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Virus worksheet pdf

At PEAK6 Capital Management, we have some well-nourished boxes for processing intraday data that you've probably already read about in A Parable about prices, processors and memory. While we all fight the spread of COVID-19 by working remotely and isolating, Kevin Newman of Simplifying Disaster Recovery with Pure ActiveCluster and VMWare MetroCluster fame had a great idea of how we could do more. He shared some work he had done getting Folding@Home up and running in our #general chat: @knewman: I've struggled to think about how I can help in all of this, since I know about as much about medicine or biology as I do about power tools (embarrassingly small). It's also hard to be socially distant and do something useful at the same time 😩. My mother, for example, knows how to sew, so she joins a community group sewing emergency face masks. I know the calculator, so I was excited to hear that I can redirect my many home computers and servers on to something useful: Folding@Home. Kevin's heads up in #general made us think about how we can do even better putting PEAK6 machines to work too. What's Folding@Home? First, some quick background. Folding@Home is a Stanford Medicine project that uses donated calculation to discover new protein folding patterns. Protein folding requires a lot of calculation, so the Folding@Home project distributes the work across many different computers all over the world. Breakdown of work allows each computer to do a bit of the calculation. When the calculation is complete, the resulting protein folding patterns provide insight into researchers and doctors so they can better treat the virus. If you want to read more about the platform and how they help with COVID-19, Greg Bowman of the Folding@Home project has a great write-up here. Downloading Virus for GoodIf you want to follow along and offer some of your own calculator, you can check Folding@Home installers site here or guides here. Whether you're on a mac, windows or linux machine, there's great installation guide to get you up and running fast. Once you've got things installed, you can open up to both FAHControl and FAHViewer as shown below. And that's pretty much it. You can configure how much load and when to run, but otherwise FAHClient runs in the background and retrieves new work as assigned. You may also notice that the client idle a bit before you are assigned work. There were over 400,000 new downloads of Folding@Home software last week, so a lot more planning is going on and they're working to make sure that all of these compute are put to use. Better with a Pinch of SALTNow, installing Folding@Home client on a few machines is pretty easy, but what if you have to install it on a lot of machines? At PEAK6 we are all about automation and repeatable builds, deployment, patching, etc. This allows us to quickly deliver our as well as easy to maintain all the parts and pieces that make up the different systems that support our trading It's also really cool. We use SaltStack, or Salt, for the automation of our systems. It is similar to other distributed automation platforms like Ansible and Puppet. Salt expresses the configuration in a Salt State module or yaml file that describes how to configure the system. Here's a quick example of folding-at-home.sls: {# Folding At Home Defaults #} {%- set fah_client_version = '7.4.4_amd64' %} {%- set fah_control_version = '7.4.4-1_all' %} fah: pkg.installed: - pkg: - fahclient: {{ fah_client_version }} - fahcontrol: {{ fah_control_version }} service.running: - name: FAHClient file.managed: - name: /etc/fahclient/config.xml - user: fah_user - group: fah_group - mode: 644 - source: - salt://ubuntu-common/files/etc/fahclient/config.xml The first three lines call variables for versions of the client and control software. The next defines a state call 'fah' with three details: 1) the packages to be installed, 2) the services to run after installation, and 3) a managed file, which in this case is a Folding@Home configuration. Once we have this mode defined, we can apply it throughout our environments as needed, pretty cool huh? Working in Docker/K8s TooIf you are more of a container/Kubernetes stack engineer, check out . This has both a Dockerfile with configuration for Folding@Home and multiple Kubernetes configuration files for installation. It's 22:00, you know what your computers do? We do! After automating the Folding@Home on March 22, we had a pretty good showing, even though it was our first run of it. The statistics show us in the top 10% of donors for the day with a rank of 198,009 out of 2,294,579! Finance by Day, Folding by Night Tom Simpson, CEO PEAK6 Capital Management, recently sent a note to the company reminding us of the importance of the work we do in the markets. Since you might be wondering what all these servers do during the day, I'd like to share Tom's thoughts with you. PEAK6 Capital Management is a provider of liquidity in the market. This means committing our energy, time, talent and capital to providing orderly and transparent equity and options markets. These markets create liquidity customers and the overall market desperately needs, especially now with all the volatility and disruption caused by COVID-19. Put another way, PEAK6 Capital Management ensures that financial institutions have a way of hedging their risk. When companies large and small need to raise cash, or businesses need to finance investments or current expenses, our efforts ensure that these financial institutions can confidently provide access to loans and credit greatly reducing the impact of economic disruption. And that's why financial markets, trading and futures exchanges, are near the top of the list of major companies, and also why we work so hard to our systems are online during this crisis. So when our servers have finished their day-to-day work in the markets, now we are to work battling COVID-19 through protein folding. There are plenty of other ways to get involved and help too, like Kevin mentioned when he first put this idea out there. You can donate to charities and food banks, you can hack on covid-19 AI challenges at Kaggle, or even 3d print highly charged supplies. Most importantly though, the best thing you can do is take care of yourself and make sure you fight the spread by staying home! A quick note about securityAs a quick note, we create Folding@Home project using the same limitations and highly revised profile we apply to our end user desktop group. This is neat because other than installing the software, there is no additional firewall, proxy or security configurations you will need to adjust in most cases. Folding@Home is pull-based with the client configured to direct communication to trusted servers at Stanford and digital signatures to check the validity of all folding inputs and outputs. There is a remote access feature for expert users to activate across many customers, but out of the box, this is disabled and locks communication to localhost. While nothing is foolproof, and you should always assess how new software affects your ecosystem's security footprint, we impressed by both the ease and thoughtfulness of the solution. Kudos to the engineers! For more information, Folding@Home the project security information here. Quick Update on 4/5/2020We have run the above Folding@Home setup during off hours in just over 12 days. In that time we have been able to complete 858 work units for an overall score of 11,256,125. Our rank after 12 days is 24,408 of 2,518,264 total donors on Folding@Home in 2020. Formidable! 💪ReferencesJoin Hacker Noon Create your free account to unlock your custom reading experience. Factors are numbers that divide evenly into another number, and a prime factor is a factor that is a prime number. A factor tree is a tool that breaks down any number in its primary factors. Factor trees are useful tools for students because they provide a graphical representation of the primary factors that can be divided into a given number. Factor trees are so named because when created, they look a bit like a tree. The spreadsheets below give students the practice of creating factor trees. For example, the free print numbers show the following: Some of the spreadsheets contain some of the most important factors and ask students to fill out the rest; others require students to create factor trees from scratch. In each section, the worksheet is printed first with an identical worksheet below it with the answers to make it easier to classify. D. Russell Find out how much students know about creating factor trees by getting them to complete this spreadsheet first. This requires students to create each factor tree from scratch. Before students start this spreadsheet, explain that when the numbers are factored in, the often more a way to do it. It won't matter what numbers they use because they will always end up with the same primary factors in the number. For example, the most important factors for 60 2, 3 and 5, as the sample problem shows. D. Russell For this worksheet, students find the primes for each number specified by using a factor tree. If students are struggling, this spreadsheet can help them master the concept. It provides some of the factors, and students fill the rest in provided empty spaces. In the first problem, for example, students are asked to use the same information. The first factor, 3, is listed for them. The students then find the other factors, such as 33 (3 x 33), which factors further into the primes 3 x 3 x 11. D. Russell This spreadsheet gives struggling students more help to master factor trees because some of the most important factors are set for them. For example, the number is 64 factors in 2 x 34, but students can further factor that number in prime factors of 2 x 2 x 17, because the number 34 can factor in 2 x 17. D. Russell This spreadsheet contains some of the factors that can help students create factor trees. If students are struggling, explain that the first number, 86, can only factor in 43 and 2, because both of these numbers are primes. By contrast, 99 factor in 8 x 12, which can additional factor in (2 x 4) x (2 x 6), which additional factors in the primary factors (2 x 2 x 2) x (2 x 3 x 2). D. Russell Finish your factor tree lesson with this spreadsheet that also gives students some of the factors for each number. For additional practice, students fill out these spreadsheets that let them find the most important factors for numbers without using factor trees. Trees.

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