GENERAL ASSEMBLY - OUTCOMES

Mock Interview Questions & Resources

Feel free to add resources or questions & the companies that have asked them!

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Data Analytics

Resources
- [Top 50 Data Analyst Interview Questions and Answers 2022](#)
- [Data Analyst Interview Questions](#)
- [Data Analytics Industry Questions](#)
- [SQL Interview Questions from Top companies in 2021](#)

General Data Analyst Questions
- What is Data Analysis?
- How can we differentiate between Data Mining and Data Analysis?
- What is the process of data analysis?
- Define data cleansing? What best practices do you follow during data cleansing?
- List the steps in an analytics project?
- How will you define logistic regression?
- List down some of the best tools that can be useful for data-analysis?
- What are some of the most common problems faced by a data analyst?
- What is Data Wrangling or Data Cleansing/Cleaning?
- How do you Handle Missing Data?

Excel Data Analyst Questions
- What is VLOOKUP?
- What is a Pivot Table, and What are the Different Sections of a Pivot Table?
- What is Conditional Formatting? How can it be used?
- What is the difference between COUNT, COUNTA, COUNTBLANK, and COUNTIF in Excel?
- What are the Questions You Would Consider Before Making a Chart and Dashboard?

SQL Data Analyst Questions
- What is a Relational Database? What do you Mean by DBMS?
- Explain the Constraints in SQL.
- What are the Joins? Explain the Different Types of Joins.
- What is the ACID property in SQL?
- What is Normalization? List all the types of normalization.
- What is a subquery in SQL? List and explain its different types
- What is the difference between the WHERE Clause and the HAVING Clause?

Tableau Data Analyst Questions
- What are Measures and Dimensions?
- What is a Hierarchy?
- How do you Create a Calculated Field in Tableau?
- What is the Difference Between a Heatmap and a Treemap?

- What is a Pareto Chart and when do we use it? How do you create it in Tableau?
- Explain Some of the Recent Stories You have Created in Tableau. What it was, how did you create it and why? What all challenges did you face while creating it?

Python Data Analyst Questions
- What is Negative Indexing? Why is it needed? Give an Example.
- Does Python Call by Reference or Call by Value?
- What is the Difference between Append and Extend?
- What is the Difference between a List and a Tuple?
- What is the Lambda Function?
- Explain how the Map, Reduce and Filter Functions Work.
- What is the difference between a shallow and a deep copy?
- What is the difference between pass, continue and break?
- What does enumerate() function do?
- What are list and dictionary comprehension? Give an example of each.

Data Science

Resources
- **The Muse:** 7 Questions You Should Be Ready to Answer in Any Data Science Interview
- **Nick Singh:** 40 Probability & Statistics Data Science Interview Questions Asked By FANG & Wall Street
- **KDnuggets, 2016:** 20 Questions to Detect Fake Data Scientists
- **Edureka, 2020:** 100+ Data Science Interview Questions You Must Prepare for 2020
- **Medium:** Data Science and ML interview questions
- **Towards Data Science:** Top Data Science Interview Questions and Answers
- **The Data Monk:** Interview Questions
- **Hackr.io:** Data Science Interview Questions

The following questions were provided by Adi Bronshtein, DSI Instructor Lead

Since April 2018, we have solicited data from alumni and instructors in their personal experience in data science interviews. Here are some of the questions they were asked.

TECHNICAL - STATISTICS & MACHINE LEARNING
- What is the difference between unsupervised and supervised learning? **(repeat)**
- What is the difference between a regression problem and classification problem? Provide an example of each. **(repeat)**
- What are the assumptions of a linear regression model? **(repeat)**
- Explain linear regression from a point of view that our CEO could understand. **(repeat)**
- How would you typically handle missing data? **(repeat)**
- Let's say you build a model that performs poorly. How would you go about improving it? **(repeat)**

- How would you evaluate a classification model? What metrics other than accuracy might you use, and why? **(repeat)**
- What is better, false positives or false negatives? Why? **(repeat)**
- If a client who is not a math/data person were to ask you what are MCMC methods, how would you describe it to them? **(repeat)**
- How do you select the right model for a problem? (Note: My wording here is verbatim. I asked for clarification about "what kind of problem" and they said "Any problem." This forced me to describe a few different approaches.) **(repeat)**
- What is the bias-variance tradeoff? **(repeat)**
- How do you correct for variance in a regression problem? **(repeat)**
- Explain PCA to me. **(repeat)**
- What is the difference between a decision tree and a random forest? **(repeat)**
- What is boosting? **(repeat)**
- What is machine learning?
- What is a p-value?
- What is a standard deviation?
- How is standard deviation used to construct a confidence interval?
- Under the hood, how is a linear regression model created? Assume there is only one X variable.
- Can you run linear regression on both numerical and categorical features?
- How would you need to preprocess your target variable if it were a categorical variable assuming you want to run a regression model?
- What are the assumptions of a simple linear regression model?
- How do you investigate whether there are any relationships between your features and between your features and the target?
- What is the difference between R-squared and adjusted R-squared?
- In a linear model, how would you interpret a Q-Q plot?
- How would you convey the correlation between two variables to a non-technical audience?
- What is the correlation between X and X?
- What are the bounds of correlation between any two variables?
- What is the correlation between X and X^2?
- How would we know if we have any multicollinearity in our model?
- Given summary statistics, which variable should we drop from our regression model so we don't have multicollinearity?
- Suppose you have an X variable that impacts Y differently depending on *another* X variable. (For example: the dosage of a medication impacts your overall recovery time differently if you are a man or woman.) How do you account for this in a linear regression?
- How can you assess whether your model is overfitting?
- What types of regression models do you know and what are the differences among them?
- What is regularization? Why would you use it?
- How does logistic regression work?
- How do decision trees work?
- If you're comparing decision trees and logistic regression, what are the pros and cons of each?
- What are the advantages of using a random forest over a logistic regression model?
- What is bootstrapping?
- When bootstrapping, how would you estimate the error between your estimate and the true population value as a function of your sample size? (This relies on the Central Limit Theorem.)
- What is bagging?

- Why might a random forest better than a decision tree? (Note: What they were looking for is to talk about how random forests work.)
- What are some models you could use to solve a classification problem?
- Why might accuracy not be the best error metric for classification?
- Given a confusion matrix, calculate precision.
- What is the difference between precision and recall?
- What are precision, recall, F1 score, and AUC ROC? When would you use each of them?
- How is the ROC curve created?
- What is the difference between parameters and hyperparameters
- If you were a machine learning model, what would you be and why?
- Is there a model that you tend to use frequently in your projects? Please explain how that model works.
- Why might multiple random weak trees be better than one long tree? (Note: This is the difference between boosting and a deep decision tree.)
- What is gradient boosting?
- What is stacking?
- What are the pros and cons of bagging, boosting, and stacking?
- Would you use dimensionality reduction with a random forest or gradient boosted model? Why or why not?
- What is the definition of gradient?
- Given a gradient f'(x) = x + 8, what is the antiderivative f(x)?
- Given a function, how do you find its maxima or minima?
- How is stochastic gradient descent different than gradient descent?
- Why are missing values a concern in modeling?
- What are the common pitfalls when building a predictive model? How do you avoid them?
- Given three columns containing some missing data (one categorical and two quantitative columns), how would you impute values for a fourth column, where this fourth column can take on only positive integer values?
- What is your favorite use case for a machine learning model?
- What is the difference between k-means and k-nearest neighbors?
- What clustering algorithms have you used before? Can you think of a reason why we'd use a clustering algorithm for a specific business problem?
- If I were to ask you to use clustering on some of the features in your Ames housing dataset which I see you used for a project, how would you preprocess the data before applying the clustering?
- In a level of technical detail that's most comfortable to you, describe to me how DBSCAN works and in what cases would you choose it over K-means.
- Suppose you're trying to cluster your observations into groups. However, you have too many features in your data. How would you decide which ones to use in the clustering model?
- When would you use PCA?
- Why would you perform PCA even if you don't have a lot of features?
- In what cases would you NOT use PCA?
- What is the geometric interpretation of an eigenvalue?
- What is the algebraic interpretation of an eigenvalue?
- How would you detect anomalies in a dataset? How would you deal with them?
- What do you know about topic modeling and how can you apply it to business problems?
- What are time series data?
- What are some disadvantages to time series analysis methods?
- When are RNNs used?

- How do recurrent neural networks (RNNs) work?
- What hyperparameters are available in LSTMs?
- Explain neural networks to our CEO.
- Explain convolutional neural networks (CNNs) to me as if I do not know data science.
- Let's say you're building a neural network model to classify images. You image dataset is very small (say only 5 images). You need more data to build a relatively reliable model but there's no place for you to get more data from. What would you do?

Additional Technical Questions DC DSI Students were asked in 2020
- What is your favorite algorithm?
- What is the difference between Bayesian Estimate and Maximum Likelihood Estimation (MLE)?
- What is Classification Modeling?
- If you had 15 marbles, 10 green and 5 yellow, what's the probability that you pick out two of each color and separately, one of each color. (Company: Guidehouse)
- You also have the customers table below, where Referred_by is the customer_id of the person who referred this customer.
  > Customers:
  > Customer_id Name Referred_by
  > 1 Jane Smith NULL
  > 2 Anne Jenkins NULL
  > 3 Jon Greene 2
  > 4 Pat Richards NULL
  > 5 Alice Barns 1
  > 6 Gabriel Ramirez 2
  > Here is a query intended to return the list of all customers except those referred by Jane Smith:
  > SELECT Name FROM customers WHERE Referred_by <> 1;
  > What will the results of this query be and why? (Company: BlueLabs)

Behavioral Questions DSI Students were asked in 2020
- Tell me about yourself
- What type of communicator are you?
- Tell us about a time that you used data to help assist a decision maker. (Company: BlueLabs)
- What part of our job posting stood out to you? (Company: BlueLabs)
- What's an example of a public policy area that you'd like to study if given the time? (Company: BlueLabs)

Software Engineering

Resources
- *The Imposter's Handbook*
- Interview Cake
- Udacity: Data Structures & Algorithms in Python
- Watch technical mock interviews with big tech companies (videos)
- You can't fix diversity in tech without fixing the technical interview. (good stats and historical info on technical interviews)

- *Cracking the Coding Interview*
- *Programming Interviews Exposed*
- *Mission: Interview*
- 100+ Coding Interview Problems with Detailed Solutions
- Acing the Google Interview
- Career Cup
- LeetCode
- Glassdoor interview questions
- Codility
- Coding Interview University
- Code Signal
- Daily Coding Problem
- JavaScript Algorithms and Data Structures
- Coderbyte
- HackerRank
- 30 Seconds of Interviews
- Algorithm example questions
- Data structure questions
- JavaScript example problems
- Data Structure and Algorithms Interview Questions
- SkillUpper
- 30 Seconds of Knowledge
- Dynamic programming interview questions
- Coding Interview Questions (video walkthroughs)
- Google coding interview example (video)
- 40 Favorite Interview Questions from Some of the Sharpest Folks We Know
- Passing The System Design Interview For Software Engineers

Technical Question Examples:

- What are the basic data types of JavaScript?
- How do you access an object in JavaScript?
- What is the difference between a for and a while loop?
- What is the difference between a method and a function?
- What is an instance?
- What are props? What is state?
- What is the difference between a class opponent and function component ?
- How do you create state within the class or function components?
- What is CSS Flex box?
- What is grid?
- What kind of selectors can you use in CSS?
- What is separation of concerns?
- What is version control? Give me an instance of a version control software?
- What is the difference between Git and GitHub?
- What are alternatives to GitHub?
- What is NaN?
- What is a Data Type?
- What is OOP Explain the concept?
- What is encapsulation?

- ○ Are you familiar with styling SVG?
- ○ What's the difference between inline and inline-block?
- ○ Explain how this works in JavaScript?
- ○ What is the difference between a Function Declaration and a Function Expression?
- ○ What is Node.js? Where can you use it?
- ○ What's your favorite HTTP framework and why?
- ○ Is Django an MVC Framework?
- ○ Is Express an MVC Framework?
- ○ What are the main differences between a NoSQL and SQL database?

Behavioral Questions
- Tell me about yourself
- What programming languages have you used in the past? What are your top two programming languages? ([source](#))
- How much are you coding on a daily basis? If you do not code on a daily basis, what is typical in your role? ([source](#))
- How comfortable are you in a startup environment, or do you prefer working in a more established company? ([source](#))
- What distinguishes a great software engineer from a good one? Do you feel you have those qualities? ([source](#))
- What's the most important thing to look for or check when reviewing another team member's code? ([source](#))
- In your opinion, what are the principles of good software engineering? What are some basic principles everyone should follow? ([source](#))
- If needed, how would you go about designing scalable applications? Walk us through your process. ([source](#))
- Why do you want to work for X company?
- Where do you see yourself in 5 years?
- Give me an example of a time you had to take a creative and unusual approach to solve a coding problem. How did this idea come to your mind? Why do you think it was unusual? ([source](#))
  - ○ (STAR - situation, task, action, result)
- Provide an example of a time when you didn't agree with other programmers. Did you stand up for something that you believed was right? ([source](#))

User Experience Design

Resources
- **GA Resource:** Whiteboarding and Design Challenge Decks and Resources
- **GA Resource:** How UX Designers Collaborate with Software Engineers
- **GA Resource:** UXDI Mock Interview Questions
- **UX Interview Advice from Hiring Managers**
- **Dribble:** 21 essential UX design interview questions & how to answer them
- **Springboard:** The 7 Questions You'll Be Asked at a UX Design Interview
- **Full Stack Cafe:** 22 UX Design Interview Questions (ANSWERED) UX Designers Must Know [2020 UPDATE]
- **Case Study Club:** 20 Questions UX Designers Should Prep Before a Job Interview

- **Toptal:** 15 Essential UX Interview Questions
- **Workable:** UX Designer interview questions
- **Impact Interview:** The Big List of 119 UX Interview Questions
- **The UX Collective, 2018:** How to prepare for a UX Interview, tips from a hiring manager
- Gamified UX Tech Interview Prep Resource - Designercize

Behavioral Questions
- Tell me about yourself
- Why do you want to work for X company?
- What made you go Into UX design?
- Talk me through a couple of your favorite pieces in your portfolio
- What was your design process for these pieces?
- What is your design process?
- What's your favorite project you've ever worked on?
- What are some websites and apps whose design you love? Why?
- Questions re: Mission and Purpose, Prioritization
- *Question topics asked by company, Commonlit: Design Process, Working with Developers, Dashboard Design
- *How do you define UX?
- *Where do you find inspiration?
- *How do you respond to negative feedback?
- *How do you know that what you're designing works for the user? Tell us a bit about personas and your approach to research and incorporating research in your work?
- How do you practice universal design?

Technical/Terminology Question Examples
- Can you speak to the difference between information architecture, interaction design, usability and user research?
- What is the difference between UX and other design disciplines?
- Name some basic design elements
- How is responsive design different from adaptive design?
- What does the term "design-thinking" mean to you?
- Name fundamental principles of design

Very Technical Question Examples (depends on the role)
- Explain the CSS "box model" and the layout components that it consists of?
- What is User Centered Design?
- What is Sass?
- What is a Grid System in CSS?

Behavioral Questions for All Disciplines

Teamwork
- Talk about a time when you had to work closely with someone whose personality was very different from yours.

- Give me an example of a time you faced a conflict while working on a team. How did you handle that?
- Describe a time when you struggled to build a relationship with someone important. How did you eventually overcome that?
- We all make mistakes we wish we could take back. Tell me about a time you wish you'd handled a situation differently with a colleague.
- Tell me about a time you needed to get information from someone who wasn't very responsive. What did you do?

Client-Facing Skills
- Describe a time when it was especially important to make a good impression on a client. How did you go about doing so
- Give me an example of a time when you did not meet a client's expectation. What happened, and how did you attempt to rectify the situation
- Tell me about a time when you made sure a customer was pleased with your service
- Describe a time when you had to interact with a difficult client. What was the situation, and how did you handle it
- When you're working with a large number of customers, it's tricky to deliver excellent service to them all. How do you go about prioritizing your customers' needs?

Ability to Adapt
- Tell me about a time you were under a lot of pressure. What was going on, and how did you get through it?
- Describe a time when your team or company was undergoing some change. How did that impact you, and how did you adapt?
- Tell me about the first job you've ever had. What did you do to learn the ropes?
- Give me an example of a time when you had to think on your feet in order to delicately extricate yourself from a difficult or awkward situation.
- Tell me about a time you failed. How did you deal with the situation?

Time Management Skills
- Tell me about a time you had to be very strategic in order to meet all your top priorities.
- Describe a long-term project that you managed. How did you keep everything moving along in a timely manner?
- Sometimes it's just not possible to get everything on your to-do list done. Tell me about a time your responsibilities got a little overwhelming. What did you do?
- Tell me about a time you set a goal for yourself. How did you go about ensuring that you would meet your objective?
- Give me an example of a time you managed numerous responsibilities. How did you handle that?

Communication Skills
- Give me an example of a time when you were able to successfully persuade someone to see things your way at work.
- Describe a time when you were the resident technical expert. What did you do to make sure everyone was able to understand you?
- Tell me about a time when you had to rely on written communication to get your ideas across to your team.

- Give me an example of a time when you had to explain something fairly complex to a frustrated client. How did you handle this delicate situation?
- Tell me about a successful presentation you gave and why you think it was a hit.

Motivation and Values

- Tell me about your proudest professional accomplishment.
- Describe a time when you saw some problem and took the initiative to correct it rather than waiting for someone else to do it.
- Tell me about a time when you worked under close supervision or extremely loose supervision. How did you handle that?
- Give me an example of a time you were able to be creative with your work. What was exciting or difficult about it?
- Tell me about a time you were dissatisfied in your work. What could have been done to make it better?

Interview Resources for All Disciplines

25 No-Fail Interview Questions
3 Steps to a Perfect Informational Interview
3 Ways to Turn Your Interview Around Before It's Too Late
4 Lies You Tell Yourself During the Job Search
4 Steps to Assessing Cultural Fit Before Getting Hired
4 Types of Interview Questions to Master (UX)
5 Must-Ask Questions During an Interview
5 Tricks to Being an Exciting Candidate for a Job You Are a Little Under-Qualified For
7 Killer Questions to Ask at Your Next Interview
9 Common Job Application Mistakes
How to Ace the Web Developer Job Interview
How to Get Any Job You Want (Even if You are Under-Qualified)
How to Impress in a Junior Developer Interview
How to Write an Interview Thank You Note
If Your Biggest Fear is Drawing a Blank Read These Tips!
Interview Buddy
Interview Notes from a Young Designer
Interview Tips: How to Ask Killer Questions in Your Interview
Interviewing for Introverts
The Ultimate Guide to Acing Your First Tech Interview
The Ultimate Interview Guide: 30 Prep Tips for Job Interview Success
This is What the Best Candidates I Ever Interviewed Had in Common
Top 31 Interview Questions
What's it Take to be Hired as a UX Designer
How to Break Into the UX Industry, Land a Job, and Keep Your Sanity

GA Outcomes Global Experience Tips

Best Practices: Etiquette & Tips
- Bring your computer fully charged and with everything already loaded. Make sure it's clean (literally and figuratively). Don't rely on an internet connection.
- Bring something to write with and write on to take notes.
- Bring hard copies of your resume and business cards if you have them.
- Get some sleep and drink plenty of water. All jokes aside, get some rest so you can present your best self.
- Dress smart. Do some research to find out the company attire. Dress a notch above.
- Arrive 15 minutes early!!

Best Practices : Body Language
- SMILE!
- Make eye contact.
- Firm handshake.
- Sit up straight and lean in.
- Speak clearly and project with confidence.
- Show that you're excited to be there and eager to learn.

Best Practices: Possible Talking Points
- Tell your story through your brand.
- Talk about your process and communicate how you tackle challenges
- Learn new technologies quickly and apply them quickly. Look at what you've learned in the last 12 weeks, imagine what you could do in the first 12 weeks of the job.
- Work in teams as well as individually, and meet deadlines.
- Ask the right questions to get the right answers.
- Work in an agile environment.

Best Practices: Finishing Touches
- Email a Thank You note when you get home. Thank them for their time and consideration, reiterate your continued interest in the position, reference something you learned from your time with them, and when you intend to follow up.
- Handwrite a personalized Thank You card for each person you interviewed with and reference something specific from your individual interviews. Mail them within 12 hours of the interview!

Questions they *cannot* ask you in an interview
- What is your religious affiliation?
- Are you pregnant?
- What is your political affiliation?
- What is your race, color or ethnicity?
- How old are you?
- Are you disabled?
- Are you married?
- Do you have children or plan to?
- Are you in debt?
- Do you social drink or smoke?
- Do you have a car?
- What type of military discharge did you receive?
- Have you ever been arrested?
- Can you pass a background check?
- Can you pass a drug screen?

CareerBuilder: Interview Questions That Aren't Okay to Ask

experience.com: Ten Questions You Should Never Be Asked In An Interview, By Michelle Cash

GA Technical Interview Intensive _

DSI:
• Kickoff Deck (Challenge on Slide 29)
• Kickoff Recording (Passcode: t.b3d?UM)
• Resources
• Hiring Panel recording (Passcode: %Lc#drg3)

SEI
• Kickoff Deck
• Kickoff Recording (Passcode: WbtnQz$8)
• SEI Takehome Assessment and Example
• Hiring Panel recording (Passcode: %Lc#drg3)
• Technical assessment conversation with Roger: recording (Passcode: R=WKxGD0)

Questions and Answers from Alumni Mock Interview Session

UXDI
• Kickoff Deck
• Kickoff Recording (Passcode: n98o%*@U)
• Design Challenge Details
• Hiring Panel recording HERE (Passcode: 2q.$%1X6).