TECH OZRIC

MAGAZINE

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ADVANCING KNOWLEDGE THROUGH TECHNOLOGY

DEPARTMENT OF INFORMATION TECHNOLOGY

KGISL INSTITUTE OF TECHNOLOGY, COIMBATORE – 641035

TECH OZRIC MAGAZINE

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DEPARTMENT OF INFORMATION TECHNOLOGY

VISION

To produce Competent Graduates suitable for Industry and Organization in the field of Information Technology by providing industry embedded learning with social responsibility.

MISSION

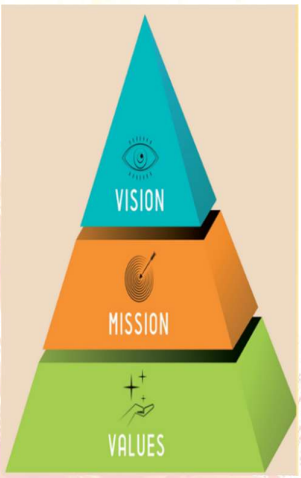
MD-1: To accomplish an effective teaching learning process through innovative practices for empowering the graduates to face societal challenges.

MD-2: To enhance the proficiency of faculty members across various domains of information technology through skill development programs.

MD-3: To nurture IT professionals through the provision of essential infrastructure and facilities for effective learning.

MD-4: To attain research excellence in the field of information technology by instilling the values of self-directed learning and fostering creative thinking through collaborative partnerships with institutes and industries.

MD-5: To foster holistic student growth by engaging them in cocurricular and extracurricular activities.



PROGRAM EDUCATIONAL OBJECTIVES (PEO'S)

PEO1: Demonstrate technical competence with analytical and critical thinking to understand and meet the diversified requirements of industry, academia and research.

PEO2: Exhibit technical leadership, team skills and entrepreneurship skills to provide business solutions to real world problems.

PEO3: Work in multidisciplinary industries with social and environmental responsibility, work ethics and adaptability to address complex engineering and social problems.

PEO4: Pursue lifelong learning, use cutting edge technologies and involve in applied research to design optimal solutions.: Exhibit technical leadership, team skills and entrepreneurship skills to provide business solutions to real world problems.

PROGRAM SPECIFIC OUTCOMES (PSO'S)

PSO1: Develop and deploy software applications using advanced programming languages, data structures, and algorithms to address real-world IT challenges in areas such as system design, web development, and mobile computing.

PSO2: Design and manage IT-based business solutions by leveraging cloud computing, data analytics, and automation tools, demonstrating entrepreneurial capabilities in the IT services and product development sectors.

PSO3: Adapt to the dynamic IT industry by ethically embracing advancements such as artificial intelligence, cybersecurity, and blockchain, while contributing responsibly to societal, environmental, and organizational IT needs.

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Serverless Computing: The Future of Scalable Applications

By Mr. Sureshkumar C, AP/IT

Serverless computing isn't truly "serverless." Sans tapping into some seriously dark arts, it's impossible to provide computational resources without a physical server somewhere. Instead, this technology distributes those resources more effectively. When an application is not in use, no resources are allocated. When they are needed, the computing power auto-scales.

This technological shift means companies no longer need to worry over infrastructure or reserving bandwidth, which in turn promises the golden ticket of ease of use and cost savings.

As Eric Knorr, editor in chief of International Data Group Enterprise, writes "One of the beauties of this architecture is that you get charged by the cloud provider only when a service runs. You don't need to pay for idle capacity—or even think about capacity. Basically, the runtime sits idle waiting for an event to occur, whereupon the appropriate function gets swapped into the runtime and executes. So you can build out a big, complex application without incurring charges for anything until execution occurs."

Serverless computing today typically favors small, self-contained units of computation to make it easier to manage and scale in the cloud. A computation, which can be interrupted or restarted, cannot depend on the cloud platform to maintain its state. This inherently influences the serverless computing programming models. There is, however, no equivalent notion of scaling to zero when it comes to state, since a persistent storage layer is needed. However, even if the implementation of a stateful service requires persistent storage, a provider can offer a pay-as-you-go pricing model that would make state management serverless. We are seeing providers releasing services that stretch the definition of serverless, and the definition may evolve over time. For example, Amazon Aurora is a "serverless" database service, which supports powerful auto-scaling capabilities but requires minimum memory and CPU allocations and hence does not scale to zero and has ongoing costs.

The most natural way to use serverless computing is to provide a piece of code (function) to be executed by the serverless computing platform. It leads to the rise of Function-as-a-service (FaaS) platforms focused on allowing small pieces of code represented as functions to run for limited amount of time (at most minutes), with executions triggered by events or HTTP requests (or other triggers), and not allowed to keep persistent state (as function may be restarted at any time). By limiting time of execution and not allowing functions to keep persistent state FaaS platforms can be easily maintained and scaled by service providers. Cloud providers can allocate servers to run code as needed and can stop servers after functions finish as they run for limited amount of time. If functions must maintain state, then they can use external services to persist their state.

Challenges and Limitations

Serverless computing is a large step forward, and is receiving a lot of attention from industry and is starting to gain traction among academics. Changes are happening rapidly and we expect to see different evolutions of what is

serverless and FaaS. While there are many immediate innovation needs for serverless,there are significant challenges that need to be addressed to realize full potential to serverless computing.

Programming models and tooling: since serverless functions are running for shorter amounts of time there will be multiple orders of magnitude more of them that compose applications (for example, SparqTV; a video-streaming service runs more than 150 serverless functions). This however, will make it more difficult to debug and identify bottlenecks. Traditional tools that assumed access to servers (for example, root privilege) to monitor and debug applications are not applicable for serverless applications, and new approaches are needed. Although some of these tools are starting to become available, higher-level development IDEs, and tools for orchestrating and composing applications, will be critical. In addition, the platform may need to be extended with different recovery semantics, such as at-least-once or at-most-once, or more sophisticated concurrency semantics, such as atomicity where function executions are serialized. As well, refactoring functions (for example, splitting and merging them), and reverting to older versions, must be fully supported by the serverless platform. While these problems have received a lot of attention from industry and academia,there is still a lot of progress to be made.

Lack of standards and vendor lock-in: Serverless computing and FaaS are new and quickly changing and currently there are no standards. As the area matures, standards can be expected to emerge. In the meantime, developers can use tools and frameworks that allow the use of different serverless computing providers interchangeably.

Exploring the Internet of Things: Concepts and Applications

By Mr. Rajasekaran S ,AP/IT

The Internet of Things, or IoT, refers to the billions of physical devices around the world that are now connected to the internet, all collecting and sharing data. Thanks to the arrival of super-cheap computer chips and the ubiquity of wireless networks, it's possible to turn anything, from something as small as a pill to something as big as an aeroplane, into a part of the IoT. Connecting up all these different objects and adding sensors to them adds a level of digital intelligence to devices that would be otherwise dumb, enabling them to communicate real-time data without involving a human being. The Internet of Things is making the fabric of the world around us smarter and more responsive, merging the digital and physical universes.

What is an example of an Internet of Things device?

A lightbulb that can be switched on using a smartphone app is an IoT device, as is a motion sensor or a smart thermostat in your office or a connected streetlight. An IoT device could be as fluffy as a child's toy or as serious as a driverless truck. Some larger objects may themselves be filled with many smaller IoT components, such as a jet engine that's now filled with thousands of sensors collecting and transmitting data back to make sure it is operating efficiently. At an even bigger scale, smart cities projects are filling entire regions with sensors to help us understand and control the environment.

The term IoT is mainly used for devices that wouldn't usually be generally expected to have an internet connection, and that can communicate with the network independently of human action. For this reason, a PC isn't generally considered an IoT device and neither is a smartphone -- even though the latter is crammed with sensors. A smartwatch or a fitness band or other wearable device might be counted as an IoT device.

The idea of adding sensors and intelligence to basic objects was discussed throughout the 1980s and 1990s (and there are arguably some much earlier ancestors), but apart from some early projects -- including an internet-connected vending machine -- progress was slow simply because the technology wasn't ready. Chips were too big and bulky and there was no way for objects to communicate effectively.

Processors that were cheap and power-frugal enough to be all but disposable were needed before it finally became cost-effective to connect up billions of devices. The adoption of RFID tags -- low-power chips that can communicate wirelessly -- solved some of this issue, along with the increasing availability of broadband internet and cellular and wireless networking. The adoption of IPv6 -- which, among other things, should provide enough IP addresses for every device the world (or indeed this galaxy) is ever likely to need -- was also a necessary step for the IoT to scale.

Rise as a Leader: Essential Qualities for Industry Success

By Ms. R. Shirley Josephine Mary , AP/IT

Being a leader can allow you to influence others and share your expertise. In the tech industry, there are many leaders who work to provide innovative solutions and expand the way people view problems. Understanding what leadership skills you possess and what valuable ones you can gain can help you establish yourself in the industry. In this article, I explain what it means to be a leader in the tech industry, share qualities these leaders have and provide eight steps to help you become one.

Being a leader in the tech industry means solving problems with innovative solutions or explaining new technology concepts in engaging ways. Typically, tech leaders initially emerge from the creation of new technology advancements. For example, a leader in the tech industry might analyze clean water access and try to create new technology to help individuals get the clean water they need. Then they might share their findings professionally through speaking events, the media or promotional campaigns.

Leaders may also encourage others to think innovatively and experiment until they find solutions to the problems they want to solve. This can include providing mentorship materials like professional development books about their experience of becoming a leader in technology. The primary criteria for being a leader in the tech industry is contributing knowledge.

How to become a leader in the tech industry?

If you want to become a leader in the tech industry, here are eight steps you can use to help you reach your career goal:

1. Network with tech leaders

2. Advocate for technology advancements

3. Create an organization

4. Promote your organization

5. Understand your long-term goals

6. Work with your community

7. Mentor your employees

8. Encourage innovation and experimental thinking

A motivational article on Importance of Empathy

By Ms. Sneha N S of Final Year IT

Empathy is a highly valued trait and is essential for social interactions. Empathy is the ability to understand a person's emotions and feelings. It is an essential component for both professional as well as personal lives. It is the ability or trait to understand other people's values, beliefs and cultures.

Empathy is the power of connection. It is a sensation of experiencing what the other person is going through. It is seen as a cognitive ability—a trait to imagine future scenarios or solve problems based on past experiences. Empathy makes an individual capable of creating a psychic and emotional connection with another person. It enables a person to enter into another individual's mindscape. If a person feels connected to another person's mindset, it is impossible to mistreat them, except unintentionally. A person gets to recoil from their experience of suffering in the same way of recoiling for their individual suffering. It brings a sense of desire to aid the person suffering.

There are several states of empathy which include, cognitive empathy, affective empathy and somatic empathy. Cognitive empathy is the capability to understand another person's mental state. Affective empathy is also known as emotional empathy. It is the ability of a person to respond with an appropriate emotion to another person's mental state. Somatic empathy is based on the physical reaction of an individual. It is based on mirror neuron responses.

Empathy manifests in education as well in between teachers and students. Empathy becomes difficult when there are differences between people regarding culture, language, skin colour, gender and age. Empathy is considered as a motivating factor for unselfish behaviour. Lack of empathy is similar to antisocial behaviour. Empathy develops deep roots in our brains, as our evolutionary history. Having empathy does not mean that a person is willing to help someone. It is an essential step toward compassionate action.

Empathy forms one of the most critical components of creating harmonious relationships. It reduces stress and enhances emotional awareness. People are well attuned to their feelings and emotions. Getting into someone's head can be challenging at times. People tend to be empathetic when they listen to what others have to say. It makes an individual overwhelmed by tragic incidents. Empathy can make an individual concerned about the well-being of another individual.

Empathy helps to make an individual a better person. By understanding what people are thinking and feeling, people can respond appropriately. Social connections build up as a result of empathy. It helps in both physical and psychological well-being. Empathizing with others helps to regulate a person's own

emotions. It helps an individual to manage his feelings even at times of great stress.

Empathy helps a person to engage themselves in helpful behaviours. Not everyone experiences empathy. Some people may be more naturally empathetic than others. How a person perceives another person can influence empathy to a great extent. Being empathetic towards others will help to understand other's suffering and create harmony in the world.

RUN BEFORE YOU CRAWL

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