

UNIVERSITY OF BRISTOL

Summer Examination Period

FACULTY OF ENGINEERING

**Example Examination for the Degree of
Bachelor and Master of Engineering and Bachelor and Master of
Science**

**COMS10012/COMSM0085
Software Tools**

**TIME ALLOWED:
1 Hour**

This paper contains 16 questions, all of which are used for assessment; the maximum for this paper is 16.

Other Instructions:

This exam is open-book: you may bring in any handwritten or printed materials. You may use a faculty-approved calculator model.

TURN OVER ONLY WHEN TOLD TO START WRITING

Q1. Which of the below protocol orderings reflects a correct network stack?

- A. HTTP, TLS, TCP, IP
- B. IP, TLS, TCP, HTTP
- C. HTTP, TCP, IP, TLS
- D. TLS, IP, HTTP, TCP
- E. IP, TCP, HTTP, TLS

[1 mark]

Q2. Consider the following HTTP request as received by a web server:

```
GET /about.html HTTP/1.1
Host: www.example.com
User-Agent: Mozilla/5.0 (X11; Linux x86_64; rv:108.0) Firefox/108.0
Accept: text/html,application/xhtml+xml,application/xml
Accept-Language: en-GB,en;q=0.5
Accept-Encoding: gzip, deflate, br
Connection: keep-alive
```

Assuming the request headers can be trusted, which of the following best describes what has happened to cause this request?

- A. Someone attempted to run gzip on the webpage about.html from their Linux terminal.
- B. Someone running the X11 windowing system navigated to `http://www.example.com/about.html`.
- C. Someone running the Mozilla OS navigated to `www.example.com`.
- D. Several browsers made the same request for `about.html` at once, forcing the server to keep the connection alive.

[1 mark]

Q3. You encounter an unfamiliar HTTP status code 413. Without knowing more than this code, which of the below might you reasonably conclude?

- A. The request has completed successfully, with some additional effects.
- B. The server needs to redirect you to another location.
- C. The server has encountered an internal error.
- D. There is an error in the request sent by the client.

[1 mark]

Q4. The *fragment* part of a URI represents:

- A. A reference to the specification for the remainder of the URI.
- B. A hierarchical identifier for the targeted resource.

(cont.)

- C. An optional mapping of values to specified parameters.
- D. An optional reference to a subordinate resource.

[1 mark]

Q5. Consider this snippet of HTML:

```
<p>
  I'm creating a link to
  <a
    href="https://www.mozilla.org/en-US/"
    title="The best place to find more information about Mozilla's
    mission and how to contribute">the Mozilla homepage</a>.
</p>
```

Which of the below reflects the text you would click on in the browser to follow the link?

- A. "I'm creating a link to the Mozilla homepage."
- B. "the Mozilla homepage"
- C. "https://www.mozilla.org/en-US/"
- D. "The best place to find more information about Mozilla's mission and how to contribute"

[1 mark]

Q6. Client-side validation of HTML form fields...

- A. Protects the server from malicious requests.
- B. Requires the user to provide authentic details.
- C. Cannot be disabled in most browsers.
- D. None of the above.

[1 mark]

Q7. Which of the following HTML elements should contain `<meta>` elements?

- A. `<header>`
- B. `<head>`
- C. `<nav>`
- D. None of the above.

[1 mark]

Q8. A Thymeleaf application is acting as a frontend to a database of student grades. You see that one method in the `Controller.java` file has an annotation:

```
@GetMapping("/student/{id}")
```

What do you know about the method this annotation is attached to?

(cont.)

- A. It accepts a student ID as a parameter.
- B. It returns a student ID.
- C. The method will not be called because the mapping is malformed.
- D. None of the above.

[1 mark]

Q9. Which of these CSS selectors will apply a style to one <p> element immediately following an element with the class attribute 'insert'?

- A. `img#insert p`
- B. `img.insert > p`
- C. `img#insert ~ p`
- D. `img.insert + p`

[1 mark]

Q10. A style with the selector of `.aside, h2, h3` would be applied to:

- A. All elements with the class 'aside', and all second- and third- level headings.
- B. The element with the ID 'aside', and all second- and third- level headings.
- C. Any third-level headings subordinate to a second-level heading inside an element with the ID 'aside'.
- D. Any third-level headings or second-level headings inside an element with the class 'aside'.

[1 mark]

Q11. When representing a colour in CSS, the keyword 'green' is equivalent to

- A. `#FF0000`
- B. `#00F000`
- C. `#00F00F`
- D. `#00FF00`

[1 mark]

Q12. You have been tweaking the style of an element so that it has a visible border. You want to create some visual space between the border and other elements on the page, with twice as much space below as there is above. Which of these rules should you use?

- A. `padding: 10px 5px 20px 5px;`
- B. `margin: 8px 8px 16px 8px;`
- C. `padding: 16px 8px 16px 8px;`

(cont.)

D. margin: 5px 5px 5px 10px;

[1 mark]

Q13. Consider the following stylesheet:

```
html { font-size: 14px; }  
p {font-size: 0.8em; }  
div {font-size: 1.2em; }
```

Imagine this stylesheet is applied to a page which contains a <p> element inside a <div> element. What would be the size of the text in the <p> element, as measured in px?

- A. 14
- B. 12
- C. 16.80
- D. 13.44

[1 mark]

Q14. Consider the following CSS rules:

```
.container {  
  display: grid;  
  gap: 20px;  
}  
.listitem {  
  grid-area: 1 / 2 / 3 / 4;  
}
```

Assuming an element corresponding to the second selector is placed in the grid container, on which row will the element end?

- A. 1
- B. 2
- C. 3
- D. 4

[1 mark]

Q15. Karen is using wget to download a website example.com. The index page of example.com contains the following HTML:

```
<!DOCTYPE html>  
<html>  
<head>  
  <meta charset="UTF-8">  
  <link type="text/css" href="style.css" rel="stylesheet">  
  <title>Example Page</title>  
</head>
```

(cont.)

```
<body>
<h1>Example Page</h1>
<p>See the <a href="./about.html">about</a> page for more about this
site, or check out the <a href="https://www.iana.org/domains/example">
IANA resources</a> for more about example pages.</p>

</body>
</html>
```

If she downloads the page by invoking

```
wget -r -l 1 http://example.com
```

How many files will be retrieved in total?

- A. 1
- B. 2
- C. 3
- D. 4

[1 mark]

Q16. Cloud computing involves:

- A. Moving data to near-edge devices such as routers.
- B. The on-demand availability of resources such as storage and computational power.
- C. A distributed architecture making use of a shared hash table to achieve consensus.
- D. All of the above.

[1 mark]