BSCCS2003: Quiz - 1 Descriptive Questions Sample Solutions

1. Suppose a client machine C is communicating with a data center D located 7500 km away from C. Assume that the TCP connection has been established and is kept alive. If each new request can be sent only after receiving an acknowledgement from D for the previous request, then what is the maximum number of requests that can be sent from C to D in one second? (Assume speed of light in cable is 2e8 m/s).

   Note : Round up to a maximum of two decimal places. For example: If the answer is 15.44444, then it should be written as 15.44 only. [Descriptive : 4.5 points]

Solution: Recall that,

$$Speed = \frac{Distance \text{ (in m)}}{Time \text{ (in s)}}$$

$$\implies Time = \frac{Distance \text{ (in m)}}{Speed \text{ (in m/s)}}$$

So,

$$time = \frac{7.5 \times 10^6 \text{ m}}{2 \times 10^8 \text{ m/s}}$$

$$\implies time = 37.5 \text{ ms}$$

The round trip time $= 37.5 \times 2 = 75$ ms.

Number of requests in one second $=$

$$\frac{1000 \text{ ms}}{75 \text{ ms}}$$

$$\implies 13.3333 \text{ requests}$$

Therefore, the answer is $\approx$ **13.33 requests / s**.

2. Consider the following code and determine the final value of the properties: border, color, font-weight, font-size and padding that will be applied to the p element by the browser. [Descriptive : 4.5 points]

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="UTF-8" />
    <title>Welcome</title>
    <style>
      .class1 {
        border: 2px solid green;
        color: blue;
        font-weight: normal;
        font-size: 3em;
      }

      .class2 {
        border: 3px solid yellow;
      }

      #id1 {
        font-size: 2em;
      }
      p {
        font-weight: bold;
        font-size: 4em;
        padding: 20px;
      }
    </style>
  </head>
  <body>
    <p class="class1 class2" id="id1" style="color: yellow">
      Welcome to iitm online degree programme.
    </p>
  </body>
</html>
```

Solution:

An inline CSS rule overrides the rule specified inside the style tag or external style sheet. So, color: yellow will be applied by the browser.

Specificity of id selector > Specificity of class selector > Specificity of type selector. So, font-size: 2em will override all the font-size property value declared inside the type selector and class selector.

border: 3px solid yellow will be applied because class2 comes after the class1 inside the style tag.

font-weight: normal will be applied because Specificity of class selector > Specificity of type selector

and padding: 20px will be applied.

3. Suppose a client machine C is communicating with a data center D located 15000 km away from C. Assume that the TCP connection has been established and is kept alive. If each new request can be sent only after receiving an acknowledgement from D for the previous request, then what is the maximum number of requests that can be sent from C to D in one second? (Assume speed of light in cable is 2e8 m/s).

Note : Round up to a maximum of two decimal places. For example: If the answer is 15.44444, then it should be written as 15.44 only. [Descriptive : 4.5 points]

Solution: Recall that,
$$Speed = \frac{Distance \text{ (in m)}}{Time \text{ (in s)}}$$

$$\implies Time = \frac{Distance \text{ (in m)}}{Speed \text{ (in m/s)}}$$

So,
$$time = \frac{15 \times 10^6 \text{ m}}{2 \times 10^8 \text{ m/s}}$$

$$\implies time = 75 \text{ ms}$$

The round trip time $= 75 \times 2 = 150$ ms.

Number of requests in one second $=$

$$\frac{1000 \text{ ms}}{150 \text{ ms}}$$

$$\implies 6.6666 \text{ requests}$$

Therefore, the answer is $\approx$ **6.66 requests / s**.

4. Consider the following code and determine the final value of the properties: border, color, font-weight, font-size and padding that will be applied to the p element by the browser. [Descriptive : 4.5 points]

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="UTF-8" />
    <title>Welcome</title>
    <style>
      .class1 {
        border: 2px solid green;
        color: blue;
        font-weight: bold;
        font-size: 2em;
      }

      .class2 {
        border: 5px solid yellow;
      }

      #id1 {
        font-size: 3em;
      }
      p {
        font-weight: normal;
        font-size: 4em;
        padding: 20px;
      }
    </style>
  </head>
  <body>
    <p class="class1 class2" id="id1" style="color: red">
      Welcome to iitm online degree programme.
    </p>
  </body>
</html>
```

Solution:

An inline CSS rule overrides the rule specified inside the style tag or external style sheet. So, color: red will be applied by the browser.

Specificity of id selector > Specificity of class selector > Specificity of type selector. So, font-size: 3em will override all the font-size property value declared inside the type selector and class selector.

border: 5px solid yellow will be applied because class2 comes after the class1 inside the style tag.

font-weight: bold will be applied because Specificity of class selector > Specificity of type selector

and padding: 20px will be applied.