The preview shows how the test is presented to participants. You can also see the correct answers for all questions except free text answers. No correct answers are shown to participants when they complete the test.

Total max score: 30

Start by reading through all questions. Peter will visit the room 45 minutes after the exam has started to clarify the questions you do not understand. Max score is 30 points.

- For grade 3, 40% of max score (12 points) is required.
- For grade 4, 60% of max score (18 points) is required.
- For grade 5, 80% of max score (24 points) is required.

You are not allowed to use the computer for anything else but answering the questions on this page.

Write your answers in either English or Swedish. If you write your answers in Swedish, make sure to not introduce any translation confusement. Write proper sentences (spelling, upper/lower case characters, punctuation, etc.). Answers that do not do this good enough/are vague/are ununderstandable cannot receive full score on the questions.

For all multi choice questions in this exam: You may check as many answers you like, but each incorrectly checked answer will be punished with 1 point reduction for that question (no question can give negative points in total).

Good luck!	
What is the URI used for in an HTTP request? Give two examples of URIs that can be used in HTTP request.	an

Max score: 0.5

What is the method used for in an HTTP request? Write which method one should use for the following type of requests (the question is about HTTP, not web applications):

Retrieive a single resource			
Retrieve multiple resources	; .		
Create a new resource. Undete an existing resource.			
Update an existing resource Delete an existing resource			
Delete an existing resource	<i>;</i> .		
			//
			Max score: 0.5
Explain what the HTTP headers		Type are used for	or respectively, Which of them
can be used in requests and res	conses respectively?		
			/
			7.
			Max score:
Pair each HTTP response code	with its corresponding	reason phrase.	
· · · · · · · · · · · · · · · · · · ·	g	,	
Correct answer			
]	
200	OK		
		<u> </u>	
]	



Place the lines of code below so they form a valid HTML5 document.



```
....,,
<html>
<h1>The Website</h1>
```

Correct answer

```
<!DOCTYPE html>
<html>
<head>
<title>Hi there!</title>
</head>
<body>
<h1>The Website</h1>
</body>
</html>
```

-	lement, s	since para	graph eleme			ach line, you can put each word inside a nents and rendered on their own rows.
						Max score: 1
Which of the	followin	g tags do	not exist in	HTML?		
<money></money>	<hr/>	<city></city>		<input/>	<a>	
						Max score: 2
Which of the	followin	g stateme	nts regardin	g attributes	in HTM	/IL5 are correct?
An attribute	e in the c	losing tag	overrides th	e same att	ribute ir	n the opening tag if it is present there.
The src attr	ribute ca	n be used	on both <im< td=""><td>ng> elemen</td><td>ts and ·</td><td><javascript> elements.</javascript></td></im<>	ng> elemen	ts and ·	<javascript> elements.</javascript>

☐ The opening tag may contain multiple attributes with the same name.
An attribute in the opening tag overrides the same attribute in the closing tag if it is presence there.
An element can have both an id attribute and a class attribute at the same time.
☐ An HTML element must have at least 1 attribute
Max score: 2
When submitting the form below (without altering it), which one of the following HTTP requests will the web browser send to the server (we only show the headers relevant to the form; the web browser will send many more headers in addition to these)? <form action="http://somesite.com/login" method="GET"></form>
<pre>Username: <input name="username" type="text" value="Alice"/> Password: <input name="password" type="password" value="Abernathy"/></pre>
POST /login?username=Alice&password=******* HTTP/1.1 Host: somesite.com
GET /login HTTP/1.1 Host: somesite.com Content-Type: application/x-www-form-urlencoded Content-Length: 33 username=Alice&password=Abernathy

GET /login?username=Alice&password=Abernathy HTTP/1.1

Host: somesite.com

GET /login HTTP/1.1
Host: somesite.com

Content-Type: application/x-www-form-urlencoded

Content-Length: 33

username=Alice&password=******

POST /login?username=Alice&password=Abernathy HTTP/1.1

Host: somesite.com

POST /login HTTP/1.1 Host: somesite.com

Content-Type: application/x-www-form-urlencoded

Content-Length: 33

username=Alice&password=******

POST /login HTTP/1.1 Host: somesite.com

Content-Type: application/x-www-form-urlencoded

Content-Length: 33

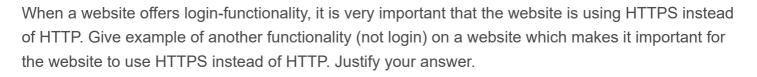
username=Alice&password=Abernathy

GET /login?username=Alice&password=******* HTTP/1.1

Host: somesite.com

The form below exists on a webpage and can be used to send a new password to a user's email.
<pre><form action="/email-new-password" method="XXXXXXXX"> Your email: <input name="email" type="email"/> </form></pre>
<pre><input type="submit" value="Send new password"/> </pre>
Should the form be submitted with the GET method or the POST method (what should XXXXXXX above be?)? Justify your answer.
Max score: 1
Here is some CSS code:
<pre>#body header h1.dark{</pre>
<pre>background-color: black; }</pre>
Write HTML code that contains a match for the CSS selector in the code above.
Note : You only need to write the HTML code found in the <body> element (including the <body> element), you do not need to write the HTML code for an entire HTML document.</body></body>

Explain what a <i>rule</i> is in CSS.
Max score: 1
Explain what pseudo-classes can be used for in CSS. Also, name one and explain what that pseudo-class do.
Max score: 1
Explain how middlewares work and describe how they are implemented in Express, including how a single middleware in Express works.



Here is an HTML form on a website one can use to login to that website:

// ...

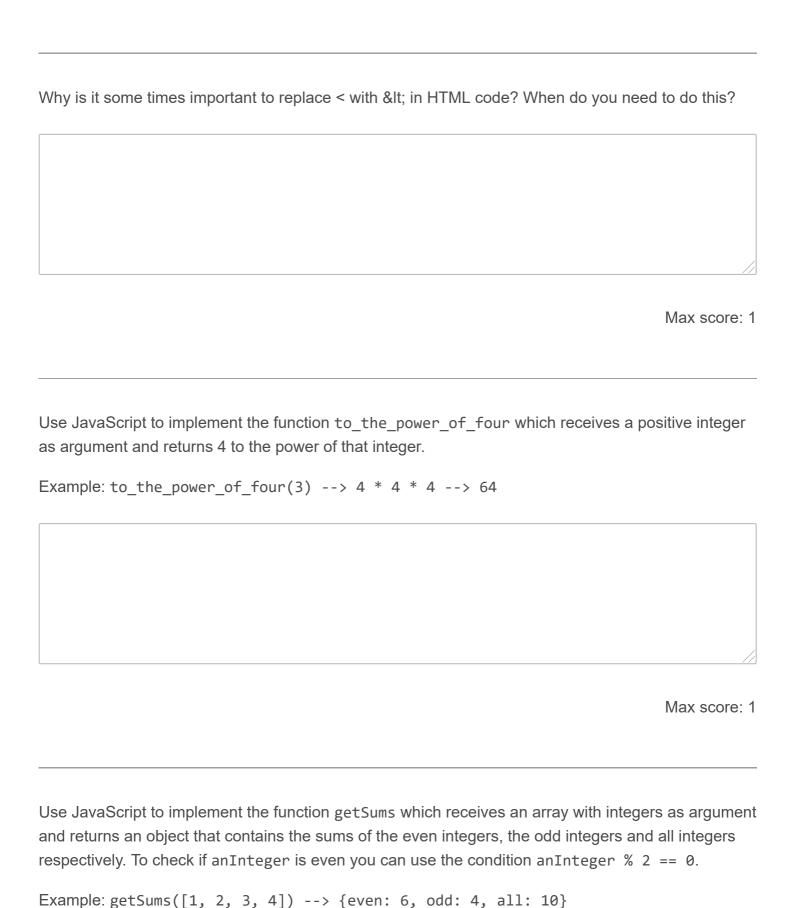
})

As your answer, write a username and password you can use to login without creating your own account in advance.

username: YOUR_USERNAME_HERE password: YOUR_PASSWORD_HERE	
Max so	ore: 1
A programmer states the following:	
On my website I encrypt my users' passwords before I store them in the database, so even if a hacker comes over my web application, there is no way for the hacker to figure out my users' password (except for brute-force).	
Is the programmer wrong or correct? Justify your answer.	
Max so	ore: 1
Explain what a cookie is, give two examples of what they can be used for and explain how they created/transferred. Be as detailed as possible.	are

Explain what a session is, give two examples of what they can be used for and explain how they work/can be implemented.
Max score: 2
The code below is taken from an Express application with bank accounts (imagine the condition from != "the account the user is logged in to" works as it should).
<pre>const app = express() app.use(bodyParser.urlencoded({extended: false})) app.post("/transfer-money", function(request, response){ const from = request.body.from const amount = request.body.amount const to = request.body.to if(from != "the account the user is logged in to"){ response.send("Unauthorized") }else{ transferMoney(from, amount, to) response.send("Transfer complete") }</pre>
The code contains a security vulnerability hackers can try to exploit to trick users into transfering money to the hackers own account. What is the vulnerability? How could a hacker exploit it? And how would you protect the website from the vulnerability?

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Use JavaScript to implement the following two functions:

```
double(3) --> 6
quadruple(3) --> 12

Implement double using multiplication by two (no other computations allowed), and implement quadruple by using/calling the double function (no other computations allowed).

First implement the functions according to the sample usage above. Then implement the functions again, but this time making use of callback functions instead of return values.
```