2a) The computing innovation that my artifact represents is known as barcodes. They are strips of black and white that represent data. This data can be used to identify an object, identify a person, or act as a link to another source. The artifact shown starts with going through the basics of barcodes and how they are used. Then, the origins of barcodes are shown below the basics. The graphs at the bottom show how barcodes have grown in popularity over the years.
2b) I used Google Drawings to create my artifact. I put the pictures and uses of bar codes at the top. I then put graphs at the bottom for statistics purposes. Then, I chose pictures of different types of barcodes and provided an explanation for what each is used for. The diagram on the left shows grocery store usage. In the graph area, I provided explanations on what these graphs were.
2c) One beneficial effect that barcodes have on society is that it reduces labor costs, which come from having to do more manual labor. The warehouse system becomes much easier to manage, replenishment to and from transactions reduces manual labor, and less paperwork is needed for taking inventory. (1) Another great effect barcodes have on society is that they reduce the possibility of errors in entering data. Entering data in manually has a substantially higher rate of error than barcodes, so scanning barcodes is a lot faster and more accurate. (2) One harmful effect that barcodes have on society is that applying barcodes to items in warehouses is a time-consuming process. Since each barcode is unique, each item has to be labelled individually, which wastes time and money. (1) Another harmful effect barcodes have on society is that the checkout process could be delayed if the barcode is smeared, smudged, torn, or printed on a torn section of packaging. This creates problems for the scanner because it can't scan the code properly, and for the store as the item with the barcode cannot be sold anymore. (3) Another disadvantage of barcodes is that when discounts are involved, some employees may forget to apply the discount to the code, delaying the checkout process. Clerks are more accustomed to scanning quickly and automatically, so when they have to manually put in a discount or other feature they're not used to, the clerks become confused and inaccurate when they type the code in manually. (3)
2d) The kind of data used in barcodes are symbology, 1D encoding, and laser interpretation. Symbology determines the mapping and interpretation of the encoded data, which allows the scanning device to know when a digit or character starts and stops. Barcodes are a simple way to record data in a number of ways. Continuous symbology starts with a black line and ends with a white line or space. Discreet symbology has characters that are encoded as a black line, then another black line. (4) 1D encoding is known as linear barcode technology. This defines a barcode with lines of varying length, color, and sequences, which can

define a character or number. There are 2 different types of 1D encoding that are often used: Code 39 and Code 128. Code 39 can check if there are any errors in the barcode and if the barcode can be decoded. Code 128 can encode all 128 characters and can build upon the previous encoding. (5)

2e)

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