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I'm an engineer with a keen interest in programming! Have you ever felt overwhelmed by algorithm problems and don't know where to start? One thing I would like to do when programming, is to understand the problem before I get into the program. Otherwise, if I try to get logic on the go, I usually end up having to debug what the hell is going on in the program and adapt to those outputs. An undesirable improvisation on the way: it's a waste of time and you probably won't be able to explain to another person why your program works with all the adjustments you had to make for it. So let's start applying the 4 steps in the image above to sort the array of numbers from the smallest to the largest. Decompose: Breaking the problem into small piecesFirst step is to decompose a seemingly big problem to sort everything at a time: how can we compare everything with everything? There are many ways to approach this problem, but for this example, we will use a simple sorting algorithm 'bubble of sorts'. It's called a bubble of sorts, because the greatest number of firsts to go to the right place and they go up like bubbles in water. So let's start with the smallest step to the most common: 1.- Compare the number 2, find the biggest one and make sure it's in the right direction.2.- Repeat comparisons until you're done with the array, the result is the greatest number to be moved, will be the first to be in the right place.3.- Repeat the passages through the array while all the local big numbers are in the right place. In other words, until we're done sorting. Here's how the array will change: Pattern matching: Finding similarities between thingsFor pattern matching we can understand that we repeat the smallest step of comparison as many times as necessary, so there should be an inside loop that repeats until we finish one pass. And we also see that we repeat the passages through the array until we've done the sorting, that is, another loop. Abstractions: Pull out specific differences to make one common decisionIn abstractions we have to bring out special cases, for example, in the GIF above, you can see that I do not compare to the very end of the array: I compare positions 0-1 to positions 9-10, (I use index 0 convention) the next time I compare with 0-1 to 8-9, next time from 0-1 to 5-6, next time from 0-1 to 3-4 The next time from 0-1 to 2-3 and then I know I've finished sortingWhy? As? I don't go through the entire array because it's not necessary since I already know that the latest numbers are already sorted. But it won't always be with these specific positions, so should we think there will be a general rule that can apply to any array? My solution is to use a variable, keeps the position where I made the last change in one passage array; I can be sure that everything to the right of the last change will already be sorted, and I don't need to check the check numbers again, it saves the time of computing :)Algorithm: List of steps to accomplish the task And the final part! Algorithm. I created 2 variables: len to know where I finished with the array, my position limit to save the last change that I talked about in the previous section. How do I determine the limit? Easy, just count the pairs for the first pass through the array, the one that treats all pairs. (I'll use ruby code to illustrate)len and arr.size - 1st len Nos. 11-1 and 10. consider I will use the exclusive range, so that it will include only 0.1,2,3,5,6,7,8,9.The value for the last change will be set each time, when we make a swap that will come later, at the moment, let's put it on the position 0Then to make a comparison and change the elements accordingly, be sure to update the variable position for the last changed position.if arr'i and 1 arr'i, arr'i 1 - arr'i, arr'i. And i'1 is the next position (for comparison), in this case position 1. In ruby, we can use arr'i, arr'i'i-1, arr'i, to replace the positions of items in the array. In javascript the swap can be done like this:let temp = arr[i] arr[i] = arr[i+1] arr[i+1] = tempUse an if to do the swap only when the first element is greater than the next, otherwise, we don't want to modify anything, so I end the if. Then we repeat until we finish going through the array... to Len, the limit. Notice how the position variable changes to position 8 because it didn't make any moves when it was in the 9 iteration i.In the code it is represented by the loop, I use the #times method in ruby, but you can imagine it in other languages as javascript as: for (var i q 0, i'lt, i')len.times do if arr'i'i'i'i and 1arr'i, arr'i and 1 - arr'i 1, arr'i' position, I end endWe want our new limit the next time we do this again will be the last position we changed earlier, so we'll assign it to our len. (a) And the next time we repeat this process, we want to start with a discarded position so that it can be used again, so we assign a No 0 position at the beginning of each repetition. b) We will also tell our biggest cycle to do this while our len is larger or equal to 1 because we want to stop when we are left with a couple of items that we know have already sorted, element 0 and element 1 when len 0. (c) while the flax is zgt;x 1 qlt;---------- (c) position 0 zlt;---------- (b) len.times do, if arr'i zrr'i , arr'i and 1 Arrzy y 1, arr'i' position , I end the len th position (qlt;---------- (a) endFinally, we return the modified array, and the full code will be as follows: def bubble_sort (arr) len - arr.size - 1, while len qt. '> scars'i - 1 scar'i, scar'i - scar'i - arr'i - arr'i. scars'i. 10, 4, 6, 8, 5, 2, 4, 6, 8, 9, 22, 2, 4, 5, 6, 6, 8, 8, 9.10, 22, I hope this will help you as a guide to start thinking about software solutions in the future. Thanks for reading until here :)I'll leave you with a little animation representing the process that comes with array and variables: Sign up to get a daily preparation of top tech history! Home eyeglasses lenses In an increasingly digital age, we spend more time every day looking at our computers, watching TV and tinkering on our smartphones and tablets. All that screen time can add up to a lot of eye strain, but blue light locking computer glasses can offer some relief. What are computer glasses and how do they block blue light? What is blue light? What are the blue light glasses? Our guide will help you choose the computer glasses that are best for you. SEE RELATED: What are blue light glasses and do you need them? What are computer glasses? Computer glasses have specially covered lenses designed to relax the eyes when using a computer. These lenses are designed to prevent digital eye strain, headaches, dry eyes, blurred vision and other symptoms of computer vision syndrome. Prescription and over-the-counter computer glasses are available. Computer glasses should improve intermediate vision, which is an area of about 20-25 inches in front of your face and the optimal distance to stay away from the screen. Not sure if your monitor is far enough away from your eyes? If your screen is at arm's length, it's the perfect distance from your eyes. FEELING THE DIGITAL TENSION OF THE EYES? Find an eye doctor near you and schedule a meeting. What is blue light? Electronics like your smartphone, computer and TV give out blue light that can disrupt sleep cycles making it difficult to get the rest of your sleep. So if someone ever warned you to put your phone away an hour or so before bedtime, they were giving you sound advice.Computer glasses, similar to night mode on many smartphones, block blue light to help your body maintain a natural day-night cycle. Computer glasses also make it more convenient to look at the screen and easier to focus on the work at hand, no matter what time it is. What are the computer glasses? Computer glasses can be made with different types of lenses (recipe and over-the-counter), with different lens shades to filter or block different percent of blue light, and with different lens coatings (such as anti-glare). What are the best computer glasses for you? It depends on your overall vision, the type of work you do - and whether you're looking for a recipe or over-the-counter lenses.INFOGRAPHIC: What are the best computer glasses? Recipe or over-the-counter computer If you want your everyday prescription glasses to work like computer glasses, you'll have to order new lenses or or computer prescription glasses. Whether you need one vision or progressive lenses (or bifocal or trifocal lenses), you can easily apply a blue light filter. If you shop around online, you can find prescription computer glasses for as low as $31, although prices will vary depending on the strength of the recipe, lens upgrades and the frames you order. If you don't need vision correction, prefer to wear contacts or don't want to shell out for a new pair of prescription glasses, plano computer glasses (with over-the-counter lenses) are an inexpensive way to protect your eyes from blue light. Online stores offer many frame styles and hue options to match your personal style and budget. Objective shades or coatings? Computer glasses come in different shades of lens and coatings. Here's how lens shades and coatings block blue light and ease the digital eye strain caused by hours spent looking at screens at work and at home: Lens shades: If you're looking for some serious blue light locking - we're talking up 94% - you should invest in a pair of yellow- or amber-hued lenses. On the spectrum of light, blue light has a short, wave-like wavelength, while amber and yellow have long, free wavelengths. Because of this, amber and yellow shades are able to compensate and absorb blue light before it reaches your eyes, allowing you to sleep better at night and reduces the symptoms of digital eye strain. Lens coatings: Since tinted lenses are not for everyone, there are some clear lens options that also provide blue light protection. The anti-reflective coating is also useful for computer glasses because it prevents screen glare from irritating or distracting your vision. READY TO SHOP FOR COMPUTER GLASSES? Find an optical store near you or shop online. Can I wear blue light glasses all day? In most cases, wearing blue light glasses all day is harmless. Blue light can cause a number of eye and sleep issues, but it is also important for our mental and emotional health. Wearing computer glasses all day is safe and is unlikely to cause any problems, but if you start experiencing mood changes, you can save your blue light glasses for your digital screen time. If you have experienced symptoms of digital eye strain, it is best to see your eye doctor. Get an exam to make sure that there is nothing else causing your symptoms, and ask if computer glasses can help make your workday more comfortable. Page updated January 2020 2020

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