

CS-C3170 Web Software Development : Exam

19.12.2019

- All answers should easily fit on a single answer sheet.
- Write on each paper your **name**, your **student number** including any checking characters, the **code and name of this course**, **examination hall**, **date**, the **number of papers returned** and **your signature**.
- If the question number is followed by an asterisk ★, you should select all options that **apply**. If there is no asterisk, select only one.
- No additional materials, calculators etc. allowed.

HTML & CSS

1. What is the key difference between `div` and `span` elements? (max 2 sentences)
(1 point)
2. What does the following CSS snippet do to the given HTML?
More specifically, how are the words Cat, Dog and Octopus styled?
(correct outcome, 1 point)
(explanation, 1 point)

<pre>h1 { color: green; } h1.calm { color: blue; } h1, h2 { color: red; font-style: italic; } H1, .calm { color: yellow; }</pre>	<pre><h1 class="calm">Cat</h1> <h2 class="hot">Dog</h2> <h1>Octopus</h1></pre>
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HTTP

- 3) When a web form is submitted, we often get an HTTP response code **302 Found** which redirects the browser to another page. Give two reasons why we want to redirect the user.
(1.5 points). When would we not redirect? (0.5 points)
(max 5 sentences, 2 points)
- 4) Consider the URL **https://sample:stuff@aalto.fi/access?error=404**
Explain briefly what are the following parts of the URL (2 points)
 - a) https://
 - b) sample:stuff@
 - c) aalto.fi
 - d) /access
 - e) ?error=404
- 5) Please describe how GET and POST differ in parameter passing? (1 point)

JavaScript

- 6) The following JavaScript code is executed. What, (if anything) is printed in the console on lines 4, 6 and 8 ? (3 points)

```
1) var text = "Hello"
2)
3) function example() {
4)   console.log( text );
5)   var text = "World"
6)   console.log( this.text );
7)   function other() {
8)     console.log( text );
9)   }
10)  other();
11) }
12)
13) example();
```

APIs

- 7) Explain briefly how the HTTP methods GET, PUT and POST are typically used in a RESTful service when used with an instance resource.
(max 5 sentences, 2 points)

Sessions & Security

- 8) Consider the four attacks below and possible **countermeasures in bold**. (3 points)
State for each pair if the countermeasure is **effective/ineffective** and **justify your choice** with max 2 sentences per each attack-countermeasure pair.
- Session hijacking (stealing cookies) vs **HTTPS**
 - Stored XSS vs. **Same-origin policy**
 - CSRF vs. **HTTPS**
 - SQL Injection vs. **Escaping user-supplied data in templates**

Django

- 9) ★ Which of the following statements are **true** for Django templates? (1 point)
- Templates cannot contain inline javascript as it gets escaped
 - Templates can specify HTTP Headers for the response
 - Templates have if statements and for-loops
 - Templates can contain and execute arbitrary Python code
 - All CSS code should be placed in the templates

10) (total 4 points)

The following snippets are a Django view and the corresponding urls.py that could have been in someone's course project (they weren't) The service hosts **private** photo albums for a number of users. *There are no syntax or other errors in the code.*

views.py

```
1     @login_required(login_url="/login/")
2     def del_page(request, album, page_num):
3         page = Page.objects.get_object_or_404(album=album,number=page_num)
4         page.delete()
5         return HttpResponseRedirect("/albums/")
```

urls.py

```
urlpatterns = [
    path('delete/<str:album>/<int:page_num>/', views.del_page),
    ...other urls...
```

(3 points) Briefly explain 3 **fundamentally** different scenarios that can what happen when a user visits the URL:

<http://someserver.com/delete/vacation/5>

Use the line numbers if necessary.

(1 point) There is an **authorization** problem in the code. What is it? (Max 2 sentences.)