

Differentiate between a web application and an application available in play store in relation to how a user accesses both applications.

A web application is an application that is accessed through a web browser, such as Google Chrome or Firefox, over the internet. In order to use a web application, a user typically needs to enter the URL of the application into the web browser and then interact with the application through the browser.

An application available in a play store, on the other hand, is a software application that is designed to be installed and run on a specific device or operating system. These applications are typically downloaded and installed from an online app store, such as the Google Play Store or the Apple App Store, and can be accessed directly from the device on which they are installed.

In general, the main difference between a web application and an application available in a play store is the way in which the user accesses the application. Web applications are accessed through a web browser, while applications available in a play store are installed and accessed directly from a device.

a. Differentiate between a web application and an application available in play store in relation to how a user accesses both applications. [2 Marks] b. Illustrate your understanding of Client and Server-side programming showing a clear distinction between the two. [6 Marks] c. As a web designer, detail Four goals for designing an easily usable website for your clients [4 Marks] d. i. Why is a form important in a web page? [2 Marks] ii. Write code that will give the following output Surname First name [4 Marks] e. i. What is CSS? [1 Mark] ii. Write a simple CSS syntax and then describe the two main parts. [3 Marks] iii. Contrast between the class selector and the id selector [4 Marks] iv. Describe two types of font families used in CSS [4 Marks]

a. A web application is an application that is accessed through a web browser, such as Google Chrome or Firefox, over the internet. An application available in a play store is a software application that is designed to be installed and run on a specific device or operating system. The main difference between the two is the way in which the user accesses the application. Web applications are accessed through a web browser, while applications available in a play store are installed and accessed directly from a device.

b. Client-side programming refers to programming that is executed by the client (usually a web browser) in order to provide interactivity and dynamic functionality to a web page. Server-side

programming, on the other hand, refers to programming that is executed by the server in order to generate and deliver web content to the client.

An example of client-side programming is JavaScript, which can be used to add interactivity to a web page by allowing the page to respond to user input and perform tasks such as form validation. An example of server-side programming is PHP, which can be used to generate dynamic web content by querying a database and inserting the resulting data into a web page before it is sent to the client.

c. Four goals for designing an easily usable website for clients include:

1. Clear and consistent navigation: A website should have a clear and consistent navigation structure that allows users to easily find and access the information they are looking for.
2. Responsive design: A website should be designed to be responsive, meaning that it should be easily readable and navigable on any device, including desktop computers, laptops, tablets, and smartphones.
3. Accessibility: A website should be designed to be accessible to users with disabilities, including those who use assistive technologies such as screen readers.
4. Load time: A website should load quickly in order to provide a good user experience and keep users engaged.

d. i. A form is important in a web page because it allows users to input and submit data, such as their personal information or responses to a survey. Forms are commonly used to collect information from users and send it to a server for processing.

ii. Here is an example of code that will give the output "Surname" and "First name" on separate lines:

Copy code

```
name "firstname" type "text" name "surname" type "text"
```

e. i. CSS stands for Cascading Style Sheets. It is a style sheet language used for describing the look and formatting of a document written in HTML.

ii. Here is a simple CSS syntax:

Copy code

The two main parts of this syntax are the selector and the property-value pair. The selector specifies which element or elements in the HTML document the style should be applied to, and the property-value pair specifies the style that should be applied.

iii. The class selector is used to apply a style to multiple elements that have the same class name. The id selector is used to apply a style to a single element that has a unique id attribute. The class

selector is denoted by a period (.) followed by the class name, while the id selector is denoted by a hash symbol (#) followed by the id name.

For example:

Copy code

```
.red-text
```

Describe two types of font families used in CSS.

In CSS, font families refer to the specific fonts used to render text on a web page. There are two main types of font families:

1. **Serif fonts:** These fonts have small decorative flourishes or lines at the ends of the strokes that make up the letters and symbols. Examples of serif fonts include Times New Roman, Georgia, and Palatino. Serif fonts are generally considered to be more traditional and formal, and are often used in print materials such as books and newspapers.
2. **Sans-serif fonts:** These fonts do not have the decorative flourishes at the ends of the strokes, and are generally simpler and more modern in appearance. Examples of sans-serif fonts include Arial, Verdana, and Helvetica. Sans-serif fonts are often used on the web because they are more legible at small sizes and on low-resolution displays.

To specify a font family in CSS, you can use the "font-family" property and provide a list of fonts to be used, with the browser using the first font that is available on the user's device. For example:

Copy code

```
font-family
```

In this example, the browser will use the Arial font if it is available, and if not, it will use a sans-serif font as a fallback. You can also specify a generic font family, such as "serif" or "sans-serif", which will use the default serif or sans-serif font on the user's device.

a. Compare and contrast native applications and hybrid applications [6 Marks] b. The objective of any website is to get viewed and read as much as possible. Discuss five key elements that will make your website good in the eyes of a viewer or reader [10 Marks] c. What is the most important form element? Give at least three types. [4 Marks]

a. Native applications are applications that are developed specifically for a particular operating system or platform, such as Android or iOS. They are typically written in the programming language native to the platform, such as Java or Kotlin for Android and Swift or Objective-C for iOS. Native applications are installed directly on the device and have access to all of the device's features and capabilities.

Hybrid applications, on the other hand, are applications that are developed using web technologies such as HTML, CSS, and JavaScript, but are packaged and distributed like native applications. They are typically run within a webview, which is a browser window that is embedded within the application. Hybrid applications have some of the advantages of both

native and web applications: they can be distributed through app stores and accessed like native applications, but they can also be built and maintained more quickly and inexpensively than native applications because they use web technologies.

There are several key differences between native and hybrid applications:

- **Development:** Native applications are typically more complex to develop because they require specific knowledge of the platform and programming language. Hybrid applications, on the other hand, can be developed more quickly and inexpensively because they use web technologies.
- **Performance:** Native applications generally have better performance than hybrid applications because they are optimized for the specific platform and have access to all of the device's features and capabilities. Hybrid applications, on the other hand, may have slower performance because they are running within a webview and may not have access to all of the device's features.
- **Distribution:** Both native and hybrid applications can be distributed through app stores, but native applications must be developed and published separately for each platform, while hybrid applications can be published once and then accessed on any platform that supports the webview.

b. Five key elements that will make a website good in the eyes of a viewer or reader include:

1. **Clear and concise content:** The content on a website should be easy to read and understand, and should clearly communicate the purpose and value of the site to the reader.
2. **Attractive design:** A website should have an aesthetically pleasing design that is visually appealing and easy on the eyes.
3. **User-friendly navigation:** A website should have a clear and logical navigation structure that allows users to easily find and access the information they are looking for.
4. **Fast load times:** A website should load quickly in order to provide a good user experience and keep users engaged.
5. **Mobile-friendliness:** A website should be designed to be easily readable and navigable on any device, including desktop computers, laptops, tablets, and smartphones.

c. The most important form element is the "input" element, which is used to collect user input. There are three main types of input elements:

1. **Text input:** This element allows users to enter text, such as their name or email address. It is denoted by the "input" element with a "type" attribute of "text".
2. **Radio buttons:** This element allows users to select one option from a group of options. It is denoted by the "input" element with a "type" attribute of "radio".
3. **Checkboxes:** This element allows users to select multiple options from a group of options. It is denoted by the "input" element with a "type" attribute of "checkbox".

a. What is a website wireframe? b. Describe two categories of wireframes a web designer can use in his work c. Illustrate three elements that wire framing aids in web design d. Write the code that will give the following: Main Title or Menu Content goes here CSS JavaScript  
Copyright2011 W3School

b. There are two categories of wireframes that a web designer can use in their work:

- c. Wireframing aids in web design by helping designers:

- d. Here is the code that will give the output "Main Title" followed by a menu, with the menu items "CSS" and "JavaScript" on separate lines, followed by "Content goes here" and "Copyright 2011 W3School" on separate lines:

a. There are several limitations of CSS that web designers should be aware of:

4. Lack of support for older browsers: CSS may not be fully supported or may behave differently in older browsers, which can make it difficult to ensure that a website looks and functions consistently across different browsers and devices.
5. Limited support for print styles: CSS has limited support for print styles, which can make it difficult to create websites that are optimized for printing.

b. There are three ways to specify a background color in CSS:

1. Using the "background-color" property: This property allows you to set the background color of an element using a color value, such as "red" or "#ff0000".

Copy code

```
background-color
```

2. Using the "background" property: This property allows you to set multiple background properties at once, including the background color.

Copy code

```
background #ff0000 url image.jpg
```

3. Using the "background" shorthand property: This property allows you to set multiple background properties in a single line of code. The correct order of property values is:

- Background color
- Background image
- Background repeat
- Background attachment
- Background position

Copy code

```
background #ff0000 url image.jpg
```

c. i. A shorthand property in CSS is a property that allows you to set multiple related properties in a single line of code. Shorthand properties can make it easier to write and maintain CSS code by reducing the amount of repetitive code that is required.

ii. The correct order of property values when using the shorthand property depends on the specific property. In general, the order of property values is:

- Required values
- Optional values
- Keywords (such as "inherit" or "initial")

For example, the shorthand property for the "font" property has the following order of property values:

- Font-style
- Font-variant
- Font-weight
- Font-size
- Line-height

- Font-family

Copy code

`font` `12px` `1.5`

a. Describe three ways in which CSS can be applied to web page [6 Marks] b. Explain four link states available in CSS [4 Marks] c. i. Give four list item markers that are used in CSS. [4 Marks] ii. To specify an image as the list item marker, write a cross browser code that will ensure the image is placed equally in all browsers. [6 Marks]

a. There are three main ways in which CSS can be applied to a web page:

1. Inline styles: Inline styles are CSS styles that are applied directly to an HTML element using the "style" attribute. Inline styles are specific to a single element and cannot be reused.

Copy code

`style` `"color: red; font-size: 18px;"`

2. Internal styles: Internal styles are CSS styles that are defined within the head of an HTML document using the "style" element. Internal styles apply to all elements within the document and can be reused.

Copy code

`color` `font-size` `18px`

3. External styles: External styles are CSS styles that are defined in a separate file and linked to an HTML document using the "link" element. External styles apply to all elements within the document and can be reused across multiple documents.

Copy code

`rel` `"stylesheet"` `href` `"styles.css"`

b. There are four link states available in CSS:

1. Link: This is the default state of a link that has not been visited.
2. Visited: This is the state of a link that has been visited by the user.
3. Hover: This is the state of a link when the user's mouse pointer is hovering over it.
4. Active: This is the state of a link when it is being clicked or activated by the user.

These states can be styled using the ":link", ":visited", ":hover", and ":active" pseudo-classes in CSS.

c. i. Four list item markers that are used in CSS

c. i. Give four list item markers that are used in CSS. [4 Marks] ii. To specify an image as the list item marker, write a cross browser code that will ensure the image is placed equally in all browsers. [6 Marks]

c. i. Four list item markers that are used in CSS are:

1. Disc: This marker is a solid circle.
2. Circle: This marker is an open circle.
3. Square: This marker is a solid square.
4. Decimal: This marker is a number with a period, such as "1." or "2."

To specify a list item marker in CSS, you can use the "list-style-type" property with one of the above values. For example:

Copy code

```
list-style-type
```

ii. To specify an image as the list item marker, you can use the "list-style-image" property in combination with the "list-style-position" property. The "list-style-position" property specifies whether the image should appear inside or outside the list item.

To ensure that the image is placed equally in all browsers, you should use vendor prefixes for certain properties. Here is an example of a cross-browser code that will specify an image as the list item marker:

Copy code

```
list-style-image url image.png list-style-position list-style-position list-style-position
```

This code specifies the "image.png" file as the list item marker, and sets the position of the image to be inside the list item. The vendor prefixes "-webkit-" and "-moz-" are used to ensure that the code works in all major browsers.

a) What is the difference between SOAP and REST? b) What is the use of a namespace in Web Development? c) What are the newly introduced input types in HTML5? d) What are the form elements that support media content in HTML5? e) What is SVG and why is it used? f) What is the use of Canvas in HTML? g) What is the difference between Canvas and SVG? h) What is the use of CORS

a) SOAP (Simple Object Access Protocol) and REST (Representational State Transfer) are two different architectural styles for building web services.

SOAP is a standardized protocol for accessing web services that uses XML to encode messages and HTTP for transport. It is typically used for building complex, enterprise-level web services that need to be highly reliable and secure.

REST is a lightweight architectural style for building web services that uses HTTP and simple, resource-based URLs to expose data and functionality. It is typically used for building simple, lightweight web services that are easy to consume and scale.

There are several key differences between SOAP and REST:

- Message format: SOAP uses XML to encode messages, while REST can use any format (such as XML, JSON, or plain text) as long as it is consistent and easily parseable.
- Protocol: SOAP uses HTTP as a transport protocol, while REST can use any protocol (such as HTTP, TCP, or SMS) as long as it is consistent and reliable.
- Complexity: SOAP is generally more complex than REST, as it has a more rigid structure and requires the use of specialized tools and libraries. REST is generally simpler and easier to



implement, as it uses standard HTTP methods and does not require any specialized tools or libraries.

b) A namespace in web development is a way to identify and group related elements in a document. Namespaces allow you to define unique names for elements and attributes, which helps to prevent conflicts with elements and attributes that may have the same name but are used for different purposes.

For example, you might use a namespace to define a set of custom elements and attributes that are specific to your application, while using a separate namespace for elements and attributes that are defined by other standards or frameworks.

c) The following are some of the newly introduced input types in HTML5:

1. "color" input type: This input type allows users to select a color using a color picker.
2. "date" input type: This input type allows users to select a date using a calendar widget.
3. "email" input type: This input type allows users to enter an email address. It can also be used to validate the format of the email address.
4. "number" input type: This input type allows users to enter a numerical value, and can be used to specify minimum and maximum values and step increments.
5. "range" input type: This input type allows users to select a numerical value using a slider widget.

d) The following are some of the form elements that support media content in HTML

d) What are the form elements that support media content in HTML5? e) What is SVG and why is it used? f) What is the use of Canvas in HTML? g) What is the difference between Canvas and SVG? h) What is the use of CORS

d) The following are some of the form elements that support media content in HTML5:

1. "audio" element: This element allows you to embed audio content, such as MP3 files, in a web page.
2. "video" element: This element allows you to embed video content, such as MP4 files, in a web page.
3. "object" element: This element allows you to embed multimedia content, such as Flash or Silverlight, in a web page.
4. "embed" element: This element allows you to embed multimedia content, such as YouTube videos or Google Maps, in a web page.

e) SVG (Scalable Vector Graphics) is a language for describing two-dimensional vector graphics. It is used to create images and graphics that can be scaled and resized without losing quality, and is well-suited for creating graphics that need to be displayed on high-resolution displays or printed at high resolutions.

SVG is often used in web development to create graphics that are responsive and can be easily manipulated using CSS and JavaScript. It is also commonly used to create charts, diagrams, and maps.

f) The "canvas" element in HTML is used to draw graphics on the fly using JavaScript. It allows you to create and manipulate graphics, such as lines, shapes, and images, in a web page in real-time.

The canvas element is often used to create interactive graphics, such as games, charts, and visualizations, or to create complex visual effects, such as particle systems or image filters.

g) There are several key differences between canvas and SVG:

- Vector vs. raster graphics: SVG is a vector graphics format, which means that it uses mathematical algorithms to draw graphics. This makes SVG graphics scalable and resolution-independent. Canvas, on the other hand, is a raster graphics format, which means that it uses pixels to draw graphics. This makes canvas graphics resolution-dependent and less suitable for scaling.
- Performance: SVG graphics are generally more efficient and perform better than canvas graphics, particularly for large or complex graphics. This is because SVG graphics are drawn using mathematical algorithms, which are generally faster to process than the pixel-based rendering used by canvas.
- Interactivity: Canvas provides more advanced interactivity and animation capabilities than SVG, as it allows you to directly manipulate pixels on the canvas using JavaScript. SVG, on the other hand, is generally better suited for static or less interactive graphics.

h) CORS (Cross-Origin Resource Sharing) is a mechanism that allows web pages to make requests to a different domain than the one that served the page. CORS is used to enable secure and controlled access to resources from other domains, and is typically used to allow web pages to make API calls to servers or to include resources from other domains (such as images or scripts).

CORS is implemented using HTTP headers, which are sent by the server and

a) Describe how page loading time be reduced? b) Explain the use of CORS? c) Difference between local Storage and session Storage objects? d) Outline some of the new features that are introduced in CSS3? e) What is responsive web design (RWD) in HTML and CSS? t) Outline some of the types of CSS that are used"? (6 marks)

a) There are several ways to reduce page loading time:

1. Optimize images: Large images can significantly increase page loading time. To reduce page loading time, you can optimize images by reducing their size and using appropriate file formats (such as JPEG or PNG).
2. Minimize HTTP requests: Each HTTP request made by a web page adds to the page loading time. To reduce page loading time, you can minimize HTTP requests by combining or minimizing resources (such as CSS and JavaScript files), and by using caching techniques.
3. Enable compression: Enabling compression (such as Gzip) can significantly reduce the size of resources (such as HTML, CSS, and JavaScript files) and reduce page loading time.

4. Use a content delivery network (CDN): A CDN is a network of servers that deliver content to users based on their location. Using a CDN can reduce page loading time by serving content from a server that is closer to the user.

b) CORS (Cross-Origin Resource Sharing) is a mechanism that allows web pages to make requests to a different domain than the one that served the page. CORS is used to enable secure and controlled access to resources from other domains, and is typically used to allow web pages to make API calls to servers or to include resources from other domains (such as images or scripts).

c) The "localStorage" and "sessionStorage" objects are types of web storage that allow web pages to store and retrieve data on the client side. There are several key differences between "localStorage" and "sessionStorage":

- Persistence: "localStorage" is persistent, which means that the data stored in "localStorage" is not lost when the user closes the browser or shuts down the computer. "sessionStorage", on the other hand, is only available for the duration of the

c) Difference between localStorage and sessionStorage objects? d) Outline some of the new features that are introduced in CSS3? e) What is responsive web design (RWD) in HTML and CSS? t) Outline some of the types of CSS that are used?"

