AOU
الجامعة العربية المفتوحة
Arab Open University
Faculty of Computer Studies

TT284
Web Technologies
Answer Key

Midterm Examination (MTA) – OB Make-up

Spring Semester 2023/2024

Date: --/March/2024

Number of Exam Pages: 9 (including this cover sheet)	**Time Allowed:** 2 Hours

Instructions:

- Total Marks: **60**
- This exam consists of **3** parts.
- **ALL questions** must be answered in the External Answer booklet.
- Be sure you write your **name and ID** on the External Answer booklet.
- **Calculators** are allowed.

PART 1
MCQ questions (10 Marks) (2 marks each)

1- What does DNS stands for?

A. Direct Network Security.
B. Domain Name System.
C. Decryption Name System.
D. Domain Name Security.

2- What does CGI stands for?

A. Common Gateway Interface.
B. Central Gateway Interaction.
C. Common General Internet.
D. Central Gadgets Interface.

3- The _____ attribute provides a mechanism for attaching a short text equivalent to any visual or audible embedded object within a web page.

A. 'div'.
B. 'longdesc'.
C. 'alt'.
D. 'id'.

4- The_____ is PHP's one error control operator. It suppresses the output of errors from the PHP expression immediately following it.

A. $.
B. %.
C. #.
D. @.

5- _____ event occurs when an object loses focus.

A. onChange.
B. onBlur.
C. onFocus.
D. onLose.

PART 2
Short questions (20 Marks)

Question 1: (4 Marks)
List four of the reasons that make someone visit a website in the first time according to Reiss.

Answer Q1:

(4 Marks)

(1 marks for each point)

(Any four points of the following):

. looking for a particular type of product, service or information
. looking for a specific product, service or piece of information
. merely curious to look at your site
. because it turned up in a search
. because another site suggested the link
. because they know about your company for some other reason.

Question 2: (4 Marks)
In terms of putting together a business case for accessibility there are four main categories (factors) developers should consider. Discuss these factors.

Answer Q2:

(4 Marks)

(1 mark for each point)

1. **Social factors** – age, literacy, type of technology, bandwidth, etc.
2. **Technological factors** – interoperability, quality, server load, site maintenance, etc.
3. **Financial factors** – meaning opportunities of increased website usage and Search Engine Optimisation, etc.
4. **Legal and policy factors** – legislation, regulation standards and guidelines, etc.

Question 3: (4 Marks)

a) Compare between web website structure and hierarchical website structures.
b) Draw diagrams that represent the web and hierarchical website structures.

Answer Q3:

a)
(2 Marks)
(1 mark for each point)

1. **Web structure**

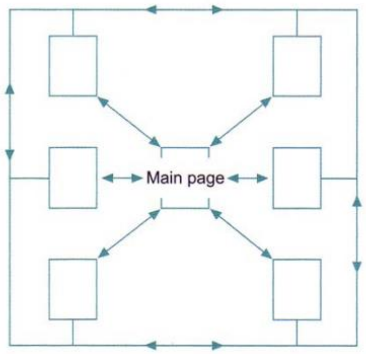
This structure is suited to smaller websites, allowing users to navigate from any page to any other within the content structure. Care needs to be taken with this structure such that each page contains clear information and a standardised navigation bar.

2. **Hierarchical structure**

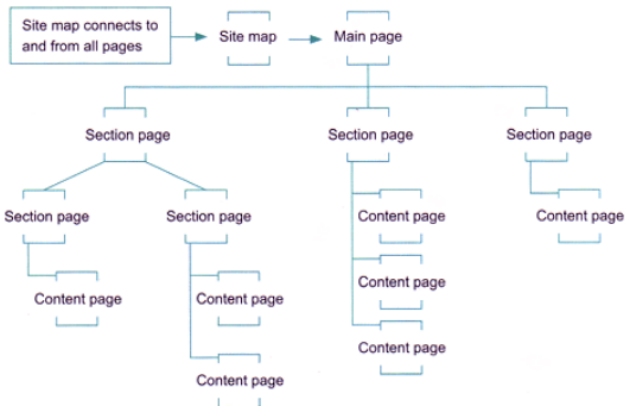
The hierarchical structure lends itself to larger content collections. Where navigation is between sections and within those sections it is linear in structure, this particular format includes a site map; this is so that users can quickly find sections that are relevant to their search and allows for free navigation through the site.

b)
(2 Marks)
(1 mark for each figure)

1. **Web structure**



2. **Hierarchical structure**



Question 4: (4 Marks)

Web service architecture (WSA) is a particular realisation of SOA that is used to provide services over the internet. Discuss its four distinct layers.

Answer Q4:

(4 Marks)
(1 mark for each point)

1 Network transport layer:
This supports the passing of messages between components in the architecture. Common protocols used here are HTTP, FTP and SMTP.

2 Message encoding layer:
This provides a standard approach to encoding information in messages so that they can be understood. Web service messaging approaches such as XML-RPC and SOAP are based on XML.

3 Service description layer:
This provides a way to describe a web service so that it can be accessed and used. The Web Services Description Language (WSDL) is used to describe services.

4 Service discovery layer:
This provides the means to publish descriptions of and find web services in a central repository. The Universal Description, Discovery and Integration (UDDI) registry standard supports this layer.

Question 5: (4 Marks)

In general, two types of computer languages can be distinguished: interpreted languages and compiled languages, explain briefly these two types of computer languages.

Answer Q5:

(4 Marks)
(2 marks for each point)

1) **Interpreted languages**
   - Scripts are interpreted at execution time (JavaScript, Basic, Perl).
   - The key distinguishing property of interpreted languages is that they are translated from the programming language into processor instructions when the script is executed.
2) **Compiled languages**
   - Compiled languages are translated to an executable file (C, Delphi or Fortran), the complete program is translated before being executed.
   - A major advantage of the compiled approach is that the program can be compiled once and run as many times as required without having to translate the high-level programming code into processing instructions each time the program is run.

PART 3
Long questions (30 Marks)

Question 1: (6 Marks)

Assume that a user is visiting a website with an average data transmission rate of 512 (Kbps); consider that the request is having the following:

- A single webpage comprising 7000 bytes of text (including HTML tags).
- CSS file containing 3000 bytes.
- Four images at an average size of 4000 bytes.
- A single image for the banner at a size of 8000 bytes.

Assume that it takes the server 4 millisecond to respond to each file request.
Calculate the total time required to download all these files.

Note:
1 Kbps = 1000 bits/second,
1 byte = 8 bits
1 second = 1000 millisecond.

Answer Q1:

(6 Marks)
(1 mark for each step)

Answer Q1 (One mark each step)

1) Content to download:
   HTML file is 7000 bytes.
   CSS file is 3000 bytes.
   Four images of 4000 bytes each = 16 000 bytes.
   Banner image is 8000 bytes.
   Total content = 34000 bytes.
2) The total file size in bits:
   34000 × 8 = 272000 bits.
3) Download speed is expressed as kilobits per second (Kbps):
   512 Kbps* 1000 = 512000 bps.
4) The transmission time of the files in seconds is calculated as follows:
   File size in bits/transmission speed in bps.
   272000/512000= 0.531 seconds.
5) The delay (in seconds) incurred by the server processing seven files is calculated as follows:
   4 ms x 7 / 1000 = 0.028 seconds.
6) Total time to download is the transmission time plus the delay:
   0.531 + 0.028 seconds.
   = 0.559 seconds.

Question 2: (6 Marks)

Write a code that tests if your browser does not support JavaScript or if JavaScript is turned off, then prints "JavaScript is working" or otherwise prints "JavaScript is NOT working".

Answer 2: (6 Marks)

(1 mark for each line)

```
<script>
 document.write("JavaScript is working");
</script>
<noscript>
 JavaScript is not working
</noscript>
```

Question 3: (8 Marks)

a) Write CSS code will set the attributes of the below tags and name the file as "format.CSS)".

Header 1:
Color is blue
Alignment is center

Paragraph:
font type is Cursive
Font size is 12

b) Write HTML that will apply the CSS formatting in the format.CSS file code and print the following.

"Hello" as header 1
"AOU student" as a paragraph.

Answer Q3:

(8 Marks)

a) format.CSS

```
h1
{
color: blue;
text-align: center;
}

p
{
font-family: Cursive;
font-size: 12pt;
}
```

b) display.HTML

```
<html>
<head>
<link rel="stylesheet" href="format.css">

</head>
<body>

<h1> Hello </h1>

<p> AOU student </p>

</body>
</html>
```

Question 4: (10 Marks)

Develop a simple web page containing the following specification:

1. Page Title “Interview Request Form”
2. Header 2 “Interview Request Details”
3. Form action to locate the script that will process the form data “http//norton.open.ac.uk/reflect.php”
4. Text Input type field for the Interviewee Full Name.
5. Checkbox type to select the preferred time as follows:
   One for Morning time.
   One for Afternoon time.
6. List type to select position as follows:
   One for the Academic position
   One for the Administration position
7. Submit button.
8. Reset button.

The web page should look like the following design (Figure 1):

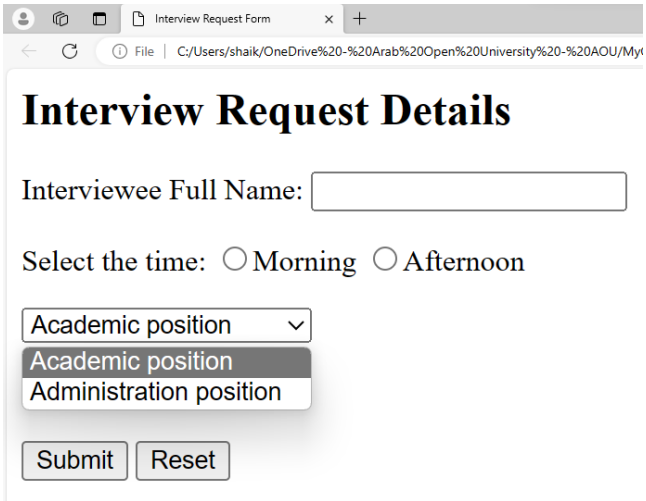


Figure 1

Answer Q4: (10 Marks)

```
<html>
<head>

<!— 1 Title 1 mark   -->

<title> Interview Request Form </title>

 <body>

<!--  2 Header 1  1 mark  -->

<h2> Interview Request Details </h2>

<!--  3 Opening the form element 1 mark  -->

 <form action="http://norton.open.ac.uk/reflect.php"method="post" name="form1">

<!--  4 Text field  1 mark  -->

Interviewee Full Name: <input type="text" name="user" /><br>

<!--  5 and 6 Radio types  2 marks -->

<p>
Select the time:
<input type="radio" name="time" value="Morning"/>Morning
<input type="radio" name="time" value="Afternoon" />Afternoon
</p>

<!--  7 and 8 List types  2 marks -->

 <select>
    <option value="Academic">Academic position </option>
    <option value="Administration">Administration position </option>
 </select>
<br>

<!--  9 and 10 Submit and reset buttons  2 marks   -->

<p>
<input type="submit" name="submit" value="Submit" />
<input type="reset" name="reset" value="Reset" />
</p>

 </body>
 </html>
```

End of questions