

Part 1: Short Answer Questions: Please answer in your script book

Instructions for short-answer questions: Use complete sentences. The length of your answer should be one to three sentences or, where required, one or two lines of Perl code.

1. What is the output of the following script?

```
for ($i =1; $i <= 10; $i++){
    if ($i eq 3) {
        print (($i+5) x 3);
    } elsif ($i eq '4') {
        last;
    } else {
        print $i;
    }
}
```

(2)

2. Describe what this program does:

```
@files = ('f1.txt', 'f2.txt', 'f3.txt');
foreach $file (@files) {
    open (FILE, "$file") || die "Cannot open $file\n";
    $lines = <FILE>;
    close FILE;
    open (FILE, '>>out');
    print FILE $lines;
    close FILE;
}
```

(2)

3. How can split and join be used to convert a row from an HTML table into a comma separated list?

(2)

4. Write the Perl code to retrieve and print the input of a form element of type "text" and name "address".

(2)

5. Write a regular expression which tests the security of a textfield in an HTML form which expects a phone number consisting of 3 digits, 1 space character and 4 digits.

(2)

6. What is the difference between Perl/CGI and mod_perl?

(2)

7. In a CGI script, which CGI environment variable contains information about the user's browser?

(2)

8. What is the purpose of cookies for CGI scripts?

(2)

9. What is the purpose of using two related modules (DBI and DBD) for database connectivity?

(2)

10. Name 5 typical server-side applications other than search engines.

(2)

Total marks: [20]

Part 2: Essay Questions: Please answer in your script book

Instructions for essay questions: Include arguments and examples, where appropriate, to support or illustrate your answers. Before you start each problem, take a few minutes to think and outline your ideas. Write a well-organised, coherent answer.

1. An organisation wants to create an on-line collaboration tool. Each staff member is allocated to a project team. Each team has a project leader. The tool must allow collaborative editing of content. Once one staff member publishes a draft document, other staff members can edit or comment on the document. Some projects contain sensitive information, which must not be disclosed to all staff members. Staff members can be expected to not deliberately delete documents which were created by other staff members. But accidental mistakes are possible.

(a) Describe the different components required for this server-side web application. Describe the different web forms of the tool. You can include diagrams in your explanation.

(5)

(b) Discuss a strategy for the maintenance and security of this application. How would the content which the staff members develop be stored and maintained? How would disclosure of sensitive information be avoided?

(5)

(c) Compare a server-side collaboration tool, which is purely web-based, to a tool, such as MS Project, which can be accessed through dedicated client applications. Discuss the possibilities for using such tools on the internet versus on intranets, and for integrating them with other applications, such as email.

(5)

Total marks: [15]

2. The use of regular expressions in search engines:

(a) Search engines may allow users to search for words which occur in certain parts of a document. Three possible uses for regular expressions would be: searching in a title of a web page; searching for words which co-occur within a paragraph; searching only within certain domain names, such as “.com” or “.ac.uk”. For each of these cases, provide a regular expression and describe how it would be used.

(6)

(b) Search engines can consist of three different search technologies: first, Boolean operators “AND”, “OR”, “NOT”; second, the database language SQL; third, regular expression matching. Describe what these are and how they are used in search engines. Is there overlap between these technologies? Are all three required? Consider the form interfaces, the parsing of documents and the matching of user queries to documents in your answer.

(9)

Total marks: [15]

End of Paper