

University of St Andrews



DECEMBER 2018 EXAMINATION DIET

SCHOOL OF COMPUTER SCIENCE

MODULE CODE: IS5103

MODULE TITLE: Web Technologies

EXAM DURATION: 2 hours

**EXAM
INSTRUCTIONS**

- (a) Answer **three** questions.
- (b) Each question carries 20 marks.
- (c) Answer questions in the script book.

**PERMITTED
MATERIALS**

Non-programmable calculator

YOU MUST HAND IN THIS EXAM PAPER AT THE END OF THE EXAM.

**DO NOT TURN OVER THIS EXAM PAPER UNTIL
YOU ARE INSTRUCTED TO DO SO.**

1. **Web standards and frameworks**

- (a) HTML5 and CSS3 are web standards. Discuss the motivation behind each, and the process necessary to become a recommended web standard.

[5 marks]

- (b) Explain using an annotated diagram the process by which a browser displays the following web page.

`https://www.theguardian.com/UK/politics`

[5 marks]

- (c) HRrecruit are commissioning a new website and have been advised to make it responsive.

- (i) What are the advantages and caveats of using a CSS framework such as Bootstrap or Foundation?

[3 marks]

- (ii) Discuss five criteria HRrecruit could use when selecting a framework to support their project.

[5 marks]

- (iii) What's the correct way to include a framework in your workflow?

[2 marks]

[Total marks 20]

2. Cascading Style Sheets

- (a) Describe 5 different methods for including CSS style information within a large website and discuss the merits or demerits of each. [10 marks]
- (b) Explain the use of CSS3 modules and how browsers facilitate their development using the example below.

```
section {  
    border:dashed 5px #000000;  
    -moz-border-radius: 5px;  
    -webkit-border-radius: 5px;  
    border-radius: 5px;  
}
```

[5 marks]

- (c) How would you incorporate non-standard web fonts in your web project? Use the example below to help illustrate your answer.

```
@font-face {  
    font-family: myexam;  
    src: url(exam_light.woff2);  
}  
body {  
    font-family: "Times New Roman", Georgia, Times, serif;  
}  
h1 {  
    font-family: myexam, Verdana, Helvetica, Arial, sans-serif;  
}
```

[5 marks]

[Total marks 20]

3. Optimisation and sustainability

- (a) A large company offering walking tours in Italy has employed you to optimise their website for online visibility and sustainability. How would you proceed?

[10 marks]

Inheritance

- (b) Examine the following web page and style sheets; explain how each element is displayed when printed.

[10 marks]

```
<!DOCTYPE html>
<html>
<head>
  <title>Web design</title>
  <link href="design.css"
rel="stylesheet" />
  <link href="preview.css"
rel="stylesheet" media="print"/>
</head>
<body>
  <header>
    <h1> HTML5 and CSS3</h1>
    <div id="brand"></div>
  </header>
  <section>
    <h1> HTML5 Mark-up for meaning
    </h1>
    <h2>CSS Design for
presentation</h2>
    <p> Understanding the
separation of design logic
from <em>meaningful</em>
mark-up is essential. Get
further help at
    <a
href="http://www.w3schools.com
"> W3Schools</a>
    </p>
  </section>
  <h3>html5</h3>
  <p class="center">Design using
CSS</p>
  <footer>
    <p>Happy to help you make the
web accessible.</p>
    <p><a
href="http://w3c.ac.uk/guide.ht
ml"> Tutorial Guide</a>
available online</p>
  </footer>
</body>
</html>
```

design.css

```
body{
background-color: yellow;font-
family: Tahoma, Geneva, sans-serif;
color: grey;
}
header{
background-color:rgba(255, 0,
0,.75);
}
h1 {
font-family: Impact; text-
shadow:5px 5px 5px #000000;
}
p {
color: brown; font-size: x-small;
}

p.center {
text-align: center;
}

section{
  color: green;
}
```

preview.css

```
body{
  color : #000000;
  line-height: 1.3;
  background : #ffffff;
  font-family : "Times New
Roman", Times, serif; font-
size :10pt;
}
h1 {
  color:black;
}
#brand{ display : none;
}
@page {
  margin: 1cm;
}
a:after {
content: " (" attr(href) ")";
}
```

[Total marks 20]

4. Interactive form: usability and accessibility

Examine the following mark-up designed to collect registration details

```
<form action="reg.php" method="post" name="reg" id="reg">
<fieldset> <legend>Registration</legend>
<p>Please supply name, password, your email address and the date, when
<em>complete</em> submit.</p>
<p>
<label for="name">Username: (required)</label>
<input name="name" id="name" type="text" tabindex="1"required> </p>
<p>
<label for="pwd">Password:</label> <input name="pwd" id="pwd"
type="password" tabindex="2" required> </p>
<p>
<label for="emailme">Email: (required)</label>
<input type="email" name="emailme" id="emailme" placeholder="Enter a valid
email address" required></p>
<p>
<label for="reg">Date:</label> <input type="date" name="reg" id="reg"
tabindex="3"></p>
<p>
<input name="status" type="hidden" id="status" value="unconfirmed"> </p>
<p> <input name="submit" type="submit" id="submit" tabindex="4"
accesskey="s" value="Register here"></p>
</fieldset>
<p>Alternatively <a href="register.pdf">print our application </a>and send
by email or by post.</p>
</form>
```

- (a) Describe using an annotated diagram what will be seen in a browser and what will happen when the form is submitted. [10 marks]
- (b) Does the page comply with the POUR principles of WCAG2.1? Explain using the source code to illustrate your answer. [10 marks]

[Total marks 20]

***** END OF PAPER *****