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| **Teacher: ROSE** |
| **Date: 8/15/18** |
| **Subject / grade level: Computer Science – AP CS Principles** |
| **Materials:**  **objectDemo\_student**  **objectDemo\_teacher** |
| **Essential Question(s):**  How can we use an object (key-value pairs) to count unique items? (inventory)  How can we make sense of (quantify/measure) this data?  How can we sort an object? |
| **Essential Standards (NGSS) and (CCSS):**   |  |  |  | | --- | --- | --- | | **Science & Engineering Practices (SEPs)** | **Disciplinary Core Ideas (DCIs)** | **Crosscutting Concepts (CCs)** | | N/A | N/A | **N/A** |   **Common Core State Standards (CCSS):**  3A-DA-11: Create interactive data visualizations using software tools to help others better understand real-world phenomena.  3A-Da-12: Create computational models that represent the relationships among different elements of data collected from a phenomenon or process. |
| **Lesson objective(s) - *Students will demonstrate understanding or learning around the following Big Ideas:***  *Objects in JavaScript are collections of key-value pairs, similar to an associative array or dictionary data structure. There is no implied order of key-value pairs. One common use of an object is to keep track of an inventory of items.*  *Arrays are an ordered list of items. We can use arrays to sort an object. By copying the keys into an array, we can then sort by their respective values.* |
| **Differentiation strategies to meet diverse learner needs:**  Extension: visualization with a bar graph (according to % totals calculated) |
| **ENGAGEMENT (*Anchoring Phenomenon*)**   * *Teacher will run the teacher demo which visualizes the packets/IP.* * *How is the bar graph generated? (shape, size, color)* * *How do you keep track of the different IP address and the packets associated with them?* * *How do you sort this data?* |
| **EXPLORATION**   * *Teacher shares the socket object as JSON* * *Students are invited to make sense of the data in the console using for-in loops* * *1) output the number of keys (ip addresses)* * *2) sum the values (packets)* * *3) calculate percent totals for each key (ip)* |
| **EXPLANATION**   * *Shiffman’s website with videos:* [*https://shiffman.net/a2z/text-analysis/*](https://shiffman.net/a2z/text-analysis/) *(assign as previous night’s HW)* * Review the Text Concordance section * Instead of a text concordance, we will create an IP/socket concordance * As objects are unordered collections of key-value pairs, we will use an ordered data structure we are familiar with (arrays) to sort the keys by their respective values |
| **ELABORATION**   * *As a class or in partners:* * *a) Create a student object to keep track of grades, absences, etc. OR* * *b) Create a classroom inventory object to keep track of classroom items.* * *Sort the object by highest values* * Sum the values and calculate % total for each key |
| **EVALUATION**   * *There are 8 tasks to complete along with a challenge in objectDemo\_student* |