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Homework 4

1. Arrays are better in scenarios where you need to access and modify information a lot. This is an example from part b on number fifteen in the first exam: “Your client receives 1000 by 1000 size images of Lung X-rays at the rate of 100 perhour. Each time she receives an image, she wants to store all the 1000000 pixels of the image into a data structure, by replacing all the pixel data that was stored for the previous image with the pixel values of this new image. Justify which data structure you would suggest her to use to store all the pixels of any current image. Suppose the previous image is used in some way before being overwritten.”

Doubly linked lists are better in scenarios where you need to add and delete information a lot. This is an example from part a on number fifteen in the first exam: “Your client is the librarian at the Kraemer Family Library. She says she needs a data structure to hold data pertaining to each book in the library. The data she needs to hold for each book are the following: the catalog details of the book, including where the book is in the library; whether or not the book has been issued to anyone, and includes the student's information. When a book is lost, she needs to delete the data of the book from the data structure. When a new book arrives at the library, she needs to store the data of this new book in the data structure. Justify the data structure you would suggest her to use based on the properties of an Array, a Linked List, and a Stack, and also based on your common understanding of the book transactions that occur in a library.”

1. V O (n2) because one of the for loops depend on list.size and another depends on i which ends up being list.size.
2. VI O (n3) because one of the for loops depends on list.size and the other two depend on variable that become list.size.