

IS.WUCMI Examination (May 2004):

Examiner:	Roger Beresford
Unit Code:	IS.WUCMI
Unit Title:	Webserver Use Configuration and Management
Duration of Exam:	2 hours.
Requirements:	Two large answer books, scenario issued 1 week ahead.
Student Groups	

Rubric:	Number of Questions	Answer All questions in Section A (50 marks) and two question from Section B (25 marks each). Use a different book for each section.
	Mode and Restrictions	Open book, one sheet of notes.
	Pass mark as a percentage	40%
	Weighting as percentage of Unit	100%

Learning outcomes

1. Specify website requirements and outline webserver structures.
2. Set up and configure a typical webserver to meet defined website requirements.
3. Design a suitable security policy for a website environment and implement the technical components to support it.
4. Evaluate and test a given website and webserver.

Q \ LO	A1	A2	A3	A4
1	✓			
2	✓			
3		✓		
4		✓	✓	
5			✓	
6	✓			✓
7		✓		✓
8*		✓		✓
9*				✓
10*	✓	✓		
11*			✓	

Section A.

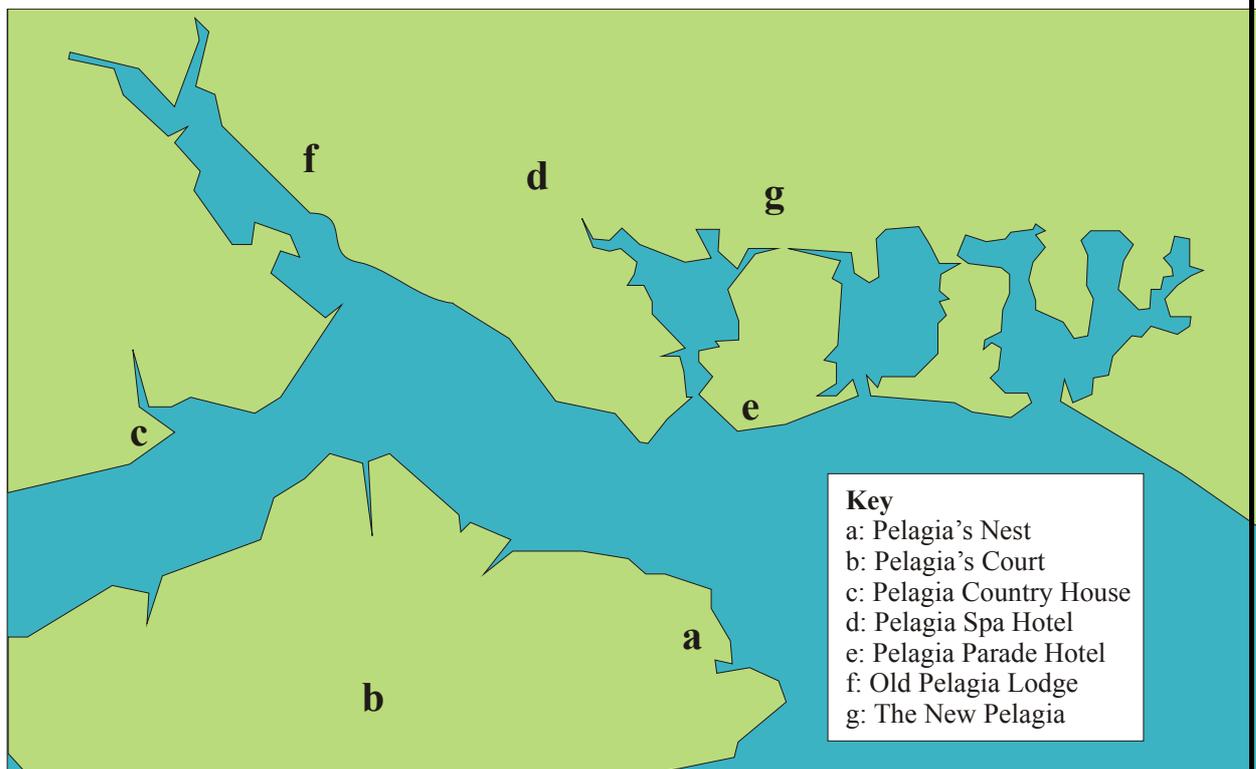
Answer **ALL** questions in this section – target time about 60 minutes.

The questions in Section A should be answered in the context of the given scenario.

The Pelagia Group is a group of privately run hotels under a common management. There are seven hotels within the South Hampshire area, as marked on the sketch diagram below. The seven hotels are: (a) Pelagia's Nest, (b) Pelagia's Court, (c) Pelagia Country House, (d) Pelagia Spa Hotel, (e) Pelagia's Parade Hotel, (f) Old Pelagia Lodge, and (g) New Pelagia Hotel.

The hotels that comprise the Pelagia Group have advertised their resources through a variety of printed media; AA listings, local tourist office listings etc, and are on the lists of a number of national travel agents. Each hotel offers a range of accommodation and services, including parking, restaurant, child friendly amenities, guest lounge, bar, etc. Two of the group's hotels ((c) and (g)) also offer conference facilities for business customers.

The Pelagia marketing manager would like the name Pelagia to figure in any website the company might develop, so www.pelagia.com or www.pelagia.co.uk is hoped for.



Solent area outline map,
redrawn from <http://uk8.multimap.com> [Accessed: 8/1/04]

Answer **ALL** questions in this section – target time about 60 minutes for the section.

- 1 The Pelagia Group's management are planning to develop a website to promote and support the business. Capturing the requirements for this website is an important first step. Outline one major functional requirement you consider likely for the proposed Pelagia website and discuss how you might establish this requirement. *[6 marks]*
- 2 In designing any website an understanding of the intended audience is important. There are many distinct groups of users who might want to access the information provided by the proposed Pelagia Website.
- (i) List at least three distinct groups of users.
- (ii) For each group, discuss what the Pelagia's management might want them to do as a result of interaction with the Pelagia website. *[9 marks]*
3. A basic Apache webserver needs the directives `ServerRoot` and `DocumentRoot` to be correctly set. Given that the Pelagia website is to be mounted in the directory `D:\WebRoot\Pelagia` on an Apache webserver installed on a Windows 2K host, explain the function of these two directives and give the relevant entries to be put in the `httpd.conf` configuration file. *[6 marks]*
4. The Pelagia webserver web space has been divided into subdirectories. The Pelagia management would like to set up a staff only part of the website giving details of employee bonus schemes, staff roster summaries, special staff discounts in the restaurants, and other information it would not want made public.
- (i) There are two basic ways to control access to a `private` directory. One is access control "per user": Discuss the advantages and disadvantages of the other.
- (ii) Give just the `<Directory ... >` section of the `httpd.conf` configuration file required to achieve access control "per user", state any assumptions you need to make about other files or settings. *(9 marks]*
5. Much of the content of any webserver is intended for public access and as such should be easily available to anyone. In spite of this very open starting point, security is vital for web systems.
- (i) Describe one security threat to the public part of the Pelagia website.
- (ii) Outline how entries in any of the "Pelagia Security Policy documents" might address this threat. *[7 marks]*

6. One statistic often quoted on commercial websites is the total number of “hits” on the site (or on a particular page on the site).
- (i) Discuss whether the use of a “hit counter” would be of value to Pelagia.
 - (ii) Explain why it would not be a measure of the readership of the page, even if it accurately records the number of requests for the page.
[7 marks]
7. Testing the Pelagia Web system before live release is vital to the good name of Pelagia. Testing can be undertaken manually or using automatic tools. Manually testing that pages are being served correctly can be checked by use of a browser (to see if it loads correctly) and an examination of the log file to confirm file source and detail on the reason for failure.
- (i) Give the section of the `httpd.conf` file that would set up an access log for the Pelagia website.
 - (ii) Outline a typical entry it would produce in the file and say what parts would be significant in the test process.
[6 marks]

Section B.

Answer **TWO** questions from this section. Target time – about 25 minutes for each question.

8. Providing “interaction” on a website is now important – merely providing static pages is not held to be sufficient by most web site managers, this is especially true of sites with an entertainment bias. Interaction usually involves running a program of some kind on the server.
- (a) Any form of interaction with a website requires collecting data from the remote user, usually via a web form. There is usually a choice of two form methods, GET or POST; GET being illustrated in the short extract below:

```
<html>
<title>Missing notes Form</title>
<body>
<FORM METHOD=GET ACTION="/cgi-bin/ordernotes.exe">

<h1> Missing Lecture Notes Requests to Roger</h1>
```

- (i) Explain what the statement `ACTION="/cgi-bin/ordernotes.exe"` in the above extract does.
- (ii) Discuss the differences between using GET or POST as the form method in the extract above. Include in your discussions any limitations in the use of either method.
- (iii) What types of files are “executable scripts” for use in code like that in the extract? Give examples.

[18 marks]

- (b) The extract given in part (a) makes use of a directory `/cgi-bin/`. Give the relevant lines from the `httpd.conf` configuration file that lets Apache use `/cgi-bin/` for this purpose.

[7 marks]

9. (a) Evaluation of an “almost ready for release” website is usually undertaken by human focus groups of typical users. What is the basic objective of this activity?

[5 marks]

- (b) Validation of a website is usually a software-supported process that does not include the direct human judgement of the evaluation discussed in part (a). Validation for “accessibility” is now a very significant requirement.

- (i) Discuss why “accessibility” is now an important issue for Webmasters.
- (ii) Outline some of the “accessibility” points required.
- (iii) Discuss the tools available to validate a website for accessibility.

[20 marks]

10. (a) The directory design for the webserver has a significant impact on the maintainability of the system. Using a simple example from your practical work, set out the basic directory structure for a webserver supporting access control by user, cgi scripts for interaction, and a private area that should be blocked from outside public access. The web developers would need access to the online manuals installed with Apache.
- (i) Draw a sketch diagram of how the directory structure might be set up.
 - (ii) Explain briefly why the structure sketched out is sensible.
- [14 marks]*
- (b) Making the site easy to navigate for users can often be supported by using the `Alias` directive. Pick a relevant directory from your diagram and give the necessary statements for the `httpd.conf` configuration file.
- [7 marks]*
- (c) For larger more complex sites with many authors, why is a good directory design **within** the `DocumentRoot` important?
- [4 marks]*
11. (a) A website, perhaps that mounted by Pelagia Group discussed in Section A, has been attacked by outside intruders and the web pages altered by the substitution of obscene logos/images and insulting text. Your company policy is to report security breaches to the relevant authorities and to facilitate their prosecution. Discuss the steps you, as Webmaster, should take to:
- (i) Preserve evidence for subsequent investigation.
 - (ii) Restore normal service as fast as possible.
- [18 marks]*
- (b) During a planning and review meeting discussing the possibility of an intrusion like that outlined in part (a) the question was posed: "What training should we provide for staff?" Discuss what training you feel would be helpful.
- [7 marks]*