**Product Development**

**SQL & Database**

**Interview Questions**

* Different types of joins (INNER, LEFT, RIGHT, FULL OUTER).
* Difference between LEFT OUTER JOIN and LEFT JOIN.
* Write queries using LIKE, HAVING, GROUP BY.
* SQL query to display employee and its manager.
* SQL to fetch latest date entry for each ID (handling duplicates).
* Identify primary key in a dataset.
* Window functions: ROW\_NUMBER(), RANK(), DENSE\_RANK() – differences.
* How to handle NULL values in SQL.
* Primary key vs foreign key vs unique key.

**Related Questions**

* SQL query for second highest salary.
* Query optimization techniques (indexes, query plan analysis).
* Clustered vs Non-clustered indexes.
* Explain normalization (1NF, 2NF, 3NF).
* OLTP vs OLAP systems.
* How are indexes used in DBMS to improve query performance?

**Python & Programming**

**Interview Questions**

* Lambda function (with examples).
* List comprehension & its use cases.
* Difference between list and tuple.
* Python dictionaries (properties, use cases).
* Difference between DataFrame & Series in Pandas.
* Handling duplicate values in a dataset using Python.
* Shallow vs deep copy.
* Exception handling in Python.
* Decorators (concept + example).
* Generators vs normal functions.

**Related Questions**

* List comprehension vs generator expressions.
* Python garbage collection mechanism.
* Debugging Python code with variable scoping (like the c = c+2 example).
* Recursion (factorial, binary search).
* Python libraries used in projects (Pandas, NumPy, Scikit-learn, etc.).
* Multithreading vs multiprocessing in Python.

**Data Analysis / BI (Business Intelligence)**

**Interview Questions**

* Outlier detection in data (SQL, Pandas, or statistical methods).
* Explain mean, median, mode with dataset examples.
* Correlation vs causation.
* Hypothesis testing with real-world use case.
* How to check multicollinearity.
* How to clean a dataset (missing values, duplicates).
* DAX query in Power BI.
* Example scenario where Power BI was used for business reporting.

**Related Questions**

* Feature selection in datasets.
* When to use regression vs classification models.
* Designing a KPI dashboard for senior management.
* Data visualization best practices (how to avoid misleading charts).

**Data Structures & Algorithms (DSA)**

**Interview Questions**

* Print numbers from 1 to N without using a loop (recursion).
* Binary search implementation.
* Complexity analysis of recursive calls.
* Time complexity of finding all paths in a tree.
* Difference between stack and queue.

**Related Questions**

* Basic sorting algorithms (merge sort vs quick sort).
* Hashing & its applications in product systems.
* Designing simple data structures for product use cases (e.g., cache, transaction tracker).

**Logical / Puzzles / Guesstimates**

**Common Puzzles**

* 3 bulbs – 3 switches puzzle.
* 10 bags of coins – find faulty heavier one with minimum tries.
* Ants collision probability on a triangle.
* 3 jars labeling puzzle.
* Mathematical puzzle: Use four 0s to make 24.
* Black box + probability question.

**Guesstimate Questions**

* Estimate number of ATMs in India.
* Estimate daily Uber rides in India.
* Estimate number of LinkedIn profiles created daily.
* Estimate iPhone users in Patiala.

**Problem-Solving**

* Dataset with 20% missing rows → how to handle.
* How to design a dashboard for senior management.

**Product & Analytical Thinking**

**Product Oriented Questions**

* If transaction failure rate increases by 5%, how would you investigate?
* Competitor launches "Buy Now, Pay Later" → how should Amex respond?
* Suggest new features for financial mobile app.
* Prioritize: improve fraud detection vs launch new rewards program.
* Imagine a company wants to launch a student credit card in India → steps to design & launch.
* How would you test a new payment gateway before rollout?
* How can a company increase credit card usage among Gen Z?

**General Product Thinking**

* Trade-off between security & user experience in payment apps.
* How to measure success of a newly launched feature.
* Prioritization frameworks: RICE, MoSCoW, Kano model.

**Project-Based Questions**

* Explain your projects end-to-end.
* Which project are you most proud of and why?
* What criticism did you get & how did you improve?
* How would you integrate your project with any Financial company specific use cases?
* How would you scale your project for 100x users?
* Resume-based project deep dives (tools, Python libraries, DB design).

**HR / Behavioral Questions**

**Core Questions**

* Describe yourself / Resume walkthrough.
* Why our company? (company + role motivation).
* Weaknesses & failures (how you handled them).
* Conflict resolution example.
* Constructive criticism received.
* Biggest achievements.

**Situational Questions**

* Two high-priority tasks with same deadline → what do you do?
* How do you handle pressure in tight deadlines?
* Tell about a time when you couldn’t answer a technical question.
* Share an example where you solved a problem using data.
* How do you prioritize learning new tools?

**Amex-Specific Behavioral**

* Example of customer commitment / going extra mile.
* Working in cross-functional teams.
* Handling disagreement between manager & client.
* How do you keep updated on FinTech & payments?

**Group Discussion (GD)**

* Online education – impact on students/employability.
* Are credit cards promoting debt culture or spending power?
* 100% online vs 100% offline education.
* Communication-based GDs.

**Preparation Strategy for Product Development Role**

1. **SQL & DBMS** – Focus more on queries + performance tuning.
2. **Python** – Emphasize data handling, Pandas, and clean code.
3. **Data Analysis/BI** – Be ready to explain metrics, visualization, hypothesis testing.
4. **Product Thinking** – Practice frameworks (trade-offs, prioritization).
5. **Projects** – Connect projects to **business/product impact**.
6. **HR/GD** – Prepare STAR-format answers + stay aware of a recruiting company’s **values** (Customer Commitment, Integrity, Quality).