

Government of India

Ministry of Electronics and information Technology

National Informatics Centre, Himachal Pradesh, Shimla

Technical Presentations by NIC HP Officials: 06-Jan-2024

As part of an ongoing series of 10-minute technical talks presented by NIC officials of their choice on a regular basis, the recent technical session took place on 06-Jan-2024.

Sh. Ravi Kishan Meena, the District Information Officer (DIO) of Chamba, has been appointed as a Scientist-C in CERT. With nearly five years of rich technical and administrative experience within NIC, he graciously shared his journey, expressing gratitude for the invaluable guidance and support received from everyone.



Sh. Ravi Kishan Meena sharing his technical and administrative experience in NIC

In acknowledging Mr. Meena's contribution, the State Information Officer (SIO) extended heartfelt thanks for his exemplary management of the district. The SIO also lauded his technical skills and active participation in various activities.

The details of the presenters, along with their topics and ratings, were as follows:

S.No.	Name	Designation	Topic	Rating (5.0)
1.	Sh. Brijender Kumar Dogra	Scientist-E	Generative Artificial Intelligence	4.0
2.	Sh. Jitender	Scientific Officer-SB	Introduction to Slony-I Replication in PostgreSQL	4.3
3.	Sh. Anurag Gupta	Scientist-E	NoSQL	4.6

Generative Artificial Intelligence

Sh. Brijender Kumar Dogra delivered a presentation on Generative AI, which refers to a category of artificial intelligence systems designed to create new content, often indistinguishable from content generated by humans. Unlike traditional AI models that focus on specific tasks, generative AI has the capability to produce original and diverse outputs, such as text, images, or even audio.



Sh. Brijender Kumar giving presentation on Generative AI

One prominent example of generative AI is the GPT (Generative Pre-trained Transformer) model developed by OpenAI. GPT models are trained on massive datasets to understand and generate human-like language. These models excel in tasks like language translation, content creation, and answering questions.

Generative AI holds great promise in various fields, including creative arts, content creation, and problem-solving. However, ethical considerations and concerns about misuse, such as deepfake generation or the propagation of false information, highlight the need for responsible development and deployment of generative AI technologies.

As research continues, generative AI is likely to play a significant role in shaping the future of human-machine interactions, enabling innovative applications and enhancing our ability to create, communicate, and solve complex problems.

Introduction to Slony-I Replication in PostgreSQL

Sh. Jitender Sharma delivered a lecture on Introduction to Slony-I Replication in PostgreSQL, is a powerful and open-source asynchronous master-to-multiple-slave replication system (changes made to the master database are asynchronously propagated to multiple slave databases) for PostgreSQL databases. It provides a solution for creating and maintaining a replicated database environment, allowing PostgreSQL databases to be distributed across multiple servers for improved scalability, fault tolerance, and high performance.

The key components are Provider Node (Master) and Subscriber Nodes (Slaves). Slony-I Daemon is the background process responsible for managing and coordinating replication activities. It ensures that changes are correctly propagated and applied across all nodes. It employs a trigger-based approach for capturing and replicating changes. Triggers are added

to tables that need to be replicated. When data modifications (INSERT, UPDATE, DELETE) occur on the provider node, triggers capture these changes and create replication events. Replication events are then transmitted to the subscriber nodes asynchronously through the Slony-I daemon.



Sh. Jitender Sharma showing the demonstration of Slony-I Replication

Slony-I also provides conflict resolution mechanisms to handle situations where changes are made on both the provider and subscriber nodes. It allows administrators to define rules for conflict resolution based on their specific requirements.

NoSQL



Sh. Anurag Gupta on the best practices for developing Secure Web Applications

Sh. Anurag Gupta spoke about NoSQL which is a DBMS that provides an alternative to traditional relational databases. Unlike relational databases, which use a structured and tabular data model, NoSQL databases are designed to handle unstructured, semi-structured, or highly dynamic data. NoSQL databases are particularly well-suited for large-scale, distributed systems and applications that require flexibility, scalability, and high performance. He explained Key characteristics of NoSQL databases includes Schema Flexibility and Scalability. As NoSQL databases offer advantages in terms of scalability and flexibility, it's essential to carefully consider the specific requirements of a given application before choosing between NoSQL and traditional relational databases. The choice depends on

factors such as data structure, query patterns, scalability needs, and overall system architecture.

Quiz Competition on Mobile App

A quiz competition was also organized based on the technical presentations delivered by NIC Officials. A total of 29 officials participated in the quiz competition which was held on the Hindi Bodh Mobile App developed by NIC HP. 15 multiple-choice questions based on the technical content delivered by the officers were asked in the quiz competition.

The latest enhancement in the mobile application introduces the capability to challenge a question. The users now can express their doubts or seek further clarification by challenging the validity or accuracy of a question.

The result of the quiz competition was as follows:

Position	Participant Name	Designation	Place of Posting
1 st	Sh. Sanjay Gupta	Scientist-E	NIC District Centre Kullu
2 nd	Sh. Swetansh Shatak	Scientific/Technical Assistant-B	NIC District Centre Solan
3 rd	Sh. Vinod Kumar Garg	Scientist-F	NIC District Centre Hamirpur

SIO also took feedback from all the present officers regarding the status of Data Ownership, handing over Data Backup and Security Audit of all the web as well as mobile applications in their domain and also directed to issue letters to all the Departments in this regard before 15-Jan-2024.



NIC HP officials attending the technical session

SIO proactively sought feedback from all attending officers on critical aspects such as Data Ownership, the seamless transfer of Data Backup responsibilities, and the comprehensive Security Audit of both web and mobile applications within their domains. The SIO directed the issuance of official letters to all concerned Departments, emphasizing the importance of these measures. The deadline set for this crucial initiative is before 15-Jan-2024.

The SIO emphatically urged every official to propose innovative ideas aimed at enhancing citizen services and optimizing application management. The call was for creative solutions that could contribute to both the betterment of the public and the overall efficiency of application systems.

It has been decided that the following NIC officials will present a technical talk on the topic of their choice during the upcoming meeting scheduled for coming Saturday, 20-Jan-2024.

S.No.	Participant Name	Designation	Place of Posting
1.	Sh. Ramnarayan Yadav	Scientist- B	NIC Centre CGO Complex
2.	Sh. Sanjeev Kumar	Scientist-C	NIC Distt Centre Solan
3.	Sh. Akhilesh Bharati	Scientist-E	NIC Distt Centre Mandi
4.	Sh. Balwan Singh	Scientist-D	NIC Distt Centre Kinnaur

These officials may not only share their Technical Talk topic, presentation, but also provide at least six multiple choice questions related to their technical talk with Sh. Sandeep Sood, Scientist-F well before 20-Jan-2024.

The following officials were present in the technical talk on 06-01-2024:

NIC HP State Centre		
1	Ajay Singh Chahal	SIO-Cum-Scientist-G
2	Lalit Kapoor	Scientist-F
3	Sandeep Sood	Scientist-F
4	Sanjay Kumar	Scientist-F
5	Vijay Kumar Gupta	Scientist-F
6	Sandeep Kumar	Scientist-E
7	Daljeet Singh Rana	Scientist-E
8	Sanjay Thakur	Scientist-E
9	Mangal Singh	Scientist-D
10	Sarvjeet Kumar	Scientist-C
11	Vandana Devi	Scientist-C
12	Chunni Lal	Scientist-C
13	Ramnarayan Yadav	Scientist-B
14	Jitender Sharma	Scientific Officer-SB
District Centre Bilaspur		
15	Rakesh Kumar	Scientist-D

District Centre Chamba		
16	Ravi Krishan Meena	Scientific/Technical Assistant-B
District Centre Hamirpur		
17	Vinod Kumar Garg	Scientist-F
18	Anurag Gupta	Scientist-E
District Centre Kangra		
19	Bhupinder Pathak	Scientist-F
20	Akshay Mehta	Scientist-E
District Centre Kinnaur		
21	Balwan Singh	Scientist-D
District Centre Kullu		
22	Brijender Kumar Dogra	Scientist-E
23	Sanjay Gupta	Scientist-E
District Centre Lahual & Spiti		
24	Jagdeep	Scientific/Technical Assistant-A
District Centre Mandi		
25	Akhilesh Bharati	Scientist-E
26	Ashwani Kumar	Scientist-E
District Centre Shimla		
27	Pankaj Gupta	Scientist-F
28	Deepak Kumar	Scientist-C
District Centre Sirmour		
29	Vijay Kumar	Scientist-E
30	Mohan Rakesh Aggarwal	Scientist-D
District Centre Solan		
31	Sanjeev Kumar	Scientist-C
32	Swetansh Shatak	Scientific/Technical Assistant-B
District Centre Una		
33	Sanjeev Kumar	Scientist-E