóide, Baile Átha Cliath
Trinity College Dublin
Ollscoil Átha Cliath | The University of Dublin

Faculty of Engineering, Mathematics and Science
School of Computer Science & Statistics
BA(Mod)Computer Science and Business
Integrated Computer Science
Year 2 Examinations

Information Management 1

DD MMM YYYY | **Take Home Exam** | **3 Hour exam**

Prof. Gaye Stephens

Instructions to Candidates:
Attempt **two** questions. All questions carry equal marks. Each question is scored out of a total of 50 marks.

Materials Permitted for this examination:
Non-programmable calculators are permitted for this examination –
please indicate the make and model of your calculator on each answer book used.
XML tools used during the module are permitted for this examination.

Sample UML Exam Question

1. Using UML design an information system to support aspects of an EU-based car manufacturing and sales operation.

(a) Model, at least 6 UML Classes(Each with at least 2 attributes) representing your information with cardinalities, named associations and roles between the classes. Include exactly one sub class and exactly one composition. [16 Marks]

(b) Model 2 UML use cases(include diagrams and standard textual descriptions) that will be supported by these classes. [12 Marks]

(c) Provide a UML activity diagram for each use case that indicates the flow of tasks that will implement the UML use cases described in part (b) above. [12 Marks]

(d) Provide a commentary on the design decisions you took during the modelling task and any ethical concerns that may need to be addressed. [10 Marks]

[Total 50 Marks]

2. A change will be made to the weighting for each part of the question. I will be increasing the weighting slightly for part d) and reducing the weighting for parts a) b) and c)

Sample XML Exam Question

2.

(a) Explain using examples what constitute a well formed and valid XML document.

[10 Marks]

(b) Use DTD Notation to fully describe the XML document shown in Figure A above. Provide explanation for your design decisions

[16 Marks]

(c) Define and explain XQuery Statements for each of the following queries posed over the document in Figure A. Show expected results and explain your design decisions

I. Return within a single new element called "Colleagues", all the last name values in the document separated by a "+" sign.

II. Return just the values of the "medicalregnumber"attribute in a new element called "RegNumbers"

III. Return only the first of the firstname for each Doctor in the document

[24 Marks]

[Total 50 Marks]

2017

XML

```
<?xml version='1.0' encoding='UTF-8' ?>
<DoctorDirectory>
<doctor area="Dublin" medicalregnumber="123456">
        <name>
                <firstname>James</firstname>
                <lastname>Murphy</lastname>
        </name>
        <telephone Type ="mobile">
                <number>0871234567</number>
        </telephone>
         <telephone Type ="Landline">
                <number>014587884</number>
        </telephone>
</doctor>
<doctor area="Kildare" medicalregnumber="789112">
        <name>
                <firstname>Freda</firstname>
                <firstname>Anne</firstname>
                <lastname>Hartigan</lastname>
        </name>
        <telephone Type ="mobile">
                <number>0879922345</number>
        </telephone>
         <telephone Type ="Landline">
                <number>045865768</number>
        </telephone>
</doctor>
<doctor  medicalregnumber="223445">
        <name>
                <firstname>Francis</firstname>
                <firstname>Mary</firstname>
                <lastname>Kelly</lastname>
        </name>
         <telephone Type ="Landline">
                <number>04487994</number>
        </telephone>
</doctor>
</DoctorDirectory>
```

Sample Linked Data Exam Question

1. The move to Linked Data (and eventually the Semantic Web) will bring benefits for application developers, compared to how data is currently available on the web.

   Discuss the statement above. Diagrams can be included to support or illustrate points made in your discussion.
   Include at least the following points in your answer.
   - Describe the benefits that Linked Data could bring;
   - Explain the concept of Linked Data;
   - Explain the concept of the Semantic Web;
   - Describe the Semantic Web Stack;
   - Explain in what way OWL builds on RDF and what benefits this brings.

   [Total 50 Marks]

Essay based answer

Approach to studying for this module

1. Understand what you did and what other group members did in the group assignment.- Think of the products you created, the processes you went through, discussions you had and reports you created.

2. Understand what the following diagrams and files are used for.

    a) Use Case Diagrams and supporting text and tables
    b) Class Diagrams
    c) Activity Diagrams
    d) Sequence Diagrams
    e) Ethics canvas
    f) XML files
    g) DTD files
    h) Xquery/Xpath code

Approach to studying for this module contd.

3. Read and attempt to answer the past exam questions.

4. Use the class notes and reference sites as a reference.

5. Consider approaches to answering the questions e.g. how would go about creating a DTD, How will you use examples to show a well-formed XML document…

6. Practice creating XML files, DTDs and Xqueries. Use sample exam questions and exercises provided during module. Use BaseX and XML validator site to see if they work.

7. Revisit the notes of the introductory classes.

8. Study the videos on linked data

For those taking Foundation Scholar exams these links may be of interest

London Ambulance Service- https://pdfs.semanticscholar.org/23ea/815b5f5e3a28d872bbe07c0504e166246e8b.pdf

Therac Disaster- http://sunnyday.mit.edu/papers/therac.pdf

PPARS- Irish Health Service- https://www.imt.ie/opinion/guest-posts/could-ppars-happen-again-a-costly-lesson-for-the-hse-02-11-2007/

NIMIS Less than symbol Incident-https://www.hse.ie/eng/services/publications/hospitals/nimis-less-than-symbol-incident.pdf

When you are finished reading reflect on one of the incidents and list the points which caused/exacerbated/contributed to the situation.

That's All Folks Thank You for Listening