

Quizlet

Computer science option c-web science

57 terms

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DISTINGUISH BETWEEN THE INTERNET AND THE WORLD WIDE WEB (WEB).

*internet is the infrastructure which enables computers, servers and other devices to establish communication by means of cables and satellite connection.

*world wide web is the uses the internet to access data and enable data exchange between users all over the globe. some of the applications of the web include: web pages, email, skip.



Describe how the web is constantly evolving.

*the web was first a platform of data exchange with a limited number of users with applications like : online libraries at universities.

*then commercial applications were added to the web like: online shopping.

*with web 2.0, users demand for social aspects have been added such as : social platforms like Facebook or Myspace, semantic webs (helps computers understand the meaning behind the webpages and the interaction between the computer and the users).

* due to the progress of technology and



availability of high speed internet, mobile devices and connected things such as fridges, houses, cars will play a bigger role

Identify the characteristics of the following:

- hypertext transfer protocol (HTTP): is a protocol that describes the data exchange in the world wide web.(which port to uses and how the data should be formatted)
- hypertext transfer protocol secure (HTTPS) : its the same like http but is extended with a security component that encrypts the data exchange between sender and receiver.
- hypertext mark-up language (HTML): is the standards for formatting content that is to be displayed in computer browsers.
- uniform resource locator (URL) : is the address of a webpage that is usually easy to remember. it consists at least of a second level domain such as "Facebook" and a top level domain such as .com, .de
- extensible mark-up language (XML) : is a tag-based syntax which is used to structure and describe information
- extensible style sheet language transformations (XSLT) : is a programming language which transform XML documents into different output formats which are required by browsers such as google chrome and internet explorer.
- JavaScript: is a programming language is commonly used for web applications
- cascading style sheet (CSS): is the central



	source for formatting instructions of content and layout of a webpage.	
Identify the characteristics of the following:	<ul style="list-style-type: none"> • uniform resource identifier (URI) : • URL. 	☆
Define the term private cloud.	Cloud computing services that are provided for a particular group with a limited number of users;	☆
Distinguish between a cloud computing model and a conventional client server model in providing computing services.	<p>Traditional client-server model: Servers on the one of the premises of the company; Connected to a Local Area Network (LAN); Maintained by IT team of that organization;</p> <p>Cloud computing: Servers outsourced to third party; Maintained by third party technical support team; Based on Internet connectivity; Connected to a WAN;</p>	☆
Explain why changing part of an IT provision to a cloud based model might be beneficial	<p>Reduce costs as fewer technical staff will need to be employed; Technical staff in third party may have greater expertise as they may be able to specialize;</p> <p>May reduce costs as third party may benefit from economies of scale for purchase of storage, hardware, etc;</p> <p>Expertise may be held by more people, so staff turnover may have less effect; The effects of unexpected hazards may be reduced as data may be distributed across a number of locations;</p>	☆

<p>Comment on the privacy and security issues relating to the use of cloud computing.</p>	<p>Privacy Sensitive data is accessible to a third party; If outsourcing occurs, potential exposure of data is increased;</p> <p>Security How secure is the data?; Can it be guaranteed that this data will not be inadvertently passed to another company?;</p>	<p>☆</p>
<p>Identify one characteristic of Hypertext Markup Language (HTML).</p>	<p>*Can be rendered by all internet browsers; * uses of tags to delimit statements</p>	<p>☆</p>
<p>Identify the steps that the server would carry out so that the information in the events' calendar can be displayed on the client's computer.</p>	<p>* Server retrieves event for days to be displayed from a database server; *Takes results and generates HTML to display them in a table; *Embeds HTML in page; *Page sent to browser;</p>	<p>☆</p>
<p>Identify two ways that a client-side script may be made available to a web browser.</p>	<p>A client-side script may be made available to a browser by the use of script tags that are embedded in the HTML code; By the use of an external file;</p>	<p>☆</p>
<p>Describe one reason why a client-side script may be used in</p>	<p>A client-side script will not require access to a remote server so that any processing that is done will be done more quickly and use less</p>	<p>☆</p>

<p>preference to a server-side script.</p>	<p>bandwidth; This will reduce the load on the server;</p>	
<p>The organizers of the theatre want to ensure their web pages appear higher up the ranking of search engines. Suggest whether the use of meta-tags can help achieve this aim.</p>	<p>Meta tags contain keywords/descriptions related to the web page's content; They are embedded in HTML code can be read by search engines; This can help their ranking; Search engines have become more sophisticated; They no longer place a high value on the content of meta tags; As they are not always a reliable guide to the web page's content; Search engines now use other parameters; e.g. Some will place more value on the number of links pointing to a web page;</p>	☆
<p>It is common for dynamic web pages to make use of a mixture of client-side and server-side scripting. Explain how the interaction of HTML, client-side and server-side scripting have allowed the production of a web page.</p>	<p>Before the web page is generated scripts will be run on the server-side; Examples of these scripts are;</p> <p>The handling of inputs;</p> <p>The retrieval of information from databases;</p> <p>The performing of calculations;</p> <p>Scripts will be written in languages such as PHP;</p> <p>Server-side scripts are hidden from users and therefore secure;</p> <p>The server sends data to the browser (client) in HTML;</p>	☆

	<p>This could also include JavaScript code which will be interpreted by the client's browser;</p> <p>Allowing (in this case) booking details to be entered by the user on the client side;</p> <p>Server driven information can be delivered on the fly using software such as Ajax;</p>	
Identify one characteristic of XML.	It does not contain a fixed set of tags, therefore new ones can be added; [1 mark]	☆
Define the term protocol.	A set of rules and procedures that both sender and receiver must adhere to in order to allow coherent data transfer;	☆
Describe, with the use of examples, how the use of open standards allows interoperability to occur.	<p>The use of open standards implies that anyone can use them;</p> <p>They are standards that are agreed from the beginning; therefore ensuring interoperability;</p> <p>For example, the Internet backbone relies on the IP protocol which is an agreed standard, allowing the transfer of information to occur;</p>	☆
Music is distributed across the web in a variety of different ways such as peer-2-peer (P2P) networks.	<p>Lossless compression is used when loss of data is unacceptable when transferring files such as audio files;</p> <p>Lossy compression may not significantly affect the final version of the file when it is decompressed;</p>	☆

Discuss two factors that would affect the decision to use either lossless or lossy compression when transferring files across the Internet.

Lossy compression will reduce file size;

Reduced file size may be an important requirement such as in the use of MP3 music files;

Lossy compression results in faster file transfer; Which is important when Internet connections are slow or files are large;

If lossy compression is used the original file cannot be reinstated;

Explain one advantage of the use of a peer-2-peer (P2P) network for obtaining and downloading music and movie files.

Easier to set up; Less time will need to be spent in configuring the network;
Other advantages could deal with the increased range of available files and the lower (or even zero) costs involved (depending upon the network).



Outline the principal difference between HTML and HTTP.

HTML is a programming/scripting/markup language;
HTTP is a protocol/standard;



Consider the section of XML code shown below:
<bird>

Both are scripting/markup languages;
Both make use of tags/elements;



```

<name>Eagle
Owl</name>
<species>Bubo
bubo</species>
<description>An
owl the size of an
eagle</description
>
<habitat>Forests</
habitat>
</bird>

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Identify one similarity between HTML and XML.

One of the characteristics of XML code is its ability to describe data.

By making direct reference to the XML code above, outline one way in which this characteristic is shown.

XML can use easily identifiable field names for data;

As in the name or species field;



The XML code, above, is sent via the HTTP protocol from a client to a server where it is

The XML code contains records;

Each record contains data identified by field names;

These field names match with the field names in the database;



used to update a database.
Describe how the structure of XML code allows data to be used to update a database.

When a user enters a URL into the search bar of the browser the URL will normally be sent to a domain name server.
Identify the two possible actions that this domain name server will then take.

Protocols and standards are essential features of the successful operation and development of the web.

Distinguish between the terms

It will (successfully) map the URL to an IP address in its own database;
If it cannot, it will pass the request to (a more authoritative) name server;
Returns NXDOMAIN when the requested domain is known to be unassigned/invalid;

A protocol is a rule that must be followed (for a certain successful process to take place);

Whilst a standard is a set of (technical) specifications that should be followed (to allow for functionality);



<p>protocol and standard.</p>		
<p>With specific references to one protocol and one standard, discuss the consequences if they did not exist.</p>	<p>For example: TCP; If there was no transport protocol; Packets would be lost;</p> <p>HTML; If there was no standard scripting language for displaying webpages; Different web browsers may not display all pages;</p>	<p>☆</p>
<p>The PageRank algorithm is used by Google's search engine. Identify the specific purpose of the PageRank algorithm.</p>	<p>To give a (rating) value; For a specific search query/term;</p>	<p>☆</p>
<p>A page has more chance of being listed on the first page of a Google search if it has many links coming into it from other websites.</p> <p>Page A links to</p>	<p>The PageRank value of page A;</p> <p>The number of outlinks from page A;</p>	<p>☆</p>

Page B. Page A has 3 links of which one refers to Page B. Page B has 3 links of which none refers to page A.

Identify two factors that will determine the effect that the link from Page A will have on the PageRank of Page B.

Describe why the use of meta-tags might not always return the results expected by a search query.

The keyword in a meta-tag might have different meanings; eg "star";
So a webpage about astronomy might be listed by a search engine when the search query/user was searching for a famous actor; Even though the page was indexed correctly;



Explain, with the use of three examples, how black hat search engine optimization tries to manipulate page ranking.

*Hidden content;
Extra keywords are hidden in places that are not visible to the user, eg text in background colour/off screen/in comment tags etc;
*Keyword stuffing;
Repeating the keywords many times in the meta-tags;
*Use of link farms;
Creating/making use of dummy pages that link to your page (to increase the number of inlinks);



<p>Identify two different types of file which, if compressed, could make use of a lossy compression algorithm.</p>	<p>Audio; Video; Picture; (ie files with colour, sound or movement)</p>	<p>☆</p>
<p>With the use of examples, outline the difference between interoperability and open standards.</p>	<p>Open standards are a freely available set of specifications; For example, the use of (freely available) HTML;</p>	<p>☆</p>
<p>The technologies associated with Web 2.0 have often been described as leading to the emergence of social networking.</p> <p>(Describe two different features, associated with these new technologies, which have</p>	<p>*Incorporation of multimedia into web pages; Which allows users to incorporate videos; *Interactive webpages; That allows friends to write on their walls etc; *User-generated content; That allows users to personalize their webpage; *Instant-messaging; That allows (fast) communication between friends;</p>	<p>☆</p>

contributed to this emergence.

A small company is deciding whether to make use of a private cloud service for storing their customer data instead of storing it on their own server.

Discuss the security issues that will affect the company's decision.

Cloud storage:

- *Operations are hidden from the company which could lead to doubts
- *No company loyalty so not the same level of dedication and care
- *The cloud operators are professionals in this area - this is what they do
- *The cloud operators are likely to have the most up-to-date systems

Company storage:

- *Operations are not hidden from the company
- *Due to company loyalty a (potential) better level of dedication and care
- *It is a small company so IT department will be small / not of the highest expertise
- *No need to continue updating security systems

Example conclusion: Cloud storage has been around long enough to have demonstrated that it is a very secure method of storing your data, so the security concerns are unfounded and the cost savings make it a sensible decision.



C.1.4 Identify the characteristics of the following:

- uniform resource identifier (URI)
- URL.

*Uniform Resource Identifier (URI) is a string of characters used to identify a resource. Such identification enables interaction with representations of the resource over a network, typically the World Wide Web, using specific protocols. One type of URI is the URL



	<p>*A Uniform Resource Locator (URL), commonly informally termed a web address could have the form <code>http://www.example.com/index.html</code>, which indicates a protocol (<code>http</code>), a hostname (<code>www.example.com</code>), and a file name (<code>index.html</code>).</p> <p>Example "<code>http://www.facebook.com</code>"</p>	
Describe the purpose of a URL.	<p>A Uniform Resource Locator (URL) is a reference to a web resource that specifies its location on a computer network and a mechanism for retrieving it.</p> <p>Example "<code>http://www.facebook.com</code>"</p>	☆
Describe how a domain name server functions.	<p>A domain name server (DNS) translates the URL from a clients request (example "<code>http://www.facebook.com</code>") and resolves a physical network address (IP) from it (example: "<code>204.74.112.1</code>")</p>	☆
<p>Identify the characteristics of:</p> <ul style="list-style-type: none"> • internet protocol (IP) • transmission control protocol (TCP) • file transfer protocol (FTP). 	<p>*internet protocol (IP): IP has the task of delivering packets from the source host to the destination host solely based on the IP addresses in the packet headers. For this purpose, IP defines packet structures that encapsulate the data to be delivered. It also defines addressing methods that are used to label the datagram with source and destination information.</p> <p>*transmission control protocol (TCP) provides reliable, ordered, and error-checked delivery of a stream of octets between applications running</p>	☆

	<p>on hosts communicating over an IP network</p> <p>*file transfer protocol (FTP) is built on a client-server model architecture and uses separate control and data connections between the client and the server</p>	
Outline the different components of a web page.	<p>A webpage contains different components such as:</p> <ul style="list-style-type: none"> *Meta data *header *body <p>and can also include</p> <ul style="list-style-type: none"> *stylesheets *scripts 	☆
Explain the importance of protocols and standards on the web.	<p>A protocol is a set of rules and procedures that both sender and receiver must adhere to in order to allow coherent data transfer; without protocols a lossless data transfer can not be established.</p> <p>Standards such as html allow interoperability between different systems and components.</p>	☆
Describe the different types of web page.	<p>personal pages, blogs, search engine pages, forums, social media platforms, newspaper, media sources, trading pages, customer service platforms, information pages of authorities</p>	☆
Explain the differences between a static web page and a	<p>*static HTML web pages are remaining with the same content and layout until the webdesigner is changing them.</p>	☆

dynamic web page.	*dynamic web pages, that make us of PHP, ASP.NET, Java Servlets change their appearance and content depending on user input.	
Explain the functions of a browser.	A web browser (commonly referred to as a browser) is a software application for retrieving, presenting, and traversing information resources on the World Wide Web.	☆
Evaluate the use of client-side scripting and server-side scripting in web pages.	A client-side script will not require access to a remote server so that any processing that is done will be done more quickly and use less bandwidth; This will reduce the load on the server;	☆
Describe how web pages can be connected to underlying data sources.	A webpage can be connected to a database server (for example a SQL-Server), from which the webserver can retrieve information that is to be displayed to the user.	☆
Describe the function of the common gateway interface (CGI).	CGI is making executable programs that are installed on a server available to a client.	☆
Define the term search engine.	A web search engine is a software system that is designed to search for information on the World Wide Web	☆
Distinguish between the surface web and the deep web.	*The Surface Web is that portion of the World Wide Web that is readily available to the general public and searchable with standard web search engines. *The deep web are parts of the World Wide	☆

	Web whose contents are not indexed by standard search engines for any reason. The deep web is opposite to the surface web.	
Outline the principles of searching algorithms used by search engines.	Web search engines get their information by web crawling from site to site.	☆
Describe how a web crawler functions.	A Web crawler is an Internet bot which systematically browses the World Wide Web, typically for the purpose of Web indexing. The "spider" checks for the standard filename robots.txt, addressed to it, before sending certain information back to be indexed depending on many factors, such as the titles, page content, JavaScript, Cascading Style Sheets (CSS), headings, as evidenced by the standard HTML markup of the informational content, or its metadata in HTML meta tags.	☆
Discuss the relationship between data in a meta-tag and how it is accessed by a web crawler.	Google says: "Currently we don't trust metadata because we are afraid of being manipulated". So meta tags can only be one source of information to index a web site. But mostly content based algorithms are being utilized by modern web crawlers.	☆
Outline the purpose of web-indexing in search engines.	Web indexing allows to quickly give the user search results based on the webpages meta data, content or other sources.	☆
Suggest how web	*use good keywords in the content	☆

<p>developers can create pages that appear more prominently in search engine results.</p>	<p>*make the page be linked by many source pages</p>	
<p>Describe the different metrics used by search engines.</p>	<ul style="list-style-type: none"> *Keyword rankings *Backlinks *Organic search traffic *Average time on-page *Pages per visitor 	<p>☆</p>
<p>Explain why the effectiveness of a search engine is determined by the assumptions made when developing it.</p>	<p>...</p>	<p>☆</p>
<p>Discuss the use of white hat and black hat search engine optimization.</p>	<p>White hat search engine optimization is being performed when filling the webpage with relevant data. Hence black hat search engine optimization stuffs the webpage with key words which give barely sense. In order to give a good product to the user, good content of the webpage should be the main tool to get a high search engine ranking.</p>	<p>☆</p>
<p>Outline future challenges to search engines as the web continues to grow. issues</p>	<p>Since the number of webpages and the number of authors increase rapidly, it is getting more and more important for search engines to filter the information the user wants. Due to the larger amount of data in the world wide web,</p>	<p>☆</p>

such as error management, lack of quality assurance of information uploaded.

the crawlers have to be designed more efficiently.