1. Merge Sort vs. Insertion Sort

 *Hypothesis*: I believe that the point that the algorithms run-time will intersect will between 100-200 datapoints, because that seems to be when squaring a number really shoots up.

 *Methods*: Describe step-by-step the experiments that you conduct. Provide the source code that you use, and details about which compiler you use, how you compile it (*e.g*., optimization flags), and the range of inputs that you feed into your program.  You may provide a link to a repository rather than copying the code into your file.  Your methods should accurately reflect how you actually generated your data **such that, someone reading them can replicate your experiment**.

 *Results*: Present the data that your experiments produced .  In most cases this will be a graph (as described in each question) and a brief explanation to make sure the reader understands the data in that graph. Graphs should be clearly labeled (axis labels, etc)!

 *Discussion*: Provide a brief discussion of your data.  Did anything about it surprise you?  Were there any unexpected challenges in collecting the data?  This section is where you will answer specific questions posed in each of these problems.

 *Conclusions*: Present a concise take-away for this experiment.  For example, “Under the conditions tested, data structure A produces a faster algorithm for *n* < 1000, while data structure B is faster for *n* > 1500.  For *n* between 1000 and 1500 the two data structures are indistinguishable.”

1. Hybrid Sort:

 *Hypothesis*: I believe that the point that the algorithms run-time will intersect will end up being the best k-value because it indicates the point at which the size of n is more efficiently sorted by one algorithm or the other.

 *Methods*: Describe step-by-step the experiments that you conduct. Provide the source code that you use, and details about which compiler you use, how you compile it (*e.g*., optimization flags), and the range of inputs that you feed into your program.  You may provide a link to a repository rather than copying the code into your file.  Your methods should accurately reflect how you actually generated your data **such that, someone reading them can replicate your experiment**.

 *Results*: Present the data that your experiments produced .  In most cases this will be a graph (as described in each question) and a brief explanation to make sure the reader understands the data in that graph. Graphs should be clearly labeled (axis labels, etc)!

 *Discussion*: Provide a brief discussion of your data.  Did anything about it surprise you?  Were there any unexpected challenges in collecting the data?  This section is where you will answer specific questions posed in each of these problems.

 *Conclusions*: Present a concise take-away for this experiment.  For example, “Under the conditions tested, data structure A produces a faster algorithm for *n* < 1000, while data structure B is faster for *n* > 1500.  For *n* between 1000 and 1500 the two data structures are indistinguishable.”

1. Comparing Dictionary Structures