Tax Invoice/Bill of Supply/Cash Memo

Sender:	Bill To:	Ship To:
Nexxbase Marketing Pvt ltd KHASRA No. 146/25/2/1, Jail Road, GSTIN: 06AADCN0946N1Z8, Gurgaon-122101 Email: 8882132132 GSTIN: **06AADCN0946N1Z8**	**Anuj Verma** Purvanchal Talkis Ke Samne Bhrigu Ashram, Ballia, Uttar Pradesh, BALLIA, Uttar Pradesh-277001	**Anuj Verma** Purvanchal Talkis Ke Samne Bhrigu Ashram, Ballia, Uttar Pradesh, BALLIA, Uttar Pradesh-277001 IN anuj17026@iiitd.ac.in
Invoice No: **NH/23-24/795884** Date: **November 14, 2023**	Order No: **3758965** Date: **November 14, 2023**	Dispatch Through: **410004797404** **EcomExpress_API Air**
Portal: **www.gonoise.com**	Payment Mode: **COD**	

Sl No.	Description of Goods	Qty	Rate (Rs)	Less (Rs)	Taxable Amt (Rs)	IGST Amt (Rs)	Total (Rs)
1	wrb-sw-colorfitultra3-std-blk_blk - Noise ColorFit Ultra 3 Smartwatch - Jet Black HSN : 85176290	1	3,499.00	0.00	2,965.25	533.75 @ 18.00%	3,499.00
	Shipping Charge		29.00		24.58	4.42	29.00
	Invoice Total	**1**		0.00	2,989.83	538.17	**3,528.00**

Amount Chargeable (in words) : Three Thousand Five Hundred And Twenty Eight Rupees Only

Declaration

We declare that this invoice shows the actual price of the goods described and that all particulars are true and correct.

E. & O.E

HSN Code	Tax Rate%	Qty	Taxable Amt (Rs)	IGST Amt (Rs)	Total Tax Amt (Rs)	Total (Rs)
85176290	18.00%	1	2,989.83	538.17	538.17	3,528.00

for Nexxbase Marketing Pvt ltd

Authorised Signatory

Prepared By : Nexxbase Marketing Pvt ltd

This is a Computer Generated Invoice

ABIN Assignment 5 (Deep learning)

Dr. Debarka Sengupta

10/11/2023

Guidelines

1. Deadline: 14th November 2023, 11:59 pm (Midnight).
2. Late submission: 15th November 2023, 11:59 pm (Midnight) (50% of the obtained marks will be deducted).
3. Further late submissions after the 15th November will be awarded zero.
4. All coding assignments must be submitted as .ipynb files with proper comments.
5. Standard IIIT-D plagiarism policy applies.
6. The assignments have to be submitted in the following manner:
   (a) Create a single Jupyter notebook with proper demarcation of questions and responses (text, code, command, explanation, output, graphs). The accepted language is Python.
   (b) A PDF file comprising the entire Jupyter Notebook and a separate Jupyter Notebook file needs to be uploaded (zip format) at the assignment link on Google Classroom before the deadline.
   (c) One group should submit only from the registered submission ID during group formation. Rest of the members must turn in the assignments with private comments mentioning the name, roll, and submission id. Any violation of above will disqualify your submission from evaluation.
   (d) The name of the PDF and jupyter notebook file should be a combination of the group number and assignment number. For example, group1 1.pdf, where 'group1' is the group number and '1' is the assignment number.
7. No shift of the deadline is allowed.

article

Question 1 (5 Points)

Create a neural network with one hidden layer containing 4 nodes, 2 input nodes, and 1 output node. Apply a sigmoid activation function after the linear block for each case.

1. Initialize the network's weights randomly. [1]
2. Perform backpropagation for 10 epochs and display the updated weights after each iteration. [2]
3. Plot the loss curve and metric curve and analyze the relationship between loss and epoch in backpropagation. [1]
4. Provide a reasoned explanation for the observed relationship. (1)

Question 2 (5 Points)

In our previous discussion about artificial neural networks applied to gene expression data in class, we identified an issue with data imbalance.

1. Implement two potential strategies to address this imbalance, being careful to select appropriate metrics for handling imbalanced data. [1+1]
2. Plot the loss versus epoch and metric versus epoch curves. [0.5+0.5]
3. Justify why both strategies are effective for handling imbalanced data. [1+1]

Question 3 (5 Points)

In our previous discussion about artificial neural networks and gene expression data, we recognized that the dataset had a limited number of samples. A standard train-test split may lead to high variance due to the random state.

1. Propose and implement two strategies that provide more reliable model estimations when dealing with a small sample size. [1+1]
2. Plot the loss versus epoch and metric versus epoch curves for all possible cases.

[0.5+0.5] 3. Provide a rationale for why both strategies are expected to be effective. [1+1]

Anuj Verma

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Experience

KLA-Tencor **Jan. 2023 – Present**

Software Engineer 2 *Chennai, Tamil Nadu*

- Responsible for implementing **SEMI standards**, design and review of code.
- Being a developer, I have closely worked with different divisions to understand their requirements to build better products for them.
- **SBS:** Solely responsible for creating a feature for switching between the different versions of software, that is responsible for wafer movement, which enables the user to keep different versions of software at the same time in the system. This feature can also help to switch between the same version of the software with different patches. That helps the user to keep working with the same version of the software with different patches.
- **Nexus:** Nexus is the main software used for wafer handling, I made many fixes to make the wafer handling process faster and easier. Also worked on the code refactoring part for the extensibility and readability of the code. I have worked on adding features to this software to enhance the usage and throughput of the software.
- Doing the above, get hands-on with design principles, design patterns, and application of OOPs and SOLID.
- **Tech and Tools:** .NET, SOLID, LLD, Visual Studio, GitHub

IDFC First Bank **Jun. 2021 – Dec, 2022**

Application Engineer *Bengaluru, Karnataka*

- Responsible for building a banking product engine on vault.
- Closely interacted with the COO, product lead, and business lead to understand the requirement, also to explain the limitations of the product, and provide a demo.
- **BNPL:** Buy now pay later, created the engine for this product based on vault, written all the logic for this product as smart contracts that lead to an increase in the efficiency of the product. Did the extensive testing (unit, e2e, and simulation) to cover all the scenarios for this product. Did the documentation for all the features the product had.
- **Observality Platform:** Develop a central dashboard for tracking credit card usage on different criteria like state, gender, region, age, and occupation. I also added the feature for getting alerts on the dashboard when there is credit card fraud happens, all these features implemented in real-time.
- **Tech and Tools:** Python, Java, Kafka, Mulesoft, Druid, Superset, Postman, VS Code.

Technical Skills

Languages: `C#`, Java, Python
Expertise: Data Structure And Algorithms, OOPs, SOLID, Operating System, DBMS, Networking
Developer Tools: VS, VS Code, Eclipse, Google Colab, Android Studio, Matlab
Technologies/Frameworks: Linux, MacOS, GitHub, JUnit

Education

IIIT Delhi **Jul. 2017 – May 2021**

Bachelor of Technology in Computer Science; GPA -: 8.07/10.0 *New Delhi, Delhi*

Projects

Sentiment Analysis Using Tweets During Pandemic | *Python, HTML, NodeJS, Colab, IBM Cognos* **November 2020**

- Collected real-time data between the fixed dates from twitter and used NLP to make it compatible for model.
- Did pre-processing on the data, used regression models to predict the sentiment and made an web app that can make request to this model and show the results.
- Used Pandas, DataFrames, Scikit, NLP, for pre-processing and model training.

IIIT Delhi APP Connect | *JAVA, Android Studio, FireBase* **October 2020**

- An app that connect alumni, professor and students on one platform so that they can share, collaborate and discuss.
- App built on Android Studio using Java and for back end data handling firebase was used.

OFDMA Scheduler | *C++, Linux, ns-3* **October 2020**

- A scheduler to schedule the different types of clients such as On-Off, BulkSend, and HTTP.
- Since the problem was NP hard, followed the greedy approach with some optimization.
- Performed the experiments for different brackets and then analysed the results.

Achievements

- Rated as overall 5-star employee in my previous organization.
- Ranked **2623** in JEE Mains, total appeared cadidates were **1.5 million**.
- Among top **25.92** percent on **LeetCode** with rating of **1572**.
- Solved 1100+ problems on DS and Algo, cumulatively on **LeetCode**, **GFG**, and **CodeChef**.
- Member of Network Research Lab at IIIT Delhi.
- Participated in Google HashCode with world rank of **2699**

Nithin Reddy, Pod Lead, Growth and Engagement, Navi Technologies, Banglore, India
8128244670, nithinreddyt@gmail.com

TECHNOLOGIES AND SKILLS

Java, Spring boot, GoLang, System Design, MYSQL, Elasticsearch, Couchbase, NodeJS, AWS services, MongoDB, Kafka, Microservices, Distributed Systems.

As an experienced professional with a proven track record of leading teams and managing complex projects, I bring a unique blend of technical expertise and leadership skills to any organization. With extensive experience in design, implementation, and cross-team dependency management, I have a deep understanding of what it takes to ensure successful project delivery and achieve business goals.

WORK EXPERIENCE

Navi, Pod Lead - Growth and Engagement Team (Sept 2021 - Present)

- Responsible for design, code reviews, technical decisions, and uptime of multiple services our team owns.
- Being the technical face of the team I work closely with the Engineering head, EMs, Product managers, and other key stakeholders at Navi.
- As a Pod Lead, I **mentor and guide 9 other people** on the team.
- Actively part of **hiring** SDE-3, SDE-2, and SDE-1.
- Solely responsible for Navi Apps home page **uptime and latency optimizations**.
- **Feeds Service:** Was solely responsible for the **Design**, **Project Planning**, **Dependency Management, Implementation**, and release planning of Feeds Service.
    - Feeds - responsible for all key real estate of Navi App, Home screen, Cross-sell, and Upsell screens.
    - Service uses a config-based approach for screens and serves personalized cards(UI widgets) to the users based on their profile and current journey.
    - Resiliency, Latency, and Scale were key factors for this service as it serves Navi's home page. Improved home page latency from 750ms to 450ms.
    - Cards can be modified, added, and deleted on the go without any app or backend release.
    - Provided capabilities for Product managers to create, update and experiment on cards, thereby reducing dependency on Developers.
    - Responsible for code reviews, mentoring, and guiding 3 other developers in the team.

- Designed and implemented the **Navi Referral Engine** for user acquisition. Helped in reducing CAC by 60%.
- **Customer Data Platform:** Responsible for Design, Execution, and Road map for the Navi CDP platform. This system is being built to support Navi's Marketing use cases and segmentation use cases.
    - This System involves streaming architecture where we use Apache Flink, and then Apache Pinot as our data store.
    - Responsible for gathering requirements from the marketing team and planning and prioritizing the features.
    - Responsible for mentoring and guiding 2 other developers in the project.
- **Rewards, Digital Gold, Stories**: Here I'm responsible for system design, and code reviews. I mentor engineers who actively work on implementation.
- **Financial Profile Service:** Built a service to track the financial profile of Navi customers.
    - I was responsible for interacting with third-party financial data providers, and account aggregators. I help PMs to technically evaluate the right vendor for a given financial data.
    - Owned and partially implemented this project and mentored and guided 4 other developers involved in this project.
- Being a senior member of the team, I actively help and am involved in all app uptime issues across teams at Navi.

Mindtickle, Senior Software Developer - Distributed Systems (Sept 2018 - Sept 2021)

I worked for a distributed database team, where I was responsible for multiple services, databases (MySQL, Elasticsearch), and data pipelines. Also driven storage-related projects and promoted best practices across teams. Hiring, onboarding, Code reviews, and mentoring were a few other responsibilities.

1) **TickleDB:**

a. Implemented a distributed data store, in which I was responsible for Data Plane, Control Plane, Routing, Auto Failover, Point-in-time Recovery, and Backup.
b. Used Golang for developing microservices and MySQL for storing data.
c. Solved challenging problems like - Multi-Tenancy, Horizontal scaling, Connection management, Database Abstraction, Multi-tenancy, Query Monitoring, Connection Monitoring, and Alerting.
d. Achieved Auto failover of MySQL nodes - the system can now recover in 2-3 seconds.

e. As the primary owner of TickleDb, I'm responsible for gathering requirements and helping decide on a road map.
f. Scaled **TickleDB** from 0 to 50M req/day and it serves as a storage solution for 40 odd microservices across 8 teams.

2) **Elasticsearch**:

a. I Managed a 30-node cluster with 900 indices. Responsible for cluster performance and health, tuning JVM heap, and scaling.
b. Solved performance-related problems to support large numbers of indices at scale.
c. Also identified concurrent index refresh problems, Memory constraints of shards, and Thread Contention issues while concurrent writes, by diving into the Elasticsearch 5.4 codebase
d. Scaled ES cluster from 80M to 400M req/day.

3) **MT-Kafka-Connect**:

a. I was responsible for building data pipelines on **Couchbase** and **MySQL.**
b. Helped teams across Mindtickle to consume CDC events. System also includes replaying events in case of a disaster.

Lyearn Inc - *Lead Backend Developer,* **Dec 2016 - Sept 2018**

a. Developed backend services from scratch, I was the first backend developer at Lyearn.
b. Implemented Message driven Architecture using SQS - scaled up course enrollments.
c. I implemented the Reporting and Admin services of the platform in a scalable manner, with full-text search capabilities, and various sort and filter capabilities using Elasticsearch as the data source.
d. Established coding standards and code review process. Onboarded new developers and was also leading System Design, Planning, and Project management

Lyearn Inc - *Software Developer Intern* **June 2015 - Nov 2016**

Owned MongoDB and Elasticsearch. Developed backend services. Implemented user and user group hierarchies using Neo4j. Implemented GraphQL layer.

EDUCATION

Dhirubhai Ambani Institute of Information and Communication Technology - *B.Tech,* 2013 - 2017, CGPA: 8.51