

TIE-23500 Web-ohjelmointi & TIE-23506 Web Software Development

First exam, 26.2.2018, 17–20

Examiner: Pietari Heino

- Additional materials, calculators etc. are not allowed.
- All answers should fit on a single answer sheet. You're not supposed to write long essays in this exam. Follow the instructions **and** remember to answer ***all*** questions.

You can answer either in English or in Finnish.

HTML & CSS

1. (2 points)

What is HTML used for? What is CSS used for? Why two different languages?

2. (2 points)

*link rel
script src*

Write down a simple HTML document that includes/references external CSS and JavaScript. In the document you should have a title, a heading, some text, an image, and a button.

Before starting to write the HTML, read the next two questions. It might be useful.

3. (2 points)

Write down a CSS file that styles all elements in the HTML page you came up with in the previous question. Explain what your stylesheet does. Try to be specific in your explanation.

JavaScript

4. (2 points)

Earlier you defined HTML for a page that had a button and an image. Now write JavaScript which gives the page this interactivity:

*When the button is clicked, the picture gets hidden. Clicking again shows the picture.
And so on.*

Hints:

Both vanilla JavaScript and jQuery are fine.

If you reference an HTML element from JavaScript, you can access and modify its CSS properties for instance in this way:

```
elemRef.style.display = "none";
```

A CSS property may be removed by setting its value to an *empty string* ("").

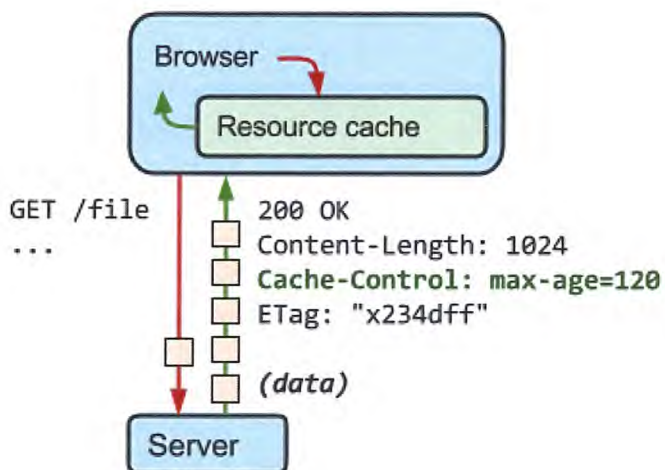
5. (2 points)

What is JavaScript used for? Give some (simple) examples of different use cases.

In terms of web applications and web software development, how is JavaScript running in a browser (client) fundamentally different from some code (eg. Django application) running on a server?

HTTP

6. (4 points)



Explain what happens in the picture and why it is useful.

Specifically tell what the 200 OK, Cache-Control, ETag, and Resource cache are, and what different scenarios might happen in the future.

Sessions & Security

7. (2 points)

aps is writing a blog post on a blogging service where he wrote the following as a title for the post. The **beginnings** of the texts he wrote are shown below. What is he trying to do in the two cases? When and where is the attack code executed?

- a) `<script>` rest of the text not shown
- b) `<img src=` rest of the text not shown

8. (2 points)

Briefly explain the basic idea of Cross-Site Request Forgery (CSRF) protection. Be specific enough but don't write more than ½ page.

Web Services

9. (4 points)

In HTTP there are a couple of different methods/verbs (listed below).

In terms of REST APIs, for what sort of interactions should they be used for?

For each of the verbs, give an example of a good use case and also write down the URL for it. You can for instance describe a webshop API or a student records API.

The verbs are: GET, POST, PUT, DELETE

Django

10. (4 points)

Explain models, templates, and views in Django (MTV).

How do they relate to each other?

What are they used for?

What problems do each of them (try to) solve?

Exponential function

Exponential function is defined by $EXP(x) = e^x$, where e is the constant 2.718... Note that

$EXP(-x) = 1/EXP(x)$. How to use:

- You need to find the $e^{2.51}$
- Find the row with $x = 2.5$
- Find the column 1, the number inside the cell is 12.3049, which is the result

x	0	1	2	3	4	5	6	7	8	9
0	1	1.0101	1.0202	1.0305	1.0408	1.0513	1.0618	1.0725	1.0833	1.0942
0.1	1.1052	1.1163	1.1275	1.1388	1.1503	1.1618	1.1735	1.1853	1.1972	1.2093
0.2	1.2214	1.2337	1.2461	1.2586	1.2713	1.284	1.2969	1.31	1.3231	1.3364
0.3	1.3499	1.3634	1.3771	1.391	1.405	1.4191	1.4333	1.4477	1.4623	1.477
0.4	1.4918	1.5068	1.522	1.5373	1.5527	1.5683	1.5841	1.6	1.6161	1.6323
0.5	1.6487	1.6653	1.682	1.6989	1.716	1.7333	1.7507	1.7683	1.786	1.804
0.6	1.8221	1.8404	1.8589	1.8776	1.8965	1.9155	1.9348	1.9542	1.9739	1.9937
0.7	2.0138	2.034	2.0544	2.0751	2.0959	2.117	2.1383	2.1598	2.1815	2.2034
0.8	2.2255	2.2479	2.2705	2.2933	2.3164	2.3397	2.3632	2.3869	2.4109	2.4351
0.9	2.4596	2.4843	2.5093	2.5345	2.56	2.5857	2.6117	2.6379	2.6645	2.6912
N	0	1	2	3	4	5	6	7	8	9
1	2.7183	2.7456	2.7732	2.8011	2.8292	2.8577	2.8864	2.9154	2.9447	2.9743
1.1	3.0042	3.0344	3.0649	3.0957	3.1268	3.1582	3.1899	3.222	3.2544	3.2871
1.2	3.3201	3.3535	3.3872	3.4212	3.4556	3.4903	3.5254	3.5609	3.5966	3.6328
1.3	3.6693	3.7062	3.7434	3.781	3.819	3.8574	3.8962	3.9354	3.9749	4.0149
1.4	4.0552	4.096	4.1371	4.1787	4.2207	4.2631	4.306	4.3492	4.393	4.4371
1.5	4.4817	4.5267	4.5722	4.6182	4.6646	4.7115	4.7588	4.8067	4.855	4.9038
1.6	4.953	5.0028	5.0531	5.1039	5.1552	5.207	5.2593	5.3122	5.3656	5.4195
1.7	5.474	5.529	5.5845	5.6407	5.6973	5.7546	5.8124	5.8709	5.9299	5.9895
1.8	6.0497	6.1105	6.1719	6.2339	6.2965	6.3598	6.4237	6.4883	6.5535	6.6194
1.9	6.6859	6.7531	6.821	6.8895	6.9588	7.0287	7.0993	7.1707	7.2427	7.3155
N	0	1	2	3	4	5	6	7	8	9
2	7.3891	7.4633	7.5383	7.6141	7.6906	7.7679	7.846	7.9248	8.0045	8.0849
2.1	8.1662	8.2482	8.3311	8.4149	8.4994	8.5849	8.6711	8.7583	8.8463	8.9352
2.2	9.025	9.1157	9.2073	9.2999	9.3933	9.4877	9.5831	9.6794	9.7767	9.8749
2.3	9.9742	10.074	10.176	10.278	10.381	10.486	10.591	10.697	10.805	10.914
2.4	11.023	11.134	11.246	11.359	11.473	11.588	11.705	11.822	11.941	12.061
2.5	12.183	12.305	12.429	12.554	12.68	12.807	12.936	13.066	13.197	13.33
2.6	13.464	13.599	13.736	13.874	14.013	14.154	14.296	14.44	14.585	14.732
2.7	14.88	15.029	15.18	15.333	15.487	15.643	15.8	15.959	16.119	16.281
2.8	16.445	16.61	16.777	16.946	17.116	17.288	17.462	17.637	17.814	17.993
2.9	18.174	18.357	18.541	18.728	18.916	19.106	19.298	19.492	19.688	19.886
N	0	1	2	3	4	5	6	7	8	9
3	20.086	20.287	20.491	20.697	20.905	21.115	21.328	21.542	21.758	21.977
3.1	22.198	22.421	22.646	22.874	23.104	23.336	23.571	23.808	24.047	24.288
3.2	24.533	24.779	25.028	25.28	25.534	25.79	26.05	26.311	26.576	26.843
3.3	27.113	27.385	27.66	27.938	28.219	28.503	28.789	29.079	29.371	29.666
3.4	29.964	30.265	30.569	30.877	31.187	31.5	31.817	32.137	32.46	32.786
3.5	33.116	33.448	33.784	34.124	34.467	34.813	35.163	35.517	35.874	36.234
3.6	36.598	36.966	37.338	37.713	38.092	38.475	38.861	39.252	39.646	40.045
3.7	40.447	40.854	41.264	41.679	42.098	42.521	42.948	43.38	43.816	44.256
3.8	44.701	45.15	45.604	46.063	46.526	46.993	47.465	47.942	48.424	48.911
3.9	49.402	49.899	50.4	50.907	51.419	51.935	52.457	52.985	53.517	54.055
N	0	1	2	3	4	5	6	7	8	9
4	54.598	55.147	55.701	56.261	56.826	57.398	57.974	58.557	59.146	59.74
4.1	60.34	60.947	61.559	62.178	62.803	63.434	64.072	64.716	65.366	66.023
4.2	66.686	67.357	68.034	68.717	69.408	70.105	70.81	71.522	72.24	72.967
4.3	73.7	74.441	75.189	75.944	76.708	77.479	78.257	79.044	79.838	80.64
4.4	81.451	82.27	83.096	83.931	84.775	85.627	86.488	87.357	88.235	89.121
4.5	90.017	90.922	91.836	92.759	93.691	94.632	95.584	96.544	97.514	98.494
4.6	99.484	100.48	101.49	102.51	103.54	104.59	105.64	106.7	107.77	108.85
4.7	109.95	111.05	112.17	113.3	114.43	115.58	116.75	117.92	119.1	120.3
4.8	121.51	122.73	123.97	125.21	126.47	127.74	129.02	130.32	131.63	132.95
4.9	134.29	135.64	137	138.38	139.77	141.18	142.59	144.03	145.47	146.94