Question interviews

Start with [Why S&T]+ Projects[leader or member and why in technical way]?End with [What is your experience in projects]

**Theory questions no coding**

[1] **IQ** Target audience **freshman**

|  |  |  |
| --- | --- | --- |
| Easy | Medium | Hard |
| [0,2,6,12,20,30,42, \_]. Ans 56 diff even | [1,2,6,15,31,56, \_]. Ans 92 diff i\*i | 48 [726]29 ,73[249]28 so 53[**129**]44 |
| [1,2,6,24,120, \_] Ans 720 factorial | [52,56,48,64,32, \_]. Ans 96 + or – i^2 [ i>=2] | 2D prefix sum table |
| (1/4 \* 1/3 \* 1/2 \* 80) Ans 10/3 | [-10,15, -5, 7,] Ans is any - Ans | [3,4,16/3 , 64 / 9 , 256/27 , **1024/81**.]Mult 4/3 |
| [4,6,9,14,21,] Ans 32 add prime | [75, 15, 25, 5, 15, --] Ans is 3 div 5 add 10 | [4,9,25,49,121, **169**]. Power of prime number |
| 134521 is 521268 then… is 968464 Ans 232968 | [4,7,12,11, ---] Ans any even number | If ahmed is medcj, then [**Karim**] is rimmc |

[2]SP+intro Target audience 𝐒𝐨𝐩𝐡𝐨𝐦𝐨𝐫𝐞

|  |  |  |
| --- | --- | --- |
| Easy | Medium | Hard |
| What is array and diff for datatype limits | struct +what default value main and global | Diff from Arr and map and types of map |
| How many types of loops | What last char of string | Diff from stack and heap |
| Errors type and what is diff | Types of array and what is prefix sum | Binary search comp and code |
| what are scopes | Pass with ref and value | Buble,selection O(n^2) Quick, merge diff(n log n) |
| Insertion and find element in array O | What is the diff between & and \* | Big O cases and ask on merge sort especially |

[3] (1) OOP Target audience junior

|  |  |  |
| --- | --- | --- |
| Easy | Medium | Hard |
| 4 principles and give brief why need OOP | Types of constructor and super | What is virtual used for and which part of it[**poly**] |
| Diff between overload and override | Encapsulation example what protected | Access modifier example + if static access md |
| Diff between class and object | What used of this and static | What is inner class and what usage |
| Clean code example | How can we do multiple inheritance | Diff from base class and superclass |
| Override[runtime] and overload[compile] | Diff from class and struct | Tight and lose coupling |

[3] (2) DS Target audience junior

|  |  |  |
| --- | --- | --- |
| Easy | Medium | Hard |
| What diff from list ,vector,stack,set | Dif Map(logn), unordered map(n) O searching? | How built map and unordered and list diff |
| what linkedlist + types+what is struct+enum | DFS,BFS what is Ds used for | What is peek in stack+what is postfix |
| What is map and what is in array | Linked list linear or nonlinear DS | What is graph and applications of it |
| Give real world exp of DS+ how to count Frq | When to use LinkedList and Arr compare | Types of trees and ask on it |
| What is diff from linear and nonlinear | What is types else of queues and mention | Diff from void and null |

[3] (3) DB Taregt audience junior

|  |  |  |
| --- | --- | --- |
| Easy | Medium | Hard |
| Why db and DBMS ex | Relational and non DB ex | What are DDL,DML,DCL |
| What is types of DB | Diff from normalization and de normalization | Types of index,what is composite key |
| What are relation in RDB | Sql stament define[DDL,DML,DCL] | What is views and stored procedures |
| Why join +What is types of joins | What are joins in details | What is casecade delete + drop and truncate |
| Types of keys and example | What diff record ,field ,table | Types of function(scaler,table,system) |

[4]Algorithms Target audience senior

|  |  |  |
| --- | --- | --- |
| Easy | Medium | Hard |
| What is complexity types(O, Ω, θ) | How to find maxsub array | What dijk work with what if negative use belman |
| Time+sapce complexty binary search rec+non | What are fundmentals of recusion fun | What is bfs used for what is dfs used for ex |
| What is DP+types of approches in DP | What are tree travese types [in,post,pre] | What is flyod used for ,what types of knapsack |
| What is algo on graph traverse | What is dijk and what is DS used on it+complex | What SCC,DAG and diff from normal connected |
| Binary search tree insertion how | What is the usage of prim and kruscal wt type |  |

Coding part

|  |  |  |
| --- | --- | --- |
| easy | Medium | hard |
| find whether the brackets are balanced or not. The input is a string of ‘{‘ and ‘}’ only. | You will be given n numbers and then you will be given a number representing the number of elements you want to reverse, store in the queue the elements after reversing | mplement a function that traverses BST in-order (ascending) |
| You are creating an registrations system. You will be given a number of strings . If the string is not similar to any string entered before display the string otherwise display the string followed by the number of occurrences | You will be given n characters, then k strings each starting with a character from the n characters. Display the smallest string lexicographically for each character | make a recursive function displaying the possible permutations of the digits ‘1’ and ‘3’ that are less than 10000 |
| Given a number, check palindrome | )Given a string of english letters and ‘?’ only. Replace the ‘?’ with smallest letter possible knowing that you can`t have the same letter consecutively | given a sorted vector of numbers and an integer k. find if two numbers in the array sum to k. |
| Given a positive number, display the product of all the digits | Given an array A of integers, for each integer A[i] we may choose any x with -K <= x <= K, and add x to A[i].  After this process, we have some array B.  Return the smallest possible difference between the maximum value of B and the minimum value of B. | Given a binary tree, find its maximum depth.  The maximum depth is the number of nodes along the longest path from the root node down to the farthest leaf node. |
| Given a balanced string s split it in the maximum amount of balanced strings.  Return the maximum amount of splitted balanced strings. | Merge two sorted linked lists and return it as a new list. The new list should be made by splicing together the nodes of the first two lists. |  |
| Given an array containing n distinct numbers taken from 0, 1, 2, ..., n, find the one that is missing from the array. |  |  |

Technology

Android

**Describe Activities.**

Activities are what you refer to as the window to a user interface. Just as you create windows in order to display output or to ask for an input in the form of dialog boxes, activities play the same role, though it may not always be in the form of a user interface.

**What is An android manifest file?**

Every application must have an AndroidManifest.xml file (with precisely that name) in its root directory. The manifest file presents essential information about your app to the Android system, information the system must have before it can run any of the app's code.

**What is container in android**?

The container holds objects,widgets,labels,fields,icons,buttons.etc.

**How to launch an activity in android?**

Using with intent, we can launch an activity.

Intent intent = new Intent(this, MyTestActivity.class);

startActivity(intent);

**How do you find any view element into your program?**

Using with findViewById we can find view element.

**What is drawable folder in android?**

A compiled visual resource that can used as a backgrounds,banners, icons,splash screen etc

**Where layouts are placed in android?**

In The Layout folder, layouts are placed as XML files

What is an Adapter?

Here, you’re checking that the Android eveloper understands that you need an additional component to connect an AdapterView (such as ListView or GridView), to an external data source. An Adapter acts as this bridge, and is also responsible for converting each data entry into a View that can then be added to the AdapterView..

### What are the major difference between ListView and RecyclerView?

There are many differences between **ListView** and **RecyclerView**, but the Android developer should be aware of the following in particular:

* The ViewHolder pattern is entirely optional in ListView, but it’s baked into RecyclerView.

ListView only supports vertical scrolling, but RecyclerView isn’t limited to vertically scrolling lists

**What is the Android Architecture?**

Android Architecture is made up of 4 key components:

* activities
* broadcast receiver
* content provider
* services

**What is the importance of XML-based layouts?**

* The use of XML-based layouts provides a consistent and somewhat standard means of setting GUI definition format. In common practice, layout details are placed in XML files while other items are placed in

## What’s the difference between onCreate() and onStart()?

* The onCreate() method is called once during the Activity lifecycle, either when the application starts, or when the Activity has been destroyed and then recreated, for example during a configuration change.
* The onStart() method is called whenever the Activity becomes visible to the user, typically after onCreate() or onRestart().

## What is Context?

A **Context** is a handle to the system; it provides services like resolving resources, obtaining access to databases and preferences, and so on. An Android app has activities. Context is like a handle to the environment your application is currently running in.**Application Context:** This context is tied to the lifecycle of an application. The application context can be used where you need a context whose lifecycle is separate from the current context or when you are passing a context beyond the scope of an activity.**Activity Context:** This context is available in an activity. This context is tied to the lifecycle of an activity. The activity context should be used when you are passing the context in the scope of an activity or you need the context whose lifecycle is attached to the current context.

## Difference between Activity & Service?

Activities are basically containers or windows to the user interface. Services is a component that is used to perform operations on the background. It does not have an UI.

**What is a Fragment?**

* A fragment is a part or portion of an activity. It is modular in a sense that you can move around or combine with other fragments in a single activity. Fragments are also reusable.

### Can Android applications only be programmed in Java?

No, not necessarily. We can program Android apps using the Native Development Kit (NDK) in C/C++. The NDK is a toolset that allows us to implement parts of our app using native code languages such as C and C++. Typically, good use cases for NDK are CPU-intensive applications such as game engines, signal processing, and physics simulation.

### Where can you define the icon for your activity?

The icon for an activity is defined in the manifest file.

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The icon for an activity is defined in the manifest file.

Web

What is the frontend and back end? What is HTML and CSS? What is Java script? What is Babel?

Deference between ===,==? ===: check type and value ,==: value

Deference between For in loop, for of loop?

In loop : Loop by index

Of loop: loop by value

What is hoisting?

Arrange function at top of the program.

What is an API?

- API stands for Application Programming Interface. is a way for two or more computer programs to communicate with each other.

What is RESTful API?

- REST (Representational state transfer) is a set of architectural constraints, not a protocol or a standard: (2 points are enough)

* A **client-server architecture** made up of clients, servers, and resources, with **requests managed through HTTP**.
* Stateless client-server communication, meaning **no client information is stored between get requests and each request is separate and unconnected.**
* **Cacheable data** that streamlines client-server interactions.
* A **uniform interface between components** so that information is transferred in a standard form. This requires that:
  + **resources requested are identifiable** and separate from the representations sent to the client.
  + **self-descriptive messages** returned to the client have enough information to describe how the client should process it.

What are CSS pseudo classes?

- A CSS pseudo-class is a keyword added to a selector that specifies a special state of the selected element(s). For example, the pseudo-class :hover can be used to select a button when a user's pointer hovers over the button and this selected button can then be styled

What is CSS before?

- In CSS, ::before creates a pseudo-element that is the first child of the selected element. It is often used to add cosmetic content to an element with the content property. It is inline by default

**Flutter**

Difference between stateful and stateless widgets?

Difference between AOT and JIT compilers?

What is hot reload?

What is pub dev?