

**Midterm Examination**  
**CSE 455 / CIS 555 – Internet and Web Systems**  
**Spring 2007**  
Zachary Ives

Name: \_\_\_\_\_

6 questions, 100 pts, 80 minutes

1. (20 pts) Explain the key architectural differences between DNS and LDAP, in terms of distribution of data, functionality, and administration. When would we prefer the LDAP approach?

2. (20 pts) Suppose we were to replace DNS with a Distributed Hash Table-based name resolution scheme. Outline how this would work and its pros and cons.

3. (15 pts) Given a (recursive) XML schema of people and their parents:

```
<inverse-family-tree>
  <person>
    <name>{person}</name>
    <hasParent>
      <name>{parent 1}</name>
      <hasParent>
        <name>{grandparent 1}</name>
        <hasParent>
          <name>{great-grandparent 1}</name>
          ...
        </hasParent>
        ...
      </hasParent>
      <hasParent>
        <name>{grandparent 2}</name>
        ...
      </hasParent>
    </hasParent>
  </person>
</inverse-family-tree >
```

(a) Write an XPath (NOT an XQuery or XSLT stylesheet) query for all people who are *descendants* of “Sam”.

(b) Write an XPath query for Nitin’s grandparents.

4. (15 pts) Explain how a message queuing system can be used to implement remote procedure calls.

5. (10 pts) What are the pros and cons of SOAP and WSDL as a remote procedure calling scheme?

6. (20 pts) Describe how session state is maintained in a servlet container. Consider at least the following: (1) the HTTP request, (2) the HTTP response, (3) internal server data structures, (4) when and how to create a new session, (5) how to expire a session.