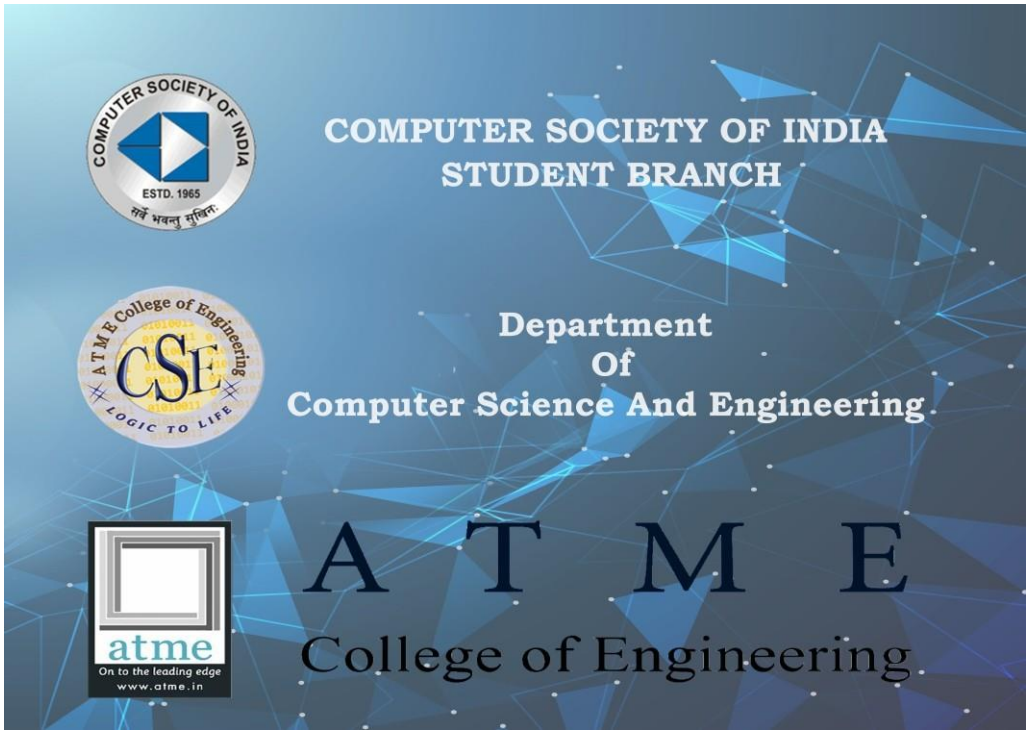

Tech Bits

CSI Newsletter

Volume 6
Issue 1
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In This Issue

A tribute to

Dr. A P J Abdul Kalam

(15th Oct 1931 - 27th July 2015)

"MAN NEEDS DIFFICULTIES IN LIFE BECAUSE THEY ARE NECESSARY TO ENJOY THE SUCCESS"

Avul Pakir Jainulabdeen Abdul Kalam better known as A. P. J. Abdul Kalam, was the 11th President of India from 2002 to 2007. A career scientist turned statesman, Kalam was born and raised in Rameswaram, Tamil Nadu, and studied physics and aerospace engineering. He spent the next four decades as a scientist and science administrator, mainly at the Defence Research and Development Organisation (DRDO) and Indian Space Research Organisation (ISRO) and was intimately involved in India's civilian space programme and military missile development efforts. He thus came to be known as the Missile Man of India for his work on the development of ballistic missile and launch vehicle technology. On his 86th birth anniversary we pay our tribute and respect for his great contributions to our nation, our society and our people.

Student Articles on latest trends in technology

Find articles on Alexa, Artificial Intelligence and Kotlin submitted by our beloved CSI - SB members.

Message from The HOD

"I am very happy to know that our CSI- Student branch is bringing its 6th edition of the CSI newsletter- "Tech Bits".
I am pleased to introduce the latest edition of our technical newsletter. As the field of technology continues to evolve at a rapid pace, it is essential to stay up-to-date with the latest advancements and trends.
I would like to congratulate and wish the very best to the students, Editorial team, CSI student counselor and faculty members of the department in all their endeavors."

Dr. Puttegowda D
Head of Department
Computer Science and Engineering
ATME College of Engineering

10 must have Android apps for Coumputer Science students

1. Sololearn

It is one of the learning app where everyone can code, which offers learning courses such as C++, JAVA, Python, JavaScript, PHP etc.

2. DroidEdit Pro

It supports many popular languages like C, C++, C#, Java, HTML, CSS, Javascript, Python, Ruby, Lua, SQL, etc. Coming to its features, DroidEdit Pro comes with multiple color themes, syntax highlighting, search & replace, auto & block indentation, run Scripts in SL4A directly, SFTP/FTP support, root mode, etc. Overall, it's a full-fledged text editor for coders and programmers.

3.Technopedia

It is one of the best Tutorial app for engineers which provides full computer science notes available for free. It offers tutorials on OS, Artificial Intelligence, cloud computing, computer graphics etc.

4.Eckovation

Eckovation
The Social Learning Platform

Eckovation brings to you a free and secure platform where students, teachers and parents can connect and collaborate from anywhere and anytime

5.Code monk

Code Monk is a curated list of topics to help you improve your programming skills to the next level. The series focuses on aspiring programmers who aim to be better at coding.

6.Programming Hub

Programming hub app is your one stop solution to learn all the top programming languages in the easiest way, while on the go, for anyone, anywhere and anytime.

7. Anacode IDE

Anacode is an integrated development environment and source code editor for JAVA, HTML, PHP etc. files that allows you to build and run android applications directly on the device.

8. AIDE – IDE for Android Java C++

AIDE is a very stable and useful IDE for developing real Android apps on your Android device. It has a feature-rich editor and comes with all the essential features like automatic code completion, real-time error checking, refactoring, smart code navigation, Java debugger, etc. This app features interactive lessons with step-by-step instructions to learn Android app development and Java programming skills. AIDE fully supports building apps with Java, XML, Android SDK, Android NDK, and C/C++ integration. Moreover, it even allows you to keep your files synced with a Dropbox account.

9. Internshala

INTERNSHALA
internships that matter

Finding and applying for internships that you want is now even easier with internshala's free internship app for students. browse through internships offered by 40,000+ companies in various profiles and locations all across India and apply easily to the once that excite you the most.

10. linkedIn

LinkedIn

The app makes it easier to discover, connect and nurture relationships with people that matter, search and apply for jobs, and get updates on topics and companies that make a difference all on the go. This online social network is a great place connect and stay in touch with your professional relationships. In addition to the job search and apply process, LinkedIn makes it easy to expand and publish a knowledge. The LinedIn app allows you to share knowledge and stay updated in Today's world.

Amazon Alexa

By **Anil Kumar C J,**
Associate Professor

Alexa is an intelligent personal assistant developed by Amazon, made popular by the Amazon Echo and the Amazon Echo Dot devices developed by Amazon Lab126. It is capable of voice interaction, music playback, making to-do lists, setting alarms, streaming podcasts, playing audiobooks, and providing weather, traffic, and other real time information, such as news. Devices such as the Amazon app on iOS or Android require the user to push a button to activate Alexa's listening mode. Currently, interaction and communication with Alexa is only available in English and German.

Origin of Alexa

The name Alexa was chosen due to the fact that it has a hard consonant with the X and therefore could be recognized with higher precision. The name is also claimed to be reminiscent of the Library of Alexandria, which is also used by Amazon Alexa Internet for the same reason.

Amazon Alexa revisited

How does Alexa work?
The small computer in the Echo isn't completely dumb. It has enough built-in smarts to **do** a number of tasks, like playing back music and making lights blink. It can also recognize the **Alexa** name: when you say the word "**Alexa**", it recognizes the word (Amazon calls this the wake word) and starts recording your voice. Amazon echo runs on on the Bing search engine .

What is Amazon dot?
Echo **Dot** is a hands-free, voice-controlled device that uses the same far-field voice recognition as **Amazon** Echo. **Dot** has a small built-in speaker—it can also connect to your speakers over Bluetooth or with the included audio cable.

What is Alexa skills?
Enabling **Skills** for Amazon's **Alexa** is easier than ever. Now, all you have to do is say, "**Alexa**, enable Lyft," and poof — you've given your Echo speaker or other **Alexa**-enabled device the ability to order you a ride. Well, you can search the **Alexa** app by category, such as Smart Home, Food and Drink or Lifestyle.

Alexa as an app

The app can be used by owners of Alexa-enabled devices to install skills, control music, manage alarms, and view shopping lists.

Functions of Alexa app

- **Alexa for music**

Amazon Music for PC allows one to play personal music from Google Play, iTunes, and others on an Alexa device. This can be done by uploading one's collection to My Music on Amazon from a computer.

- **Send a message or call using Alexa**

Messages can be sent through multiple ways from Alexa's application. Alexa is able to deliver messages to a recipient's Alexa application, as well as to all of their Echo devices that are both supported and associated with their Amazon account. It cannot send attachments including videos and photos.

The other functions of Alexa are:

- Alexa for home automation
- Alexa for ordering what you desire
- Alexa for sports

Alexa voice service

Amazon allows device manufacturers to integrate Alexa voice capabilities into their own connected products by using the Alexa Voice Service (AVS), a cloud-based service that provides APIs to interface with Alexa. AVS provides cloud-based automatic speech recognition (ASR) and natural language understanding (NLU). The voice of Amazon Alexa is generated by a long short-term memory artificial neural network.

Supporting devices of Alex

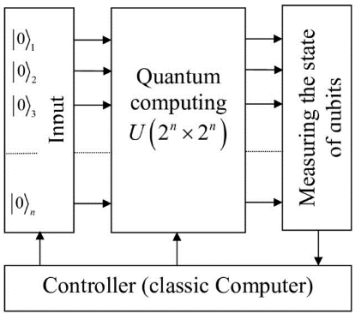
- Amazon Echo
- Amazon Fire TV
- Amazon Fire and Fire HD tablets - 4th, 5th,or 6th generation devices.
- Fire HD 10 - 7th generation and many more.

Alexa and it's future

Alexa, at this rate of development, products like Alexa will soon be programmed to allow executives to get boardroom. They'll be able to compile, synthesize, and share information in a matter of minutes, eliminating the need for the meetings where these tasks typically take place. With Internet-connected devices—often referred to as being part of the Internet of Things—pulling data from every direction, rerouting delivery trucks based on a newly reported traffic accident will be as easy as telling. Bringing Internet of Things-linked artificial intelligence to the fingertips of partners and employees will breathe new life into the corporate world.

Quantum Computing: The Future of Technology

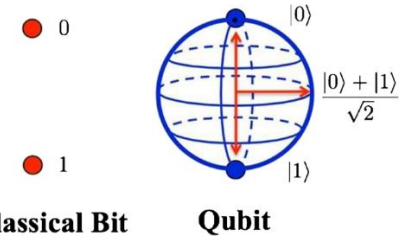
Quantum computing is a cutting-edge technology that promises to revolutionize the way we process information. Unlike classical computing, which operates using bits of information that are either 0 or 1, quantum computing relies on quantum bits or qubits. Qubits can exist in a superposition of states, which means they can be 0, 1, or both simultaneously. This allows quantum computers to perform certain computations much faster than classical computers.



The potential applications of quantum computing are vast and include areas such as cryptography, optimization, drug discovery, and machine learning. However, quantum computing is still in its infancy and faces numerous challenges, including the need for error correction, the difficulty of building large-scale quantum computers, and the lack of programming languages and algorithms.

Despite these challenges, there has been significant progress in the field of quantum computing in recent years. Major tech companies such as IBM, Google, and Microsoft are investing heavily in quantum computing research and development, and governments around the world are also investing in quantum computing initiatives.

One of the most significant breakthroughs in quantum computing came in 2019 when Google announced that it had achieved quantum supremacy. This means that its quantum computer was able to perform a calculation that would have taken a classical computer thousands of years to complete in just 200 seconds. This achievement demonstrated that quantum computing has the potential to solve problems that are practically impossible for classical computers to solve.



Quantum Computing in Practice

Many businesses are already using quantum computing. For example, IBM is working with Mercedes-Benz, ExxonMobil, CERN, and Mitsubishi Chemical to implement quantum computing into their products and services:

Mercedes-Benz is exploring quantum computing to create better batteries for its electric cars. The company is hoping to shape the future of modernized electrically powered vehicles and make an impact on the environment by implementing quantum computing into its products in an effort to be carbon neutral by 2039. Simulating what happens inside batteries is extremely difficult, even with the most advanced computers today. However, using quantum computing technology, Mercedes-Benz can more accurately simulate the chemical reactions in car batteries

ExxonMobil is using quantum algorithms to more easily discover the most efficient routes to ship clean-burning fuel across the world. Without quantum computing, calculating all of the routing combinations and finding the most efficient one would be nearly impossible.

The European Organization for Nuclear Research, known as CERN, is trying to discover the secrets of the universe. Using quantum computing, CERN can find algorithms that pinpoint the complex events of the universe in a more efficient way. For example, quantum computing can help CERN figure out patterns in the data from the Large Hadron Collider (LHC).

Teams at Mitsubishi Chemical and Keio University are studying a critical chemical step in lithium-oxygen batteries: lithium superoxide rearrangement. They are using quantum computers "to create accurate simulations of what's happening inside a chemical reaction at a molecular level."

Quantum computing is not without its controversies, however. Some experts have raised concerns about the potential implications of quantum computing for cryptography. Quantum computers could theoretically break some of the most widely used encryption protocols, which could have serious implications for privacy and security. As a result, there is a growing need for the development of quantum-resistant encryption protocols.

Despite the challenges and controversies, quantum computing is an exciting area of research that holds enormous promise for the future. As researchers continue to make progress in the field, we can expect to see more applications of quantum computing in various industries and fields, leading to new breakthroughs and discoveries.

Kotlin - The programming language for modern multiplatform applications.

Introduction

Kotlin is a statically-typed programming language that runs on the JVM(Java virtual machine) and also can be compiled to JavaScript source code or use the LLVM(Low Level Virtual Machine) compiler infrastructure. Its primary development is from a team of JetBrains programmers based in Saint Petersburg, Russia.[3] While the syntax is not compatible with Java, Kotlin is designed to interoperate with Java code and is reliant on Java code from the existing Java Class Library, such as the collections framework.

History

In July 2011 JetBrains unveiled Project Kotlin, a new language for the JVM, which had been under development for a year.JetBrains lead Dmitry Jemerov said that most languages did not have the features they were looking for, with the exception of Scala. However, he cited the slow compile time of Scala as an obvious deficiency.One of the stated goals of Kotlin is to compile as quickly as Java. In February 2012, JetBrains open sourced the project under the Apache 2 license.

The name comes from Kotlin Island, near St. Petersburg. Andrey Breslav mentioned that the team decided to name it after an island just like Java was named after the Indonesian island of Java (though the programming language Java was perhaps named after the coffee)

PROJECT Kotlin by JetBRAINS

JetBrains hopes that the new language will drive IntelliJ IDEA sales.

Kotlin v1.0 was released on February 15, 2016. This is considered to be the first officially stable release and JetBrains has committed to long-term backwards compatibility starting with this version.

What Is Kotlin, and Why Should You Use It?

What is Kotlin?

Kotlin is a new language (sometimes referred to as Swift for Android), developed by the JetBrains team, and is now in its 1.0.2 version. What makes it useful in Android development is that it compiles to JVM bytecode, and can be also compiled to JavaScript. It is fully compatible with Java, and Kotlin code can be simply converted to Java code and vice versa (there is a plugin from JetBrains). That means Kotlin can use any framework, library etc. written in Java. On Android, it integrates by Gradle. If you have an existing Android app and you want to implement a new feature in Kotlin without rewriting the whole app, just start writing in Kotlin, and it will work.

So, the first language. I think that Java isn't the master of elegance or clarity, and it is neither modern nor expressive (and I'm guessing you agree). The disadvantage is that below Android N, we are still limited to Java 6 (including some small parts of Java 7). Developers can also attach RetroLambda to use lambda expressions in their code, which is very useful while using RxJava. Above Android N, we can use some of Java 8's new functionalities, but it's still that old, heavy Java. Very often I hear Android developers say “I wish Android supported a nicer language, like iOS does with Swift”. And what if I told you that you can use a very nice, simple language, with null safety, lambdas, and many other nice new features? Welcome to Kotlin.

Features of Kotlin

- Functional & Object-Oriented.
- Named & Optional Arguments.
- No Checked Exceptions.
- Extension Functions.
- Java Compatibility.
- Statically Typed.
- Null Safety.
- Lambdas.

Where is Kotlin Used?

Pinterest

Pinterest has successfully introduced Kotlin into their application, used by 150M people every month.

Gradle

Gradle is introducing Kotlin as a language for writing build scripts.

Evernote

Evernote recently integrated Kotlin into their Android client.

Uber

Uber team uses Kotlin for building internal tools.

Corda

Is an open-source distributed ledger platform, supported by major banks, and built entirely in Kotlin.

Coursera

Coursera Android app is partially written in Kotlin.