



# The Actuary India

Magazine of the Institute of Actuaries of India

June 2023

PRICING, RETIREMENT  
BENEFITS

**PRICING OF  
RETIREMENT PRODUCTS:  
ML CAN HELP!**

GRAPHIC NOVEL

**THE FUTURE ACTUARY:  
CHAPTERS 3-4**

DEFINED BENEFIT,  
RISK MANAGEMENT

**LONGEVITY SWAPS:  
MANAGING RISK  
FOR PENSIONS  
ARRANGEMENTS**

INTERVIEW

**IN CONVERSATION  
WITH DR. ARIJIT BASU**





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## Editorial

## Letters to the Editor

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## Features

### **Pricing of retirement products: ML can help!**

This article by **Devashis Ghosh** shows how machine learning can help insurers price retirement products. By forecasting customer actions and features, such as withdrawals, premiums, and annuitization timing, they can estimate the negative cash flow vectors and design profitable products.

### **Longevity swaps: Managing risk for pensions arrangements**

Longevity risk hedging is a key concern for pension schemes. **Timsi Sethi** discusses how longevity swaps can help with this, and briefly mentions the prospects of such hedging in India.



## Culture

### **The Future Actuary**

**Devadeep Gupta** shares the fascinating chapter four of 'The Future Actuary,' where Cauchy, Chi & Gauss continue their gripping adventure.

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## Podcasts

### In conversation with Dr. Arijit Basu

**Kunj Behari Maheshwari**, Editor-in-Chief of The Actuary India, engages in an insightful interview with **Dr. Arijit Basu**, shedding light on his remarkable journey, valuable experiences, and the ever-evolving landscape of the insurance industry.



## Puzzles

Guess the letters for these emoji puzzles about DB pension de-risking. Use the clue to help you. Don't worry, you can try as many times as you like. This is as fun as making replicating portfolios made by Puzzle master **Kathan Jain**.

- De-risking DB pension plans



It's been an amazing year for the digital avatar of Actuary India magazine. We've transformed the way we communicate the knowledge and acumen of the actuarial community through a unique and exciting approach. The transition from a magazine to a website has allowed the actuarial community to publish a lot more along with text-based articles. The magazine now has increased interaction through the website through downloadable resources, podcast recordings, puzzle solving and humor sections, and interactive articles.

In the past months, we've explored some of the softer aspects of working in the actuarial field. Sateesh Bhat emphasized the necessity for sleep to operate at our best, both personally and professionally. Ajay Shekhar and Shreyash Maheshwari provided a discourse around the scope and requirements for actuarial employment in non-traditional areas outside of the insurance domain. We also got some more insight into the possible future of our profession with a couple of more segments of The Future Actuary moving towards an exciting and unexpected finale.

Devashis Ghosh suggests an interesting manner in which ML can help in the pricing of retirement products along with Timsi Sethi covering a possible solution to hedging the risk in such products using longevity swaps.

The immense scale of success of the 22nd GCA meant that there were continuing coverages of the various sessions that took place during the event around the various domains of life and health insurance, risk and analytics, property and casualty business.

We hope to continue bringing such interesting content to the entire actuarial community along with some fun along the way too. We would love to hear your thoughts on this and would absolutely encourage any ideas from the community, no matter how big or small. Please feel free to reach out to us with your contributions through our website or email.

Prakhar Mody  
**Editor, The Actuary India**  
Magazine of the Institute of Actuaries of India

# Announcements



NATIONAL INSURANCE COMPANY LIMITED  
(A Govt. of India Undertaking)  
CIN: U10200WB1906GOI001713  
Registered & Head Office: 3, Middleton Street, P.O.Box No.9229, Kolkata – 700071

## **Recruitment of Actuarial Apprentice**

National Insurance Company limited a leading General Insurance Company, invites applications for recruitment of 16 Actuarial Apprentices.

For details regarding the eligibility conditions, age, educational qualifications and other details, please visit “Recruitment” section of company’s website (<https://nationalinsurance.nic.co.in/> )

Important Dates – Submission of application:-

Start Date: - 07.06.2023 (10:00 hrs.)

End Date: - 30.06.2023 (10:00 hrs.)



## **AGRICULTURE INSURANCE COMPANY OF INDIA LIMITED**

**Regd. Office: Office Complex 1, 5th floor, Plate B & C, East Kidwai Nagar, New Delhi-110023**

### **ADVERTISEMENT FOR APPOINTED ACTUARY**

“Agriculture Insurance Company of India Limited (AIC), has been formed under the aegis of the Government of India and promoted by 6 Public Sector Companies as a specialty Crop Insurance provider to the Indian farming community. AIC is under the administrative control of Ministry of Finance, GOI.

The Company is inviting application from resident Indian Citizens for the post of Appointed Actuary on full time contractual basis for a period of 3 years, renewable subject to approval of the Competent Authority.

For further details, please visit Career section of our website [https://www.aicofindia.com/AICEng/Pages/Career\\_Recruitment.aspx](https://www.aicofindia.com/AICEng/Pages/Career_Recruitment.aspx)

**Last date of receipt of Application: 30.06.2023**



## ANNOUNCEMENT

### STRUCTURED QUERY LANGUAGE (SQL)- THE INCREDIBLE DATA TOOL FOR ACTUARIES: WEBINAR SERIES 2023

#### I. ABOUT THE PROGRAM

The Structured Query Language (SQL) is one of the most effective tools for Actuaries when they deal with large amount of data, which goes much beyond the capacity of MS Excel. While Python, R, VBA, SAS and SPSS are used in many situations, the SQL is the best to communicate with the Data Base/ Big Data. When the big data science and Artificial intelligence (AI) growing beyond one's imagination, Actuaries to overcome the emerging challenges by equipping themselves with all such tools and techniques which AI is based upon. This program envisages to bring in confidence and capacity among all actuarial professionals to effectively deal with all types of data, be it structured, semi-structured or unstructured.

The 22-hour interactive webinar series covers basic and advanced SQL functions and its applications in various data scenarios. Participants will have hands-on experience by their engagement in tasks and assignments based on real life situations.

#### II. PROGRAM SCHEDULE:

Webinars will be spread over 11 sessions of 2 hours each duration, starting from **27 June 2023**. In order to ensure opportunity for learning across all members of the profession and to engage participants for an effective learning and hands on experience, sessions are uniformly spread during the week.

A detailed program schedule is available in **ANNEXURE-I**

*Recorded videos of all webinars will be made available in the member's login page until 31 August 2023. However, it is highly recommended to attend all LIVE sessions without fail for optimum learning out of the program.*

#### III. REGISTRATION:

##### Registration fee

- ✓ **For Members** : Rupees Four thousand (₹4,000.00) only & (18% GST extra).
- ✓ **For Non-members** : Rupees Eight thousand (₹8,000.00) only, (18% GST extra).
- ✓ **Bulk registrations** from Employers will be accepted with a minimum registration count of **25**, where both members and non-members can together register with a lump sum payment of **₹1,00,000.00** (18% GST extra). Any additional count of registrations beyond 25 will be considered with the same average rate.
- ✓ **Registration menu** : Login to IAI >>Training program>>SQL
- ✓ **Registration opens** : On 1 June 2023 11.00AM.
- ✓ **Registration closes** : On 25 June 2023 6.00PM.





## IV. FACULTY

**Dr. Deepak Kumar Singh**, PhD (IIT, Kanpur), MTech (IIIT, Allahabad) is the CEO of DK Infosolutions Private Limited and visiting faculty of Indian Institute of Information Technology, Lucknow. He is the Chair- Incubation centre at Jaipuria Institute of Management at Lucknow. He is also advisor to many Companies, Institutions and the Government of UP for their different projects. Being a passionate teacher, he has trained many executives and students in India, China, Japan, Singapore and Tanzania. His core areas of expertise are AI, ML, IoT and Data Analytics.

## V. COVERAGES :

- ✓ Relational Databases
- ✓ Creating Databases and Tables
- ✓ Data Types and Constraints
- ✓ Basic SQL Queries
- ✓ Filtering and Sorting Data
- ✓ Joins and Unions
- ✓ Aggregating Data with Group By
- ✓ Subqueries and Nested Queries
- ✓ Modifying Data with SQL
- ✓ Advanced SQL Functions
- ✓ Creating Views and Indexes
- ✓ Database Transactions
- ✓ Stored Procedures and Functions
- ✓ Performance Tuning and Optimization

## VI. CONTACT :

Point of contact for all related queries: Mr. Ravindra Mastekar at: 022-62433348 or [ravindra@actuariesindia.org](mailto:ravindra@actuariesindia.org)



## ANNEXURE-I

### Program Schedule

27 June 2023 to 27 July 2023- 7.00 pm to 9.00 pm

Date	Day	Program	Topic
27-06-2023	Tuesday	Basic using SQLite	Introduction to SQL2, Databases and RDMBS
29-06-2023	Thursday		Install a Database Engine and SQLite Introduction
01-07-2023	Saturday		SQL Syntax and basic queries
11-07-2023	Tuesday	Medium to Advance	SQL Data Types and SQL Operators
13-07-2023	Thursday		SQL Expressions and SQL Comments
15-07-2023	Saturday		Data Definition Language Commands & Operations and Data Manipulation Language Commands & Operations
18-07-2023	Tuesday		SQL Data Control Language Commands and SQL Functions
20-07-2023	Thursday		SQL Queries, Sub Queries and Clauses
22-07-2023	Saturday		SQL Joins and Views
25-07-2023	Tuesday		SQL Indexes and Transactions
27-07-2023	Thursday		SQL Injection and SQL vs. NoSQL

## Our Team



**Kunj Behari Maheshwari**  
Chief editor

Kunj Behari Maheshwari is a partner at Willis Towers Watson Actuarial Advisory LLP and the Head of Life Insurance consulting for India and Sri Lanka within WTW's Insurance Consulting and Technology division.

He is passionate about actuarial work, research and volunteers regularly towards initiatives at the IAI. He enjoys swimming and being outdoors.



**Prakhar Mody**  
Editor

Prakhar is a qualified actuary with extensive experience in financial risk management and technology transformations having worked with banks, insurers, financial institutions and corporate clients across the globe.

He is also an avid gamer with an interest in fictional novels and trekking.



**Anirudh Bansal**  
Editor

Anirudh is the founder of InsurTech Actuary and is a General Insurance Actuary. He is passionate about microinsurance, innovation and InsurTech startups.



**Rajeshwarie Iyer**  
Editor

Rajeshwarie Iyer is working as the VP, Head Specialty Bangalore for SwissRe Global Business Solutions. She is a Fellow of the Institute of Actuaries of India and the Institute and Faculty of Actuaries UK. Rajeshwarie has worked in General Insurance in reserving, pricing and regulatory reporting and is currently underwriting reinsurance.

She volunteers actively for the profession and is a classical dancer who enjoys swimming, blogging and reading.



**Kathan Jain**  
Editor

Kathan works at Ankolekar & Co. as a senior associate. He's obsessed with food and enjoys binge-watching & solving puzzles in his free time.



**Ekta Mehta**  
Editor

Ekta Mehta is an associate actuary currently involved in with-profits and experiences analysis-related tasks throughout the year. She spends her free time solving large-sized jigsaw puzzles, volunteering in several actuarial capacities and helping young adults to enhance their communication, speech & drama skills.

The Institute of Actuaries of India (IAI) is a statutory body established under The Actuaries Act 2006 (35 of 2006) for regulating the profession of Actuaries in India. The provisions of the said Act have come into force from the 10th day of November 2006, in terms of the notification dated 8th November 2006, issued by the Government of India in the Ministry of Finance, Department of Economic Affairs.

The Actuary India is the flagship magazine of the IAI that has been in publication for over two decades. We aim to provide our members and the larger actuarial community a platform to connect, exchange views and promote thought-leadership and research beneficial to the profession.