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Alumni Section

Developing with Docker

Let's break an iconic phrase "It works on my machine"

<u>To give a little background</u>

When you develop your code and when you want to test your code, you'd have to install the database and all the required libraries along with the specified version in your local machine. Of course this works, and this still works today and probably many people still do it. The downside is, that you are bound to the environment of your machine: it can't be shared, it clutters up your development machine and it's surely not a reproducible environment.

● What if you're working on two projects running two different versions of your favourite database?

● What if you're working with multiple different languages, do you keep them and all their libraries installed and maintained on your main system? In different versions?

● What if you want to share what you just developed with your colleague? How often does their development setup differ from yours? Will it run?

● How many background processes do you have running 24/7 to run and test your software?

● How do you manage your main system? How do you manage which package needs to be installed for you to be ready to work?

Developing apps today requires so much more than just writing the code. Multiple languages, frameworks, architectures, and discontinuous interfaces between tools for each lifecycle stage creates enormous complexity
Docker is a tool which allows developers, sysadmins to easily deploy their applications in a sandbox aka container to run on the host OS i.e., Linux.
The key benefit of Docker is that it allows users to package an application with all its dependencies into a standardized unit of software development.

<u>Understanding the containers</u>
Containers are abstractions of the app layer. They package all the code, libraries, and dependencies together. This makes it possible for multiple containers to run in the same host, so you can use that host's resources more efficiently. Each container runs as an isolated process in the user space and takes up less space than regular VMs due to their layered architecture.
Container can be thought of as three different categories:-

- **Builder**- A tool or series of tools used to build a container, such as distro builder for LXC, or a Dockerfile for Docker.
- **Engine**- An application used to run a container.
- **Orchestration**- Technology used to manage many containers including Kubernetes and OKD.

Why Docker containers are great

You have probably heard the iconic phrase "It works on my machine". Well, why don't we give that machine to the customer?
That's exactly the problem Docker and containers solve in general. A Docker container is a packaged collection of all the app's libraries and dependencies already pre built and ready to be executed.

A lot of companies have migrated over from VMs to containers not only because they're much lighter and faster to spin up, but also because they're extremely easy to maintain.

Does this mean that we don't need VMs anymore? No, on the contrary, VMs are still very much needed if you want to have a whole operating system for each customer or just need the whole environment as a sandbox. VMs are usually used as middle layers when you have a big server rack and several customers that'll be using it.
The ease of use and maintainability leads us to another important aspect of why containers are so great: it's way cheaper for a company to use containers than fully fledged Vms.
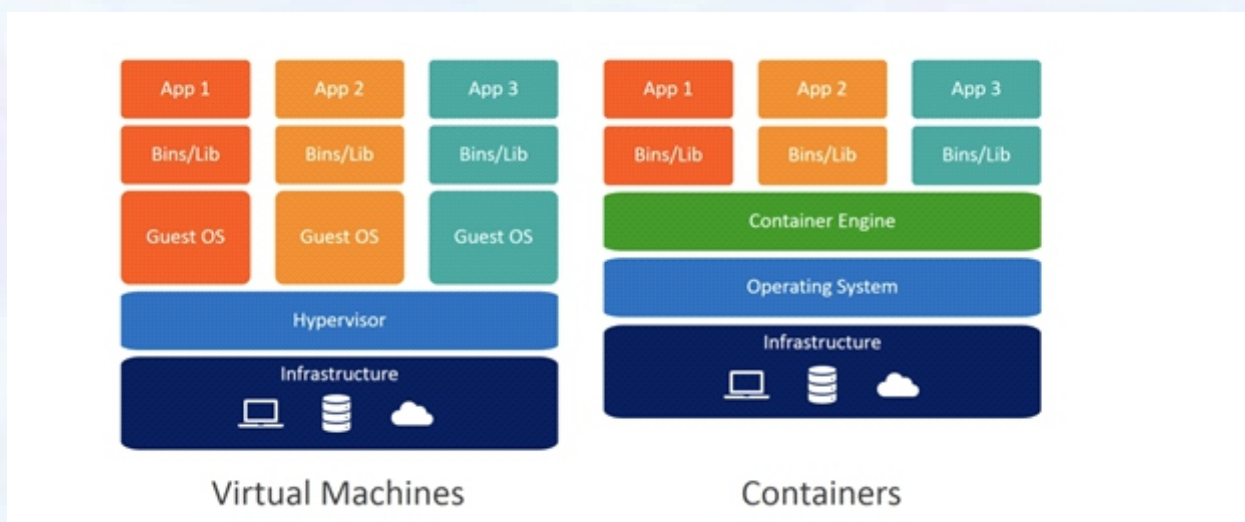
What are Docker Images

Docker images are instructions written in a special file called a Dockerfile. It has its own syntax and defines what steps Docker will take to build your container.
Since containers are only layers upon layers of changes, each new command you create in a Docker image will create a new layer in the container.

Conclusion
Docker containers are a wonderful technology that makes it possible to deploy applications faster and with lower levels of resource consumption than virtual machines. But virtual machines continue to have their own killer features, like a higher degree of portability and full support for image rollbacks.

If you want to discuss it more than we can connect on
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Microsoft, invest india to nurture 11 tech startups

Microsoft India on 24th august announced it has collaborated with Invest India to nurture tech startups in India. To begin with, the company has onboarded 11 startups for its Microsoft for Startups program from fields like agriculture, defense/security, IT/ITeS, e-mobility, waste management and financial services.

The 11 startups will gain access to benefits including Azure credits, as well as support for technology and business acceleration, focused on scaling their growth.
They will be able to utilize Microsoft technology including Azure, GitHub, and M365, allowing them to quickly build and run their businesses, the company said in a statement.

The Microsoft for Startups program will work closely with Accelerating Growth of New India's Innovations (AGNIi Mission), a program of the Office of the Principal Scientific Adviser to the Indian government.

"Fostering strong ties with the top enterprises in the world to nurture Indian innovation is one of the most important contributions of AGNIi in ensuring India's continued strength in the global economy," said Deepak Bagla, MD and CEO, Invest India.

Housed and executed by Invest India, AGNIi Mission helps startups become enterprise ready. The selected startups will also get personalized technical sessions, content, and mentorship. Moreover, they will be able to leverage Microsoft's Azure Marketplace, enterprise sales team, and the rapidly growing partner ecosystem to develop and execute their go-to-market strategies, said Microsoft.
"The collaboration between Microsoft and Invest India affirms our commitment to the startup ecosystem in the country, aid Emily Rich, Director of Startups, APAC, Microsoft."

"Combining the reach of Invest India's AGNIi Mission with the tech and business resources of Microsoft for Startups, this is an exciting opportunity for startups to accelerate their aspirations for enterprise readiness," Rich added.

NASA suspends spaceX's lunar lander contract till november

A week after Jeff Bezos' Blue Origin sued NASA over awarding Moon lander contract to Elon Musk, the US space agency has put SpaceX's $3 billion contract on hold for the second time, the media reported. according to court filings, NASA voluntarily agreed to temporarily suspend the contract until November 1, this year, while the US Court of Federal Claims adjudicated the case, the Verge reported on Friday(20th August).

Blue Origin had asked the court to grant a pause on SpaceX's contract while the litigation played out, the report quoted a person familiar with the company's sealed filings. NASA agreed to halt SpaceX's contract on the condition that all parties agreed to "an expedited litigation schedule that concludes on November 1," a spokesperson for the agency was quoted as saying.

"NASA officials are continuing to work with the Department of Justice to review the details of the case and look forward to a timely resolution of this matter," the spokesperson added.

SpaceX had intervened in the lawsuit earlier this week to "ensure that the court has a complete and accurate picture" of the protest, the company told the judge. Blue Origin sued NASA last week over NASA's April decision to pick only SpaceX's Starship rocket system for the agency's first human lunar landing system since 1972. The US space agency was expected to pick two lunar lander prototypes (including one of Blue Origin's) but funding cuts from the US Congress led the agency to select SpaceX over Blue Origin.

Blue Origin lodged a sealed complaint with the court weeks after the US Government Accountability Office (GAO), last month, squashed its challenge to NASA for picking SpaceX.

Blue Origin applied to GAO in April, and put SpaceX's lunar lander contract on hold for 95 days. Bezos even offered NASA a discount of up to $2 billion to give his space company Blue Origin the human lunar landing system (HLS) contract.

Escalating his space war with Musk, Bezos in an open letter to the NASA Administrator Bill Nelson said that his company would close the US space agency's near-term budgetary shortfall and produce a safe and sustainable lander that will return Americans to the surface of the Moon -- this time to stay.

But, despite the delays, SpaceX has made swift progress on its Starship system and has moved the program along using mostly private funds, the report said. The first Starship prototype bound for orbit will be ready for launch "in a few weeks," Musk tweeted last week. The moon lander contract is part of NASA's Artemis program, which aims to return astronauts to the moon by 2024 as a stepping stone to the first human mission to Mars.

Microsoft hires ex-uber executive Manik Gupta for consumer apps biz

Microsoft has hired Manik Gupta, former head of product at Uber, as the tech giant aims to strengthen its consumer apps portfolio. Manik Gupta, who was Chief product Officer at Uber and also saw product management for Google Maps in his earlier stints, will be responsible for Microsoft Teams consumer, Skype and GroupMe, reports The Verge.

He will report directly to Jeff Teper, Microsoft's head of Microsoft 365 collaboration.

"I am thrilled to announce that we have hired Manik Gupta, as Corporate Vice President for Teams Consumer, Skype, and GroupMe. Manik will report directly to me assuming general management leadership for our end-to-end consumer strategy, vision, and execution," Teper said in an internal memo.

Manik's experience at Uber as Chief Product Officer, at Google as Director PM for Google Maps, and his current role as an investor and advisor to early-stage, high-growth technology companies, will be invaluable to us building world-class consumer experiences across all of Microsoft," he added. Manik will officially start on August 30 and will be based in the Bay Area, San Francisco.

"This fall Windows 11 -- with Microsoft Teams -- represents one of the most important milestones for us to delight users and grow our consumer business" Teper said. Manik Gupta joined the ride-hailing company in 2015 from Google.

Microsoft is currently focused on creators and communities, and how best to leverage its Cloud capabilities to have a consumer-focused app or community.

OkCredit on growth and hiring spree, to double workforce by FY-22

Talent is the bedrock on which we have been able to build great products, loved and appreciated by our SMB community. In fact, ever since Covid struck, the focus has been not just on hiring, but also taking great care of our existing employees. Be it mental health OkCredit, India's favorite digital book keeping start-up plans to double its headcount by March 2022, increasing its current workforce of 120 by 100 percent. This human resource expansion comes on the back of a strong growth witnessed by the company in both user base and transactions. Despite two severe waves of the pandemic since last year, crippling the business environment, OkCredit's user base has grown by 34 per cent since March 2020. Transactions by active users on the platform have grown by 15 per cent. The percentage of organic registrations are up by 3 times when compared to the pre-pandemic levels.

The company has been hiring consistently, increasing its headcount by 80 per cent since March last year to keep up with the growth and adoption of its platform. It will be actively recruiting for talent in analytics and data, engineering, user research, online marketing, and SEO to further propel business growth. Besides, the bookkeeping startup also plans to engage over 50 freelancers and interns during the year across various projects. Launched in 2017, OkCredit was one of the first startups to build a SaaS product for small and micro businesses, a segment that was considered a no-go zone for a very long time. The basic premise being to ease buying and selling on credit. Given the scale of data the company generates, working at OkCredit is an opportunity to solve challenging problems for 60 million SMBs in India.

There is accelerated learning along with a host of fun activities -- Zumba, open mic, meditation and surprise rewards for employees among several others. Not only can the candidates expect a steep career progression along with monetary rewards, but the startup also offers tremendous opportunities to learn, on the job as well as through L&D programs.

OkCredit has an end-to-end digital recruitment process where right from search to onboarding happens seamlessly through digital modes. In keeping with its customer-first approach, a key ask at the company is to be close to customers across departments and roles.

"There can't be a better source of insight than talking to your customer and we actively encourage that. In addition to this, we appreciate diversity and different schools of thought. We are looking for people who can contribute to culture and make OkCredit a better place", says Vishal Aman, Chief of Staff at OkCredit.

The four-year-old startup has seen excellent growth since its inception with merchants spanning 98 per cent of the pin codes across the nation and active transaction recording from 90 per cent of the pin codes every month. These merchants are across categories such as -- Kirana, medical stores, mobile recharge, apparel, eateries, etc. The company has an open, participative, and vibrant culture with no strict entry/exit attendance policy. During the second wave of the pandemic, it allowed no questions asked leaves andissues, leaves or vaccinations, we have been firmly standing behind our employees to help them in every possible way", said Harsh Pokharna, Co-founder & CEO, OkCredit.

The Bengaluru based company's commitment to its employees was recently visible when it announced a mid year salary boost to all its employees. Along with the salary jump, it also made changes to its ESOP policy making it more attractive than what's available in the market. These measures are part of the company's efforts to create a culture of acknowledgment, rewards, and appreciation.
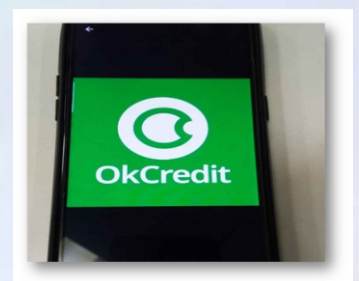
ISRO launched GISAT-1/EOS-3 on Aug 12

Three days prior to the celebration of its independence day, india had been sending up its earth observation satellite eos-03 earlier named or the Geo Imaging Satellite-1 (GISAT-1), said the Indian space agency. the GISAT-1 had been the country's first sky eyed or earth observation satellite have been placed in geo-stationary orbit. the GISAT-1 had been launched by the rocket Geosynchronous Satellite launched vehicle-F10 (GSLV-F10) on Aug 12. The rocket was expected to blast off at 5. 43 a. m. on that day from the second launched pad, said Indian Space Researched Organization (ISRO). India's rocket port was located at Srihari Kota in Andhra Pradesh.

the GSLV-F10 rocket would left the GISAT-1 at the geosynchronous transfer orbit from where the satellite had been taken up to its final position firing its onboard motors. once placed in geostationary orbit, the satellite would had a steady eyed on the areas of interest (the satellite would moved in sync with the rotation of the earth and hence would looked stationary) unlike other remote sensing satellites placed in lowered orbit that could came to a spot only at regular intervals. originally the gisat-1 was slated for launched on March 5, 2020, but hours before the launched ISRO announced postponement of the mission owing to some technical glitch. Soon after the COVID-19 pandemic and the lockdown delayed the mission. The rocket had have been dismantled and cleaned up.

subsequently, the GISAT-1 launched was slated for March 2021 but due to problems in the satellite's battery side, the flight got delayed. with the replacement of the battery the satellite and the rocket was being readied for their flight at Srihari Kota when the second wave of COVID-19 swept in affecting many at the rocket launched center. the indian space agency had earlier said the 2,268 kg GISAT-1 would provided a real time image of a large area of region of interest at frequent intervals. It would also enable quick monitoring of natural disasters, episodic events and any short-term events.

the satellite would had payload imaging sensors of six band multi-spectral visible and near infra-red with 42 meters resolution; 158 bands hyper-spectral visible and near infra-red with 318 meters resolution and 256 bands hyper-spectral short wave infra-red with 191 meters resolution. a four meter diameter Ogive shaped payload fairing (heat shield) had been used in the rocket for the first time, isro had said. according to ISRO, after GISAT-1 launched, the other satellite to went up had been eos-4 or risat-1a was a radar imaging satellite with Synthetic Aperture Radar (SAR) that could took pictures during day and night looking through the clouds. the satellite weighing over 1,800 kg had been carried by the Polar Satellite Launched Vehicle (PSLV) this september, said ISRO.

the EOS-4 was a repeated microwave remote sensing satellite of Risat-1 and was configured to ensured continuity of SAR in C-band providing microwave data to the user community for operational services. the satellite would played a strategic role in the nation's defense with its capability to operate in day, night and all weather conditions with a mission life of five years. the satellite had high data handling systems and high storage devices among other things. according to ISRO, the satellite would provided imaging data for various applications related to land, watered and environment which found useful inputs for agriculture, forestry and watered resource management, said ISRO.

FDA approves brivaracetam for treatment of partial-onset seizures in pediatric patients

Brivaracetam (Briviact; UCB) has received FDA approval for the treatment of partial-onset seizures in pediatric patients ages 1 month and older, according to a press release.

The drug will be available in tablets, oral solution, and intravenous (IV) dosage forms and is approved as either monotherapy or adjunctive therapy. Furthermore, this is the first time that the IV formulation will be available for pediatric patients and is the only IV formulation approved for this indication and this age group in nearly 7 years, according to the press release.

"We often see children with seizures hospitalized, so it's important to have a therapy like Briviact IV that can offer rapid administration in an effective dose when needed and does not require titration," said Raman Sankar, MD, PhD, FAAN, FAES, chief of pediatric neurology at the Rubin Brown Endowed Chair for the David Geffen School of Medicine at UCLA and UCLA Mattel Children's Hospital, in the press release. "The availability of the oral dose forms also allows continuity of treatment when these young patients are transitioning from hospital to home. Now that Briviact IV and oral formulations are an approved therapy for partial-onset seizures in children as young as one month, we have a new option that helps meet a critical need in pediatric epilepsy.

This approval fills a great need for pediatric patients with epilepsy, which can have significant impacts on development and functioning. Seizures can impair cognition with effects most severe in infancy, although few antiseizure medications are approved for the treatment of partial-onset seizures in infants.

"When a child or infant suffers from epilepsy, we know that their life and the life of their caregiver is consumed by the unpredictable nature of seizures and the potentially profound consequences epilepsy can have on pediatric patients," said Mike Davis, head of US neurology at UCB, in the press release. "We've leveraged UCB's experience in epilepsy and commitment to innovation to expand the indication for Briviact to reduce the number of partial-onset seizures these young and vulnerable patients are experiencing and provide their caregivers with an FDA-approved treatment."

The approval is supported by data on long-term retention rates over 2 years, according to the press release. In an open label follow-up pediatric study, an estimated 71.4% and 64.3% of patients aged 1 month to less than 17 years with partial-onset seizures remained on treatment at 1 and 2 years, respectively.

Study: possible new antiviral may be protective against herpes, other infections

A new report by the American Chemical Society suggests that peptoids that were successful in helping treat animals with herpes infections may help prevent other kinds of infections, including COVID-19.

"In the body, antimicrobial peptides such as LL-37 help keep viruses, bacteria, fungi, cancer cells and even parasites under control," said one of the study's principal investigators Annelise Barron, PhD, in the press release. Barron added that because they are quickly cleared by enzymes, they are not ideal drug candidates.

"Peptoids are easy to make," Barron said in the press release. "And unlike peptides, they're not rapidly degraded by enzymes, so they could be used at a much lower dose."
Peptoids are simple and inexpensive to produce with an automated synthesizer and readily available chemicals, according to the researchers. They added that side chains are linked to nitrogens in the molecular backbone, forming a structure that resists enzymes.

Barron and her team developed peptoids as clinical candidates to prevent or treat viral infections, with a recent report of their newest peptoid sequences that were designed to be less toxic to people than previous versions. The compounds inactivated SARS-CoV-2 in lab dishes, making the viruses incapable of infecting cultured human cells, according to the study authors.

The researchers reported in vivo results, showing that the peptoids safely prevented herpes infections in mice when dabbed on their lips. Additional experiments are being conducted to confirm these findings, including the peptoids' efficacy against HSV-1 strains that are resistant to acyclovir, according to Barron.
"COVID-19 infection involves the whole body, once somebody gets really sick with it, so we will do this test intravenously, as well as looking at delivery to the lungs," Barron said in the press release.
Barron noted that she has sent peptoid samples to experts in other labs to test against a range of viruses, with positive results in lab dish studies against influenza, the cold virus, and hepatitis B and C.

"In their in vitro studies, a team found that two of the peptoids were the most potent antivirals ever identified against MERS and older SARS coronaviruses," Barron said in the press release.
Other labs are testing peptoids as anti-fungals for airways and the gut, and further as anti-infective coatings for contact lenses, catheters, and implanted hip and knee joints, according to the press release. By studying how these broad-spectrum compounds work, the researchers have the advantage of inactivating the virus, which is not common for standard antivirals that slow viral replication but still allow viruses to infect cells. This also makes it less likely for the pathogens to develop resistance, according to the study.

Barron and her team hope for clinical trials to begin within the year, and if successful, she said peptoids could be given as a new preventative or after an infection happens in a person.