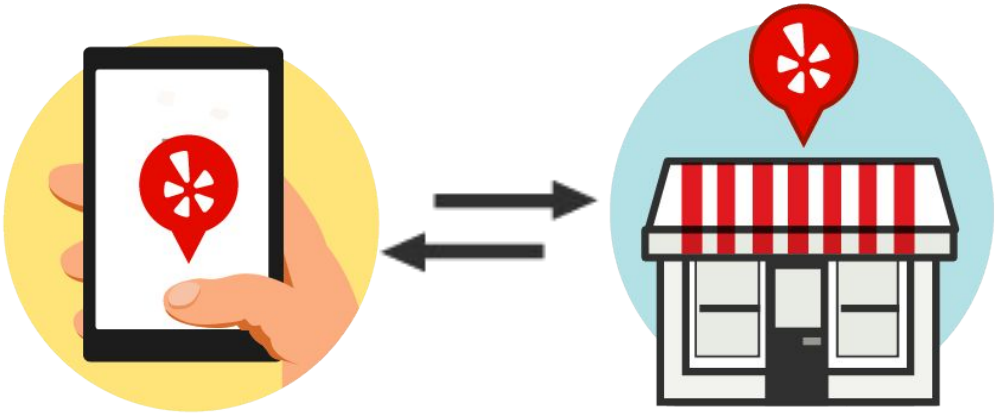

yelp
Technical Interview
Workshop



Yelp's Mission

Connecting people with great local businesses

Xun Tang

UC Santa Barbara, Ph.D. @ CS, 2015
Fudan University, B.Sc. @ CS, 2009

>4 years @ Yelp

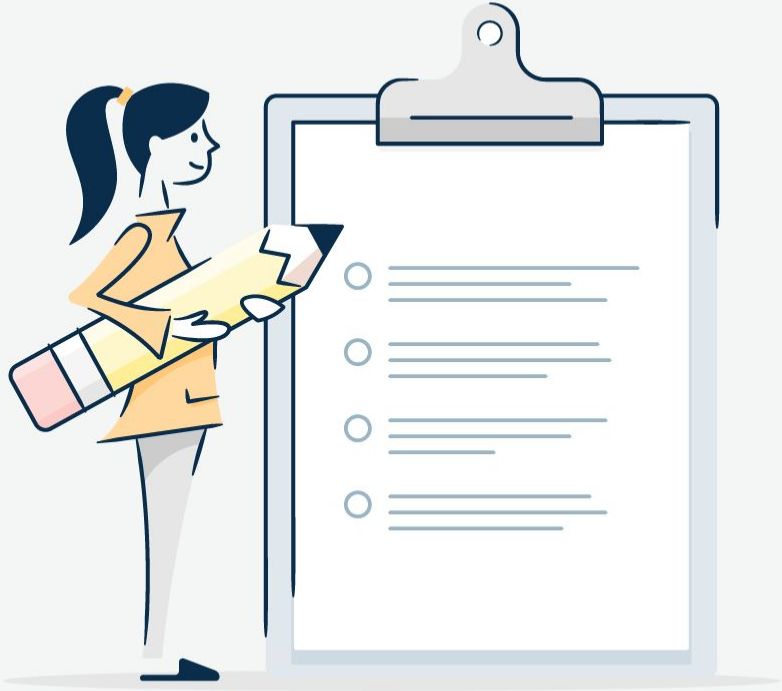
- Backend + Machine Learning Engineer
- Ads Creative
- Ads Delivery
- Ads Quality

<3 authentic Chinese food.

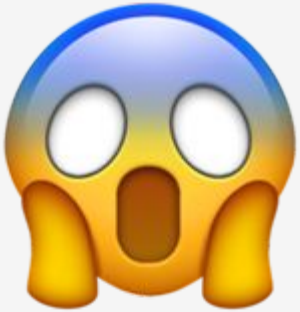
Goals:

Understand what types of questions come up in an Interview

Walk through a sample coding question



Why prepare?

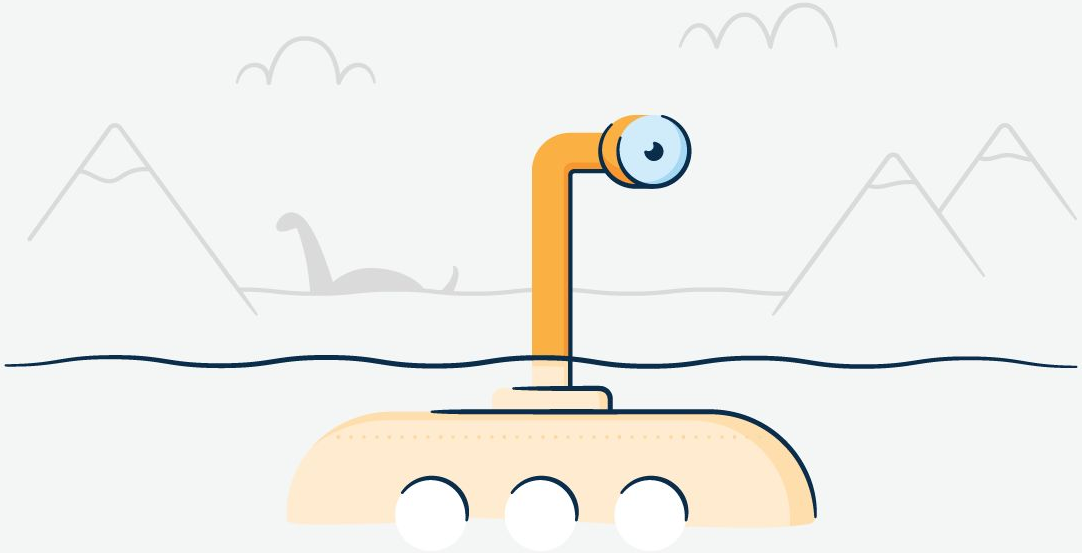


Blurt out something

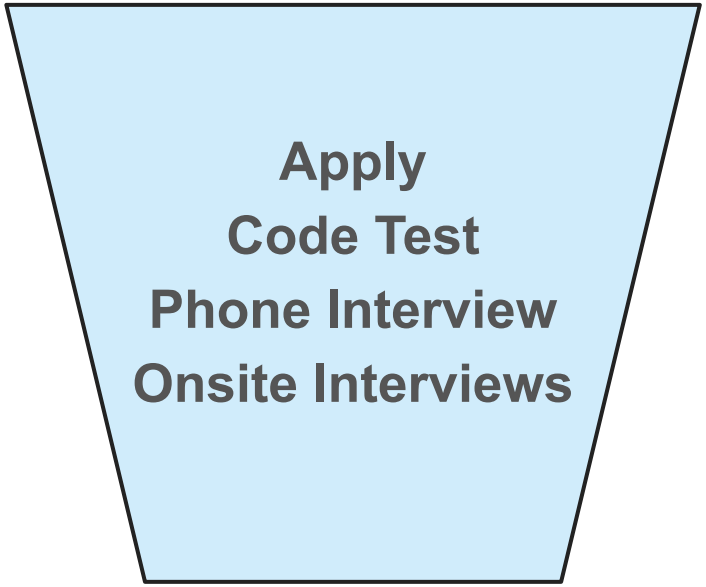
Freeze

Speak really fast

Interview Overview



Interview Pipeline



Types of Questions

Background

Play well with others
Tenacity, Ownership & Curiosity

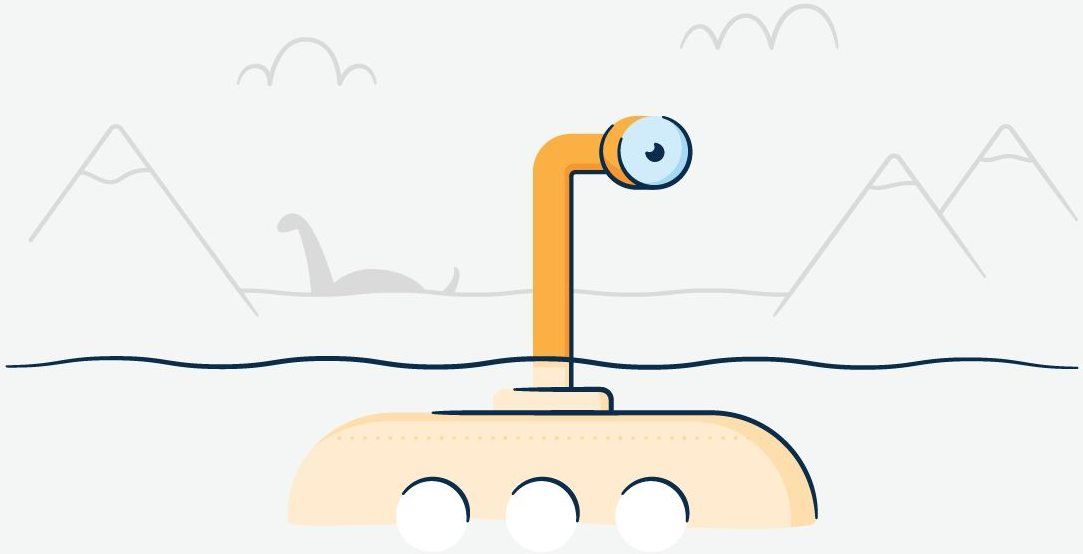
Coding

Problem solving

System Design

Understanding of higher level concepts

Coding Question Walkthrough



What we're looking for

Computer science and coding knowledge

Data Structures, basic **Search** and **Sort** algorithms, how to write classes, functions, etc.

Are they qualified for this role?

What we're looking for

Communication skills

Explain your solution as clear as you can, talk your interviewer through your solution

Can they be successful in their role?

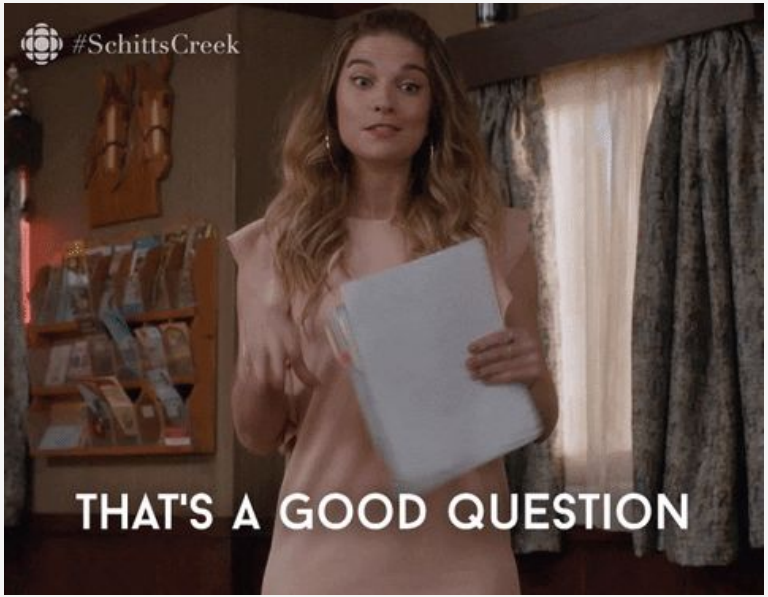
What we're looking for

Thinking through problems and ability to learn

How you think through the problem is most important

Can they grow themselves and grow others?

Let’s see the question? :)

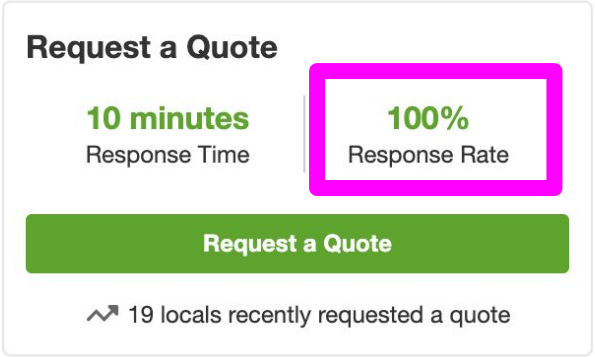


Coding Question

Business messaging response rate

On Yelp, users can initiate and engage in private conversations with business owners.

We want to display how **responsive** a business owner is to users that message them.



Water Heater Doctor

Claimed

22 reviews

Plumbing, Water Heater Installation/Repair Edit

Write a Review | Add Photo | Share | Save

Photos and Videos

Add photos

Services Offered

Verified by Business

- Emergency Services

Request a Quote

20 minutes
Response Time

100%
Response Rate

Request a Quote

126 locals recently requested a quote

(503) 345-5441

Get Directions
923 NE 78th Ave
Portland, OR 97213

You Might Also Consider

Sponsored

B & M Mechanical

2 reviews

Don't wait until the sun starts blazing or the weather drops to freezing…

Steps in a coding question

Understand the problem

Ask clarifying questions

Break it down

Before jumping into code, think about the steps you need to solve the problem. **Explain your thinking!**

Write code

Once you've decided on an approach, implement it. Pick the language you're most comfortable with.

Evaluate

Check your work and make sure it fits the requirements. Can you make it more efficient?

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What are your clarifying questions?

To calculate the **response rate of a business**, we use the following formula, expressing the response rate as a whole number (integer) percentage:

```
floor(
    (# conversations where the business owner wrote >= 1 message) /
    (# total conversations a business owner is involved in)
    * 100
)
```

Coding Question

What are your clarifying questions?

A business owner can not initiate a conversation with a user: only users can initiate conversations.

Given a biz owner ID, and a list of all messages sent via Yelp, return the given biz owner's response rate.

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Break it down

In **English or pseudo code**, write down the steps you would take to solve this problem.

No coding yet!

Break it down

In how many conversations did the business owner respond at least once?

How many total conversations is the business involved in?

What is the response rate?

Break it Down!

Possible Answer:

Step 1: Iterate through the messages and check:

1a: If the message is to the biz owner OR is from the biz owner
- If yes, add to set of biz owner convos

1b: If the message is from the biz owner
- If yes, add to set of biz owner responses

Step 2: Divide the biz owner responses by the biz owner convos as response rate

Step 3: return response rate

Break it down

```
floor(
    (# conversations where biz owner wrote >= 1 message) * 100 /
    (# total conversations a business owner is involved in)
)
```

```
class Message:
    def __init__(self, sender, recipient,
conversation_id):
        self.sender = sender
        self.recipient = recipient
        self.conversation_id = conversation_id

def response_rate(business_owner_id, all_messages):
     // set 1: business owner involved
     // set 2: business owner responded
     // for each message figure out if it belongs in one
        the two sets
     // plug into the formula
```

Steps in a coding question

Understand the problem

Ask clarifying questions

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Before jumping into code, think about the steps you need to solve the problem. **Explain your thinking!**

Write code

Once you've decided on an approach, implement it. Pick the language you're most comfortable with.

Evaluate

Check your work and make sure it fits the requirements. Can you make it more efficient?

```
def business_responsiveness_rate(biz_owner_id, all_messages):

    owner_replied = set()
    owner_involved = set()

    for message in all_messages:
        if message.sender == biz_owner_id or message.recipient ==
biz_owner_id:
            owner_involved.add(message.conversation_id)
        if message.sender == biz_owner_id:
            owner_replied.add(message.conversation_id)

    return int(len(owner_replied) * 100 / len(owner_involved))
```

Steps in a coding question

Understand the problem

Ask clarifying questions

Break it down

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Evaluate

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Evaluate

Testing
- Happy path
- Edge cases

Complexity
- Time
- Space

Code Quality

Evaluate

```
def response_rate(business_owner_id, all_messages):
  owner_replied = set()
  owner_involved = set()

  for message in all_messages:
    if message.sender == biz_owner_id or
        message.recipient == biz_owner_id:
      owner_involved.add(message.conversation_id)

    if message.sender == biz_owner_id:
      owner_replied.add(message.conversation_id)

  return int(len(owner_replied) * 100 /
      len(owner_involved))
```

Run the code and this happens...

```
> ZeroDivisionError: integer division or modulo by
zero
```

Evaluate

```
def response_rate(business_owner_id, all_messages):
  owner_replied = set()
  owner_involved = set()

  for message in all_messages:
    if message.sender == biz_owner_id or
        message.recipient == biz_owner_id:
      owner_involved.add(message.conversation_id)

    if message.sender == biz_owner_id:
      owner_replied.add(message.conversation_id)

  if len(owner_involved) == 0:
    return 0

  return int(len(owner_replied) * 100 / len(owner_involved))
```

- Time complexity?
- Space complexity?

http://hr.gs/fall2019practice

[Breaking Down Technical Interviews Blog post]

Wrap up

Practice coding questions

Websites (Leetcode, HackerRank, Glassdoor) or books (Cracking the Coding Interview).

Do your homework

Research the company in advance

yelp.com/dataset_challenge

Academic dataset from 10 cities across the globe!

- **6M** reviews
- **1M** business attributes
- **190K** businesses
- **200K** photos

Your academic project, research or visualizations submitted by December 31, 2019

=

a $5,000 prize* !

*See full terms on website


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Thank you.

Questions/Suggestions?

xun@yelp.com