

Definire un'architettura per una moderna web application evidenziando le criticità legate alla sicurezza informatica.

Definire le caratteristiche e l'importanza di una transazione di tipo ACID

Documento informatico: norme, concetti, caratteristiche

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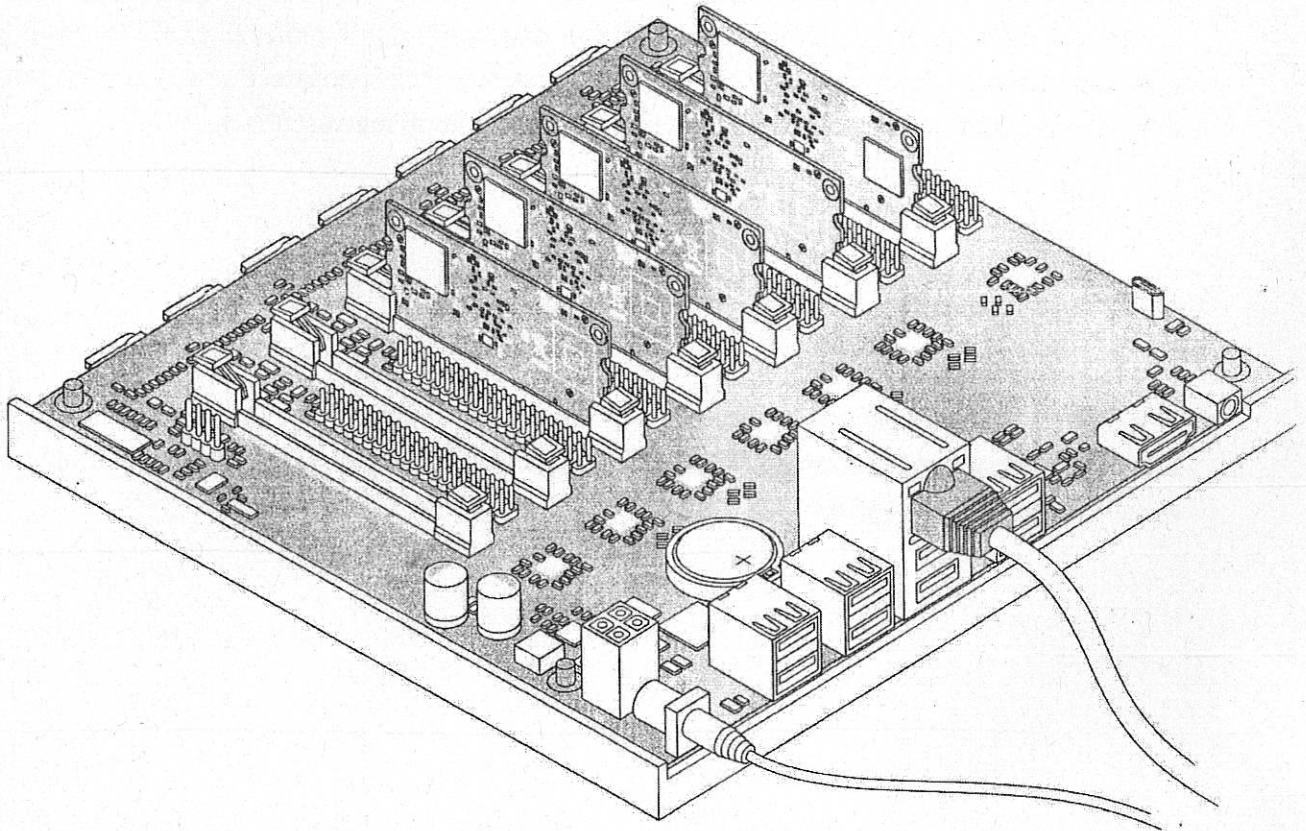
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Hands On



Home Clustering Made Easier > Learn Docker and Kubernetes with the Turing Pi

STEPHEN CASS

Once I configured the modules, I just needed a power and network connection to use and manage my five-module cluster.

Once upon a time, if you wanted to install a piece of software, you just stuck an executable file on your hard drive somewhere and went on your merry way. But as computers became more complex, so did installation procedures, which led to problems like "dependency hell," as different applications dueled over conflicting system configurations.

One increasingly popular solution today is to add a container layer to the software stack, giving each application its own temporary, sandboxed environment without needing the resources required for a complete stand-alone virtual machine. And as a bonus, containers make it easier to deploy applications

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QUESITI SITUAZIONALI

- Il suo Responsabile affida a lei e a un suo collega un compito particolarmente delicato e importante lasciandovi piena autonomia nell'esecuzione. Tuttavia, dopo un primo confronto operativo con il collega, si rende conto di essere fortemente in disaccordo con il modo di procedere che le ha proposto e che le sembra meno accurato rispetto a quello da lei pensato. Come procederebbe per risolvere la situazione? Quali atteggiamenti e comportamenti metterebbe in atto?
- Le chiediamo di immaginare una situazione lavorativa in cui si trova a dover risolvere un problema mai incontrato in precedenza. Come procederebbe nello specifico? Nel dettaglio, quali valutazioni e azioni metterebbe in atto?

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Cosa si intende per cooperazione applicativa? Definire i protocolli SOAP e REST descrivendo le rispettive architetture.
Vantaggi e svantaggi.

Progettazione di un database relazionale, definire lo schema E/R, le sue caratteristiche e la prassi per giungere alla definizione della struttura del DB.

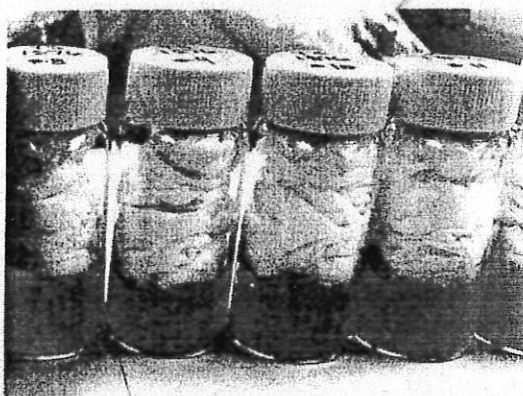
Sviluppo, acquisizione e riuso di sistemi informatici nelle pubbliche amministrazioni: norme, concetti e caratteristiche



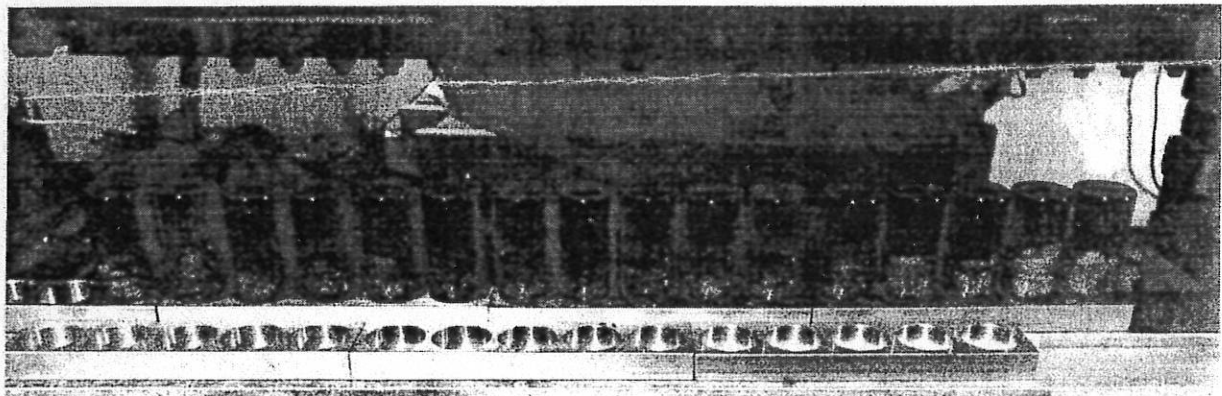
There are currently about 440 fission reactors operating worldwide, which together can generate about 400 gigawatts of power with zero carbon emissions. Yet these fission plants, for all their value, have considerable downsides. The enriched uranium fuel they use must be kept secure. Devastating accidents, like the ones at Chernobyl in Ukraine and Fukushima in Japan, can leave areas uninhabitable. Fission waste by-products need to be disposed of safely, and they remain radioactive for thousands of years. Consequently, governments, universities, and companies have long looked to fusion to remedy these ills.

Among those interested parties is NASA. The space agency has significant energy needs for deep-space travel, including probes and crewed missions to the moon and Mars. For more than 60 years, photovoltaic cells, fuel cells, or radioisotope thermoelectric generators (RTGs) have provided power to spacecraft. RTGs, which rely on the heat produced when non-fissile plutonium-238 decays, have demonstrated excellent longevity—both Voyager probes use such generators and remain operational nearly 45 years after their launches, for example. But these generators convert heat to electricity at roughly 7.5 percent efficiency. And modern spacecraft need more power than an RTG of reasonable size can provide.

One promising alternative is lattice confinement fusion (LCF), a type of fusion in which the nuclear fuel is bound in a metal lattice. The confinement encourages positively charged nuclei to fuse because the high electron density of the conductive metal reduces the likelihood that two nuclei will repel each other as they get closer together.



The deuterated erbium (chemical symbol ErD_3) is placed into thumb-size vials, as shown in this set of samples from a 20 June 2018 experiment. At left, the vials are arrayed pre-experiment, with wipes on top of the metal to keep the metal in position during the experiment. The metal has begun to crack and break apart, indicating it is fully saturated with deuterium. Below, the vials are placed upside down to align the metal with the gamma ray beam. Gamma rays have turned the clear glass amber.



NASA

We and other scientists and engineers at NASA Glenn Research Center, in Cleveland, are investigating whether this approach could one day provide enough power to operate small robotic probes on the surface of Mars, for example. LCF would eliminate the need for fissile materials such as enriched uranium, which can be costly to obtain and difficult to handle safely. LCF promises to be less expensive, smaller, and safer than other strategies for harnessing nuclear fusion. And as the technology matures, it could also find uses here on Earth, such as for small power plants for individual buildings, which would reduce fossil-fuel dependency and increase grid resiliency.

PHYSICISTS HAVE LONG thought that fusion should be able to provide clean nuclear power. After all, the sun generates power this way. But the sun has a tremendous size advantage. At nearly 1.4 million kilometers in diameter, with a plasma core 150 times as dense as liquid water and heated to 15 million °C, the sun uses heat and gravity to force particles together and keep its fusion furnace stoked.

On Earth, we lack the ability to produce energy this way. A fusion reactor needs to reach a critical level of fuel-particle density, confinement time, and plasma temperature (called the Lawson Criteria after creator John Lawson) to achieve a net-positive energy output. And so far, nobody has done that.

Fusion reactors commonly utilize two different hydrogen isotopes: deuterium (one proton and one neutron) and tritium (one proton and two neutrons). These are fused into helium nuclei (two protons and two neutrons)—also called alpha particles—with an unbound neutron left over.

Existing fusion reactors rely on the resulting alpha particles—and the energy released in the process of their creation—to further heat the plasma. The plasma will then drive more nuclear reactions with the end goal of providing a net power gain. But there are limits. Even in the hottest plasmas that reac-

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QUESITI SITUAZIONALI

- Le chiediamo di immaginare una situazione lavorativa in cui si trova a dover moderare un conflitto molto acceso tra due colleghi del suo stesso ufficio. Cosa farebbe nello specifico? Come procederebbe per risolvere la situazione? Quali atteggiamenti e comportamenti metterebbe in atto?
- Sta per concludere una ricerca importante che le è stata affidata e che l'ha impegnata particolarmente durante l'ultimo trimestre. A pochi giorni dalla scadenza, tuttavia, si accorge di aver commesso un errore che la costringe a rivedere il suo approccio iniziale per non pregiudicare completamente il risultato finale. Sa bene che il pieno raggiungimento dell'obiettivo non sarà più possibile e che dovrà gestire questo cambiamento riducendo al minimo i disagi. Come procederebbe nello specifico? Nel dettaglio, quali valutazioni e azioni metterebbe in atto?

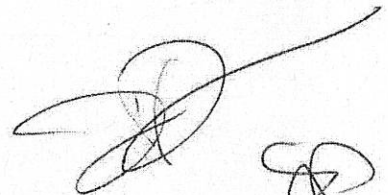


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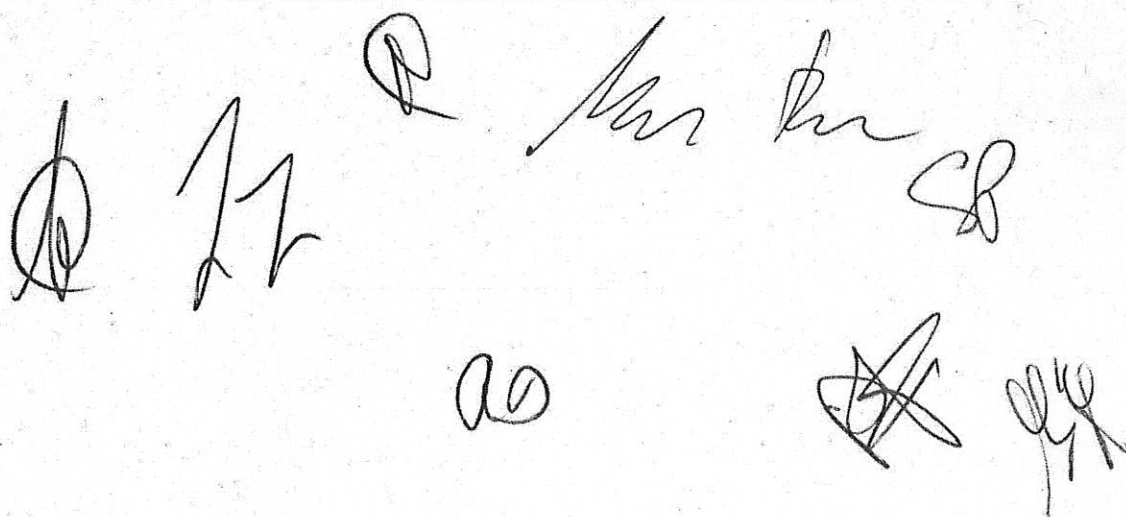
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L'ente ha la necessità di dismettere una vecchia applicazione client-server su DB relazione, è prevista la migrazione delle funzionalità e dell'archivio verso un RDBMS e WebApplication: definire un piano di massima per la migrazione, esaminando le criticità ed individuando le strategie per la riduzione dei rischi connessi al passaggio.

Esporre le principali differenze fra un sistema virtualizzato e "containerizzato", vantaggi e svantaggi delle due tecnologie.

Trasmissione informatica dei documenti: norme, concetti e caratteristiche

A collection of handwritten signatures and initials in black ink, scattered across the bottom of the page. The signatures are stylized and vary in complexity, including what appears to be a large 'L' or 'H' shape, a cursive 'M', and several other abstract scribbles.

How to choose the right career path

by Hossam Ali

Many students have graduated this year, and I know they have many questions in mind about their career paths. I will answer some of these based on my professional experience working at several companies in different countries. First of all, you should be proud of yourself that you have completed a bachelor's degree in engineering. By studying this field, you have gained many skills, such as problem-solving, logical thinking, and innovation, which will definitely help you with any job or career path. Let me now answer some of the common questions of fresh graduates.

Should I work at a small or multinational company?

Everything has pros and cons. Personally, I have seen colleagues working at multinational companies but performing very basic and limited jobs, which translates to a low learning curve; however, others working in small companies—you can barely recognize their names—learned many things in a short time. They were deployed across many departments within the small business and performed engineering and nonengineering tasks, which gave them broad experience, while, at the big companies, individuals were limited in the scope of their job responsibilities. Conversely, multinational companies have a wide range of opportunities that small companies can't afford, like traveling and working in a different country.

I have been an active volunteer with IEEE, and I like management and business roles. Should I apply for these positions or start as an engineer and then change my career?

I had the same exact question 10 years ago, and I asked one of my mentors, who advised me to start as an engineer. It was perfect advice for me because understanding

the technicalities of any job will help you manage or sell it. This is crystal clear when you work in management and sales, dealing with people from nontechnical backgrounds—they often feel that there is something missing because they don't know how the technology works. I have seen some colleagues without technical backgrounds who do a great job, but they have made an extra effort to understand the technical solutions. My advice is that you need to gain some technical knowledge before shifting your career.

Which job or industry is right for me?

You should keep an eye on the future and see what's coming by attending events and meetups with professionals working in technology. From my point of view, the future is cloud computing, the Internet of Things, cybersecurity, big data, and automation. Today, technology is evolving very quickly, and we have to adapt to change. Build your career path on a technology that will be in the market for the coming 5–10 years, and, if something changes, make a smart move to another area. For example, I was working in the telecom sector many years ago, and I moved to the 4G department because it was new at the time. Then, I moved to IT and cybersecurity because these fields are booming now.

What if I get a job offer but not in the field or with company where I would like to work?

The short answer is this: accept the offer and take the job. You need to learn about corporate life, which will help you in any other position. Start your first job, learn as much as you can from qualified colleagues, and, if you still don't like it, leave it—but with a plan. Set a goal of 3–6 months to find a role you like, and never leave a job before finding the next one. Why? First, you will not be under the pressure of finding a position to get paid, and, second, you will be able to negotiate with recruiters because you have already an existing job.

QUESITI SITUAZIONALI

- Durante una riunione di lavoro straordinaria il suo operato viene fortemente criticato da un suo collega in presenza del vostro superiore. Il clima è teso e i presenti rimangono in silenzio. Come gestirebbe nello specifico la situazione? Quali atteggiamenti e comportamenti metterebbe in atto?
- Il suo superiore le affida la responsabilità di completare alcuni compiti urgenti. Probabilmente il tempo concesso non sarà sufficiente. Come procederebbe nello specifico? Nel dettaglio, quali valutazioni e azioni metterebbe in atto?

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- Top middle: "Mr" and "Rv".
- Top right: "No".
- Middle left: "d/2".
- Middle center: A signature with a star-like mark.
- Middle right: A signature.
- Bottom center: A signature.
- Bottom right: "y4".

Il ciclo di vita del software: descrivere le singole fase costituenti il canonico ciclo di vita di un applicazione, evidenziare le fasi più importanti per il raggiungimento di un progetto di qualità e corrispondente agli obbiettivi prefissi dallo stesso.

Cos'è un sistema SSO e quali vantaggi comporta? Definire la tecnologia SAML2 e i principali "passi di dialogo" previsti da questo protocollo.

Firma digitali: norme, concetti e caratteristiche

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The power of imagination

by Erivelton Nepomuceno

Each time we watch a sci-fi movie, we ask ourselves if our society will achieve such scientific advances. An easier task is to analyze the same question asked one or two hundred years ago and see if there is some dreaming progress that came true.

Perhaps one of the most important geniuses of this speculation was the French author Jules Verne (1828–1905). Well known for his scientific predictions, he is acclaimed as one who could see the technological advance of the future in his own time. Even more, he wrote of this in many must-read bestselling adventure novels, such as *Journey to the Center of the Earth* (1864), *Twenty Thousand Leagues Under the Seas* (1870), and *Around the World in 80 Days* (1872).

Verne's special skills to predict the future of science advances have been discussed in many works. They are well accepted. However, there are questions that each of us must answer: how to become creative or use our imaginations to advance unforeseen scientific progress or find a solution for a technical and scientific puzzle is still to be understood.

Numerous works and talks have addressed our current struggle to understand how the long exposure of children to screens, games, and social media deeply impacts the mind. Many believe that this may lead to violent behavior and a decrease in human intelligence. Others hold that our current technology is a powerful weapon for strengthening our logical reasoning and soft skills. In any case, it is almost a consensus among us that the imagination is a unique human feature, capable of discoveries, art, and poems.

Students or well-established professors should always reinvigorate their imaginations. In our times,

As our bodies are transformed by what we eat, our imaginations are fueled with the information that we receive.

no secure path has been developed to avoid pitfalls on this journey. However, our accumulated knowledge can give us some direction. Regarding screen time, balanced daily activity looks like a more secure approach. Reading books, talking to friends, playing board games, practicing some physical exercise, taking some fresh air—if present in our routine—could be good alternatives to computers and mobile devices.

Regarding books, I must confess a great project failure in my life. I designed my house to avoid shelves, and I thought that screen reading would shortly command the market. I was wrong. The U.S. first-quarter 2021 print book sales grew 29%, compared to a 17% increase in e-books. I wonder if those different shapes, sizes, and weights give us some unique perception of each book. Today I bought a shelf—it is filled with books, a great aid for the imagination.

In fact, reality is an inexhaustible source of mystery and information. It is really useful to google something nowadays. However, it might be surprising to ask a question of a friend, teacher, or relative and receive from a still-not-understood supercomputer—the mind—an incredible reply.

As our bodies are transformed by what we eat, our imaginations are fueled with the information that we receive. We must choose wisely. *IEEE Potentials* has been a good companion for uncountable readers over the past decades. Invite a friend to read it. Share your expectations with me. Moreover, empower your imagination to transform scientific fiction into fact!

About the author

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QUESITI SITUAZIONALI

- Le chiediamo di immaginare una situazione lavorativa in cui le viene chiesto di collaborare ad un progetto importante con una persona con la quale le risulta difficile comunicare. Come gestirebbe le interazioni? Quali buone azioni metterebbe in atto per portare a termine nel migliore dei modi il progetto affidato?
- Le chiediamo di immaginare una situazione lavorativa in cui si trova a dover prendere una decisione delicata senza potersi prima consultare con il suo diretto responsabile o con i suoi colleghi di ufficio. La decisione non è ovviamente procrastinabile. Come procederebbe? Quali ragionamenti metterebbe in atto?

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