

**Programming Assignment #3**  
**“IP Address Manager”**  
**Blackboard Announcement: October 10, 2018**  
**Formally Posted: October 23, 2018**  
**Due Date: November 8, 2018**

**Concepts:** IP addressing, visual interfaces, storage

**Skills:** HTML, CSS, Javascript

**Background Information:**

We discussed in class various models of IP addressing. In particular, the 32-bit IPv4 and 128-bit IPv6 schemes. IPv4 was further divided into five classes A, B, C, D, E, which differ both function as well as division between prefix and suffix, as well as a “classless” model which has an “arbitrary” boundary (specified by a “mask”) between prefix and suffix.

We will assume these are all “public addresses” that need to be globally unique – at least in conjunction with the network mask – as opposed to the private addresses which were separately discussed.

**Description of Assignment:**

The goal of this assignment is to provide an interface for assigning and managing IP addresses for the various types described above. There are several pieces of information that will need to be entered by the user:

- The choice of IPv4 or IPv6
- The choice of classful (for IPv4) or classless
- For classful addressing, the choice of class A-E
- For classless, the mask that determines the boundary between prefix and suffix for IPv4, or between the global prefix and subnet prefix for IPv6
- For IPv6, the choice whether zero compression should be applied to colon-hex
- The choice of how many IP addresses are required by the user
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You will probably use either a radio buttons or a dropdown to allow the user to make these choices

If the user chooses “Class E”, simply indicate that such addresses are “reserved” and no further action is required.

It is recommended when displaying the addresses whether as bits (0's and 1's), dotted decimal notation for (IPv4), or colon-hex for IPv6 that Courier font be used as it is fixed length. You should use a “class” (in the HTML/CSS sense of the word) within the HTML and corresponding CSS to handle that styling.

While you may assume that you are the sole authority on assigning IP addresses, you need to ensure that you don't reassign address that have already been used. To this end you will need some kind of persistent storage. You can use a text or xml file, a database if you are so inclined, or for the purposes of this assignment, it is probably adequate to use the store available within the user's browser. (See [https://www.w3schools.com/html/html5\\_webstorage.asp](https://www.w3schools.com/html/html5_webstorage.asp))

Create a new menu item on your course homepage to link to this assignment.