



# Foothill FrontEnd Interview

## General Questions

- Tell us about yourself.
- What websites are you interested in and you learn from?

## Git

- What do you know about Git?
- What is the difference between Git and GitHub?
- Do you know any technology like Git?
- What are the commands that you use for git?
- Is the local repository is shared with your colleagues? When you change on your repository does the repository change on your friend's device?

## React

- For this sample code below
1. What is props drilling?
  2. What is context? What do we use it for?
  - 3.

```

const red = () => {
  state = {
    value:10
  }
  return(
    <black state={state} />
  )
}

const black = state => {
  return <green state={state}/>
}

const green = state => {
  return <blue state={state}/>
}

const blue = state => {
  return state.value;
}

const App = () => {
  return <red />
}

```

## Data Structure

- What types of sorting do you know ? what is the complexity of each? And tell me what is the best one and how it works?
- If I have an array with 20 numbers, can you sort it in  $O(n)$ ? and can you sort all the arrays in this way ? what is the conditions that should be satisfied?  
ans:count sort and the condition is the range of the numbers should be satisfied
- Explain Stable sort?
- What is the complexity for a search algorithm? e.g, binary search
- What is the complexity of processes on ArrayList, Linkedlist and Hashmap ?
- What the difference between data structures in terms of memory management?
- What is the difference between Stack and Queue ? What their methods? When do we need to use each one of them ?
- How does the array access data in the memory (when you pass index, how does array know where the data is at)?

- How does Linked Lists Store data?
- What is faster when access data? Linked list or array? BigO
- How is the Hash/Hashtable structured?
- What is the BigO of Hashtable?
- How does the Hashtable access data in memory?
- You have an array of 200 student, what is the best datastructure for serching for a student? Why hashtable? Explain how Hash function works.
- What is faster fetching data from memory? Array or LinkedList?
- What is the Cache? and what is it used for in the system?
- How to reverse a Queue without using another Datastructure? If you want to use another datastructure, what is the best one for it?
- What datastructure does the browser use for going backwards and forward while browsing pages?

## OOP

- What is the 4 pillers of OOP?
- What is the difference between class & object?
- What is the constructor? When does it work?
- What is the difference between the constructor and other functions?
- Does the constructor function exist in class before declaring it?
- What is the destructor ? how does it work ?
- What is abstraction? fully abstract e.g, interface ? When to use them?
- What is the inheritance ? How could we apply it? Why do we need it?
- What is composition ? How we could apply it? Why do we need it ?
- Which is better? composition or inheritance? and why?
- What is Encapsulation ? How can we apply it in the code? What is the benefits that we get from it ? give an example in reality.
- What is the difference between Encapsulation and Abstraction?
- what is the use of setter method?
- What is Polymorphism ? When do we need to use it ? give an example in reality.
- Explain the types of polymorphism. runtime and compile-time
- Explain the difference between Overriding and Overloading ?
- How to access a property of a class without creating a new instance? declare it with static .

- Is OOP always good for every program? and why?
- What is garbage collection? Who should do it? What it does? and how is it different in C and Java?
- What is the difference between `Syntax-Error` and `Exception-Error` ? How can you solve `Exception-Error` ?
- Output question:
- 

```

abstract Human {
    public void Human(){

    }
    abstract void sayHi();
}

class Human2 extends Human {
    public void Human2(){

    }
    public void sayHi(){
        System.out.print("Hi")
    }
    public void sayBye(){
        System.out.print("Bye")
    }
}

public static void main() {
    Human human1 = new Human();
    human1.sayHi();
    human1.sayBye();

    Human human2 = new Human2();
    human2.sayBye();
    human2.sayHi();
}

```

## JavaScript

- You have a button with function that `console.log('hi inside')`, inside a container that has a function with `console.log('hi from outside')` when you click on the container.

when you click on the button, the console logs both messages, how to prevent that? search for `event.stopPropagation()`

^ edit

- What is the difference between `var` , `let` and `const` ? and which is came to solve problems caused by another ? with some output questions.
- What is the closure and why is it used for?
- Wxplain what are callback functions?
- What is Callback hell?
- Explain what a promise is? with some code to check output that uses `.then()` `.catch()` `.finally()` .
- What are the functions related to promises ?
- What does promises came to solve?
- What is async and await?
- Is JavaScript Single threaded or multi-threaded?
- Are JavaScript and PHP loosely coupled language?
- What is the Difference between `.forEach()` and `.map()` ?
- Explain thespread operator `...` ?
- Explain the usage of `map()` , `reduce()` and `filter()` functions?
- What is the difference between `==` and `===` ? Which is faster and why? with some output questions:

•

What's the output true/false?

==

```
var result = 1 == 1;  
var result = '1' == 1;  
var result = '1' == '1';
```

===

```
var result = 1 === 1;  
var result = '1' === 1;  
var result = '1' === '1';
```

## CSS

- You have a div, center it vertically and horizontally.
- What is `box module` ?

- Which css property gives the original width?
- You have div has width 400 pixels a paragraph inside with 20 pixels padding and 1 pixel border , Calculate the width of the element?
- Explain box-sizing property.
- How you want to make the width inclusive with everything inside the element?
- What is pixel ?
- What is the difference between Pixels and em and rem units?
- What is the benefit of using rem units?
- Explain display property?
- Explain position ?
- What's the difference between block , inline and inline-block ?
- Difference between display: none and visibility: hidden ?
- Output questions:
- 

```
<style>
  .c1{
    background-color: blue;
  }

  .c2{
    background-color: purple;
  }

  #div1{
    background-color: red;
  }
</style>
...
<body>
  <div class="c1 c2" id="div1">Hello</div>
</body>
```

By deleting id from the div above, what the div will be colored?

```
<div class="c1 c2">Hello</div>
```

## HTML

- Explain Meta tag?
- Explain accessibility?
- Name some of the design patterns that you know. Explain one of them, how does it work? Why do we need it? Give an example of using it in reality.
- How could we make the website responsive using HTML ?

## Design Patterns

- What is design patterns?
- Explain the solid principles of design patterns?
- Name some of the design patterns that you know. Explain one of them, how does it work? Why do we need it? Give an example of using it in reality.
- What is factory pattern?
- What is Singleton pattern?

## Data Base

- You have 2 tables, `Children` and `Parents` ., Write a query to print the contents of both tables each `parent` is attached to `child` .
- What are the types of join? Explain each one of them and what will happen when I have `null` data in a table?
- What is the difference between NoSql and Sql?

## Problem Solving

- You have an array of n numbers every number is in [1-n], there is only one number is `missing` and one number is `duplicate` . Find them without sorting the array nor using another datastructure.

```
input : Arr = {1, 2, 4, 4, 5, 6};
```

```
output: ret = [4, 3];
```

- You have an array of  $n$  numbers every number is in  $[1-n]$ , there is only one number is missing . How to find it?

```
input : Arr = {1, 2, 4, 5, 6};
```

```
output: num = 3;
```

- You have an array of 0's , 1's and 2's sort it without using any sorting algorithm.

```
input : Arr = {1, 2, 0, 2, 1, 0, 1, 0};
```

```
output: Arr = {0, 0, 0, 1, 1, 1, 2, 2};
```

- You have an array of 0's and numbers , and you were asked to rearrange it in a way such that all the zeroes must be at the right side of the array (move all zeroes to the end of the array ).

```
input : Arr = {-1, 2, 0, 4, 3, 0, 5, 0};
```

```
output: Arr = {-1, 2, 4, 3, 5, 0, 0, 0};
```

- Count duplicates in the same array?

```
input : Arr = {-1, 2, 0, 2, 3, 0, 5, 0};
```

```
output: 0:3 2:2
```

- You have an array of numbers and a number num , find 2 numbers in the same array their sum is equal to num .  $O(n)$  complexity

- Check if a string palindrome.

```
using 2 pointers or another datastructure using stack
```