Exiting Update

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There is no comment functionality as of now. And there is still some work to do

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Repo link

TOPICS TO LEARN

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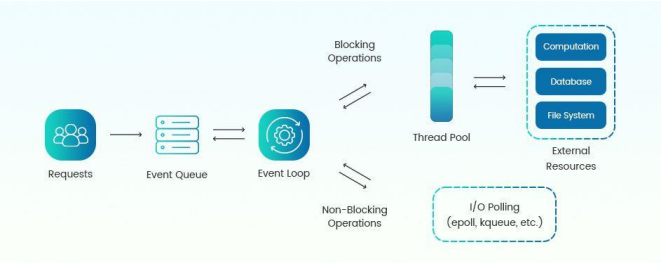

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    a. default is App
4. rafce, tsrafce
5. calling function on button click
    a. without parameter
    b. with parameter
6. Fragments
7. Children Prop
8. **Theory**
9. What is React
10. DOM
    a. DOM vs Virtual DOM
    b. Reconciliation
        i. working
    c. Diffing Algorithm
    d. React Fibre
        i. incremental rendering
    e. Shadow DOM
11. Dynamic rendering
12. props vs state
13. Server Side vs Client Side Rendering in React
14. Synthetic Events
    a. Event Pooling
15. Life Cycle
16. View Oriented
17. Memoization
18. Pure functions and components
19. Strict Mode
20. SPAs vs MPAs
21. CSR vs SSR
22. Static vs Dynamic rendering
    a. ISR, SPA
23. **Components**
    a. A React render tree
        i. top-level components
        ii. leaf components
    b. Props
        i. immutable
    c. Forwarding props
    d. children
    e. Importance of making them pure
    f. local mutation
24. **JSX**
    a. Rules of JSX
    b. Fragment
    c. JavaScript in JSX
    d. HTML VS JSX
25. Conditional rendering
26. Key
27. **UI as a tree**
    a. Render trees
    b. Module Dependency Tree
    c. Bundler
        i. eg: Webpack
        ii. Compiling
        iii. Loader
        iv. Code splitting
28. **Rendering steps**
    a. Triggering
    b. Rendering
    c. Committing
29. Rerendering
30. Batching updates
31. **State**
    a. Behaviour
    b. Queueing updates
    c. Updater function
    d. Updating object
    e. local var vs state var
    f. local mutation
    g. Lifting state
    h. Reducer
32. Declarative vs Imperative UI
33. **Event handlers**
    a. onClick, onSubmit etc...d
    b. Stopping propagation
    c. Preventing default
34. Lifecycle Methods
    a. What is Mounting, Unmounting
    b. Phases
    c. - Mounting phase
        i. constructor
        ii. render
        iii. getDerivedStateFromProps
        iv. componentDidMount

- **d. - Updating phase**
  - i. shouldComponentUpdate
  - ii. componentWillUpdate
  - iii. componentDidUpdate
    1. getSnapshotBeforeUpdate
- **e. - Unmounting phase**
  - i. componentWillUnmount
- **f. - Error Handling**
  - i. getDerivedStateFromError
  - ii. componentDidCatch

35. **Hooks**
    - a. useState
      - i. changeValue
      - ii. changeValueWithFunction
    - b. useRef
      - i. html
      - ii. useState vs useRef
      - iii. forwardRef
      - iv. useImperativeHandle
      - v. flushSync
    - **c. useEffect**
      - i. dependency
      - ii. return in useEffect
      - iii. useLayoutEffect
    - d. useMemo
      - i. sample
      - ii. recache
      - iii. pros and cons
      - iv. referential equality
    - e. useHistory
      - i. push
      - ii. pop
      - iii. replace
      - iv. Redirect
    - f. useNavigate
      - i. navigate()
        1. route
        2. -1, 1
    - g. useCallback
      - i. sample
      - ii. useMemo vs useCallback
      - iii. uses
    - h. useContext
      - i. sample
    - i. useReducer
    - **j. Create custom hooks**
      - i. useDebugValue
    - k. useTransition
    - l. useDeferredValue
    - m. useId
      - i. sample
    - n. useImperativeHandle
36. **Props**
    - a. default prop
    - b. PropDrilling
    - c. Children
37. **Components**
    - a. Creating Components
    - b. Controlled vs Uncontrolled Components
      - i. Inputs
    - c. Higher order components
    - d. Pure components
38. **React Router**
    - a. install
    - **b. Hooks**
      - i. useHistory
      - ii. useNavigate
    - c. use
    - **d. Link**
      - i. replace
      - ii. reloadDocument
      - iii. state={}
      - iv. - useLocation()
      - **v. NavLink**
        1. -isActive
        2. end
      - **vi. Navigate**
        1. useNavigate
        2. navigate(-1)
    - **e. Types of Router**
      - i. BrowserRouter
      - ii. HashRouter
      - iii. HistoryRouter
      - iv. MemoryRouter
      - v. StaticRouter
      - vi. NativeRouter
    - f. params (:id)
    - g. cont {<name>} = useParams()
    - h. useSearchParams

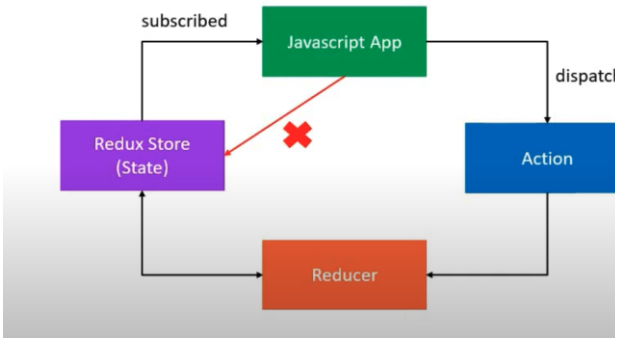
i. **Nesting Routes**
   i. index
   ii. location
   iii. shared element with children
   iv. outlet
   v. - useOutletContext()
   vi. Nesting in separate file
   vii. useRoute

39. # Good to Know
40. Immer
41. Object.entries(e)
42. Icons
43. Experimental Hooks
    a. useEffectEvent
    b. use
    c. useFormStatus
44. useOptimistic

45. # Week 2
46. Render props
47. Higher order components
48. Custom hooks
49. Code splitting
    a. Route based
    b. Component based
    c. React.lazy
50. Higher order comps
51. **Lazy Loading**
    i. fallback ui
    ii. suspense
    iii. **Error boundaries**
    iv. componentDidCatch
    v. Fallback UI
    vi. Nested & Propagation
52. **useReducer**
    a. Dispatch
    b. useReducer vs useState
    c. useReducer vs redux
    d. payload
53. **PropTypes**
    a. types => name, string, any
    b. required, optional,
    c. node, element type
    d. oneof, shape
    e. PropTypes vs Typescript
54. **useMemo vs useCallback**
    a. React.Memo vs useMemo
    b. Object reference
    c. Pros and cons of memoization
55. **Context API**
    a. Provider
    b. Consumer
    c. useContext
    d. useReducer
56. **Webpack**
    a. Module Bundler
    b. Code Splitting
    c. Webpack Dev Server
    d. Hot Module Replacement (HMR)
    e. Tree Shaking
57. **Babel**
    a. Transpilation
    b. Plugins
    c. Runtime Polyfills
    d. Dynamic Import
58. useDeferedValue
59. dead code elimination
60. useTransition
61. # Others
    a. forward ref
    b. useDebugValue
    c. useImperativeHandle
    d. Axios interceptor
    e. Concurrent Requests
       i. axios.all(), axios.spread()
       ii. cancel Token

Redux

62. **Theory**
63. Why, what
64. Redux
65. How redux stores data
66. Architecture
67. Store
68. pros and cons
69. Redux store
70. Middleware
71. Calling APIs
72. React reducer vs Redux
73. **Store**
    a. Dispatch
    b. subscribe
        i. unsubscribe
    c. getState
    d. replaceReducer
    e. Store enhancer
74. **Action**
    a. Action creator
75. **Reducer**
    a. rules
76. **Redux flow**



77. **Redux principles**
    a. Store
    b. Action
    c. Reducer
78. Selectors
    a. Memoized selector
79. **Middleware**
    a. - Logger, crash reporting
    b. - Perform async tasks
    c. applyMiddleware
    d. Redux Thunk
        i. Thunk vs saga
        ii. Payload creator
    e. Adding multiple middleware
80. **Slice**
    a. init state
    b. reducers
    c. extraReducers
81. **Redux toolkit**
    a. Nanoid
    b. Redux Query.
82. Normalising Data
    a. Normalised state
    b. createEntityAdapter
    c. shallowEqual, reference equality
83. Serializing
84. Hydrating
85. redux vs flux
86. saga vs thunk

87. **Other**
88. Immer and the working of Immer in redux.
89. Access store outside of redux components
90. Flux by fb
91. Log rocket
92. createAsyncThunk
93. createEntityAdapter
94. createSelector
95. createListenerMiddleware

96. **JWT**
97. What?
98. **Structure**
    a. Header
    b. Payload
        i. iat
        ii. exp/eat
    c. Signature
99. Authentication working
100. Pros and cons
101. Expiration Time
102. Bearer token
103. Revocation
104. refresh token
105. Authentication vs Authorization
106. Types of Claims
    a. public
    b. registered
    c. private

React Native

Core Components

1. Text
2. View
    a. default flexbox layout
3. Button
    a. onPress
    b. onLongPress
    c. onPressIn
    d. onPressOut
4. Pressable
5. List
6. Flatlist
    a. optimises scroll performance
    b. Item separation
    c. key
    d. footer and header
7. Flatlist vs Map
8. Section list
9. ScrollView
10. SafeAreaView
11. Image
    a. ImageBackground
    b. react-native-svg
12. Modal
13. Alert
14. Switch
15. StatusBar
16. ActivityIndicator
17. TouchableOpacity
18. TouchableHighlight
19. TouchableWithoutFeedback

Styling

20. style
21. StyleSheet Utility
22. NatvieWind
23. Inheritance
24. ios vs android
    a. border in text
    b. shadow
25. flexbox
    a. justify content
    b. align baseline
    c. align self
26. Relative and Absolute layout
27. **Dimension API**
28. Drawback of Dimensions API
29. useWindowDimensions
30. PlatformModule
    a. Platform.OS
    b. Plastform.Select
    c. using Extensions
31. **Navigations**
    a. Expo vs ReactNavigation
    b. Stack
    c. Drawer
    d. Tab

DSA

1. **Algorithms**
    - **Search**
    - Binary Search(recursive also)
    - Linear Search
2. Recursion
3. Iterative & recursive
4. Virtual memory
5. Amortised resizing
6. Dynamic programing
    - Memoize approach
    - Bottom up approach
7. **Problems**
    - Factorial, fibonacci, prime number (with and without recursion)
8. **Complexity Analysis**
    - Time complexity
    - Space complexity
9. **Asymptotic Notations**
    - Ranking
    - Big O notation
    - Omega Notation
    - Theta Notation
10. **Memory**
11. **Memory Allocation**
    - Bit vs byte
    - Memory address
    - Contiguous memory allocation
    - Non-contiguous memory allocation
    - **Stack**
        i. Primitive types are stored in stack
    - **Heap**
        i. Reference type are stored in heap
        ii. Eg: Arr, fun, obj
12. **Memory Leak**
    - Symptoms
    - **Garbage Collections**
        i. Process
    - Reasons for memory leak
    - How to debug
13. **Big O Notation**
    - Linear time complexity
    - Constant time complexity
    - Quadratic time complexity
    - Qubic
    - Logarithmic complexity
    - Exponential complexity
14. **Operations in normal array**
    - Init
    - Set
    - Get
    - Traverse
    - Insert
    - Delete
15. **Data Structures**
16. What is DS?
17. Advantages and Disadvantages
18. Examples
    - DOM
    - Undu & Redo
    - Os job scheduling
19. **Dynamic Array**
    - It's working and memory allocation?
    - Set
20. **Linked List**
    - Advantages and disadvantages
    - Applications
    - **Creating a linked list**
    - **Operation**
        i. Init
        ii. Set
        iii. Get
        iv. Traverse
        v. Insert
        vi. Delete
    - Singly Linked List
    - Double linked list
    - Circular linked list
    - Array vs linked list
21. **OTHERS**
22. **Build in DS in JS**
    - **Array**

        i. Push, pop, shift, unshift, forEach, map, filter, reduce, concat, slice, splice ,sort()
        ii. some(), every(), find(), findIndex(), fill(), flat(), reverse(), sort()
    - **Objects**
        i. Insert, Remove, Access, Search,
        ii. Object.keys(), Object.values(), Object.entries()
    - **Sets**
        i. add, has, delete, size, clear
    - **Maps**
        i. set, get , has, delete, size, clear
    - Array vs Set
    - Object vs Map
    - **Strings**
        i. Primitive and object string
        ii. Escape char
        iii. ASCII
            1. 32 - Space
            2. 48-57 == (0-9)
            3. 65-90 == (A-Z)
            4. 97-122 == (a-z)
        iv. Unicode
        v. UTF-8
23. **Custom DS**
    - Stacks
    - Queue
    - Circular queues
    - Linked lists
    - Hash tables
    - Trees
    - Graphs

Intermediate

24. Algorithms

- **Sorting**
- Bubble sort
- Insertion sort
- Quick sort
    i. Divide and conquer
    ii. Partition method
    iii. Pivot selection
    iv. Last, first
    v. average/median
- Heap sort
- Merge sort
    i. Divide and conquer
- Merge vs Quick sort

25. Data Structures

26. Stacks

- LIFO
- Push, pop
- Stack underflow
- Stack overflow
- Use cases
- **Types of Stack**
- Linear Stack
- Dynamic Stack
- Array-based
- Linked list based
- Monotonic stack

27. Queue

- FIFO
- Enqueue
- Dequeue
- Peek
- Priority queue
- Circular queue
- Uses
- **Types of Queue**
- - Linear Queue
- - Circular Queue
- - Priority Queue
- - DEqueue (Double ended queue)
    i. Input restricted
    ii. Output restricted
- - Blocking Queue
- - Concurrent Queue
- - Delay Queue

28. Hash Table

- Searching O(1)
- Hash function
- Collision
- Dynamic restructuring
- Uses
- Load factor

- **Operations**
- Init
- Insert
- Search
- Delete
- Traverser
- **Please Note**
- Week set, week map
- **Collisions Handling**
- - Separate Chaining
- - Open Addressing
    i. Linear Probing
    ii. Quadratic Probing
    iii. Double Hashing
    iv. Clustering
- - Cuckoo hashing
- - Robin Hood hashing

29. **SHA: Secure Hashing Algorithm**

Advanced

30. Linear, non-linear, hierarchical
31. ## Data Structures
32. **Tree**
    - Features
    - Uses
    - parent, child, root, leaf, sibling, ancestor, descendent, path, distance, degree, dept, height,edge,subtree
    - **Types of trees on nodes**
    - - Binary tree
    - - Ternary tree
    - - K-array tree
    - - Threaded binary tree
    - **Types of trees on structure**
    - - Complete tree
    - - Full tree
    - - Perfect tree
    - **- Degrenarted**
        i. Left-skew
        ii. Right-skew
33. **Binary Search Tree (BST)**
    - BST vs BT
    - Uses
    - Balanced vs unbalanced tree
    - Properties of BST
    - **Operations**
    - - Inserting
    - - Deletion
    - **- Traversal**
        i. DFS
        ii. - InOrder
        iii. - PreOrder
        iv. - PostOrder
        v. BFS
34. **Balanced Search Tree**
    - AVL tree
    - Red-black tree
    - Prefix tree
    - M-way search tree
    - - B Tree
    - - B+ Tree
    - Merkle Tree
    - Red-black tree vs AVL
35. **Heap**
    - Min Heap
        i. **To get value of**
        ii. - Left child
        iii. - Right child
        iv. - Parent
        v. Operations
        vi. - Init/ Heapify
        vii. - Insert
        viii. - Delete
    - Max Heap
    - Heapfity
        i. Bottom-up
        ii. Top-down
    - DEPQ
36. **Trie**
    - String vs Trie
    - **Operations**
    - - Init
    - - Insertion
    - - Delete
    - - Search
    - Prefix and Suffix tree
    - - terminator char
    - **Compressed Trie**
    - - Radix Tree (Patricia Trie)
37. **Graph**
    - Vertex, Edge
    - Can be stored as
    - - Adjacency list
        i. as linked list

    ii. time O(V)
    iii. space O(V+E)
  - - Adjacency matrix
    i. As array
    ii. time O(1)
    iii. space O(v^2)
  - Spanning tree
    i. min spanning tree
  - Graph indexing
    i. Vertex-centric indexes
    ii. Edge-centric indexes
  - **Types**
  - - Unidirectional (Direct graph)
  - - Bidirectional (Un DIrected graph)
  - - Cyclic
  - - Disconnected
  - - Weighted Graph
  - - Unweighted Graph
  - - Bipartite Graph
  - **Traversal**
    i. BFS
    ii. DFS
  - River size problem

38. ## Algorithms

39. Greedy method
40. Kruskal's Algorithm
41. Prim's Algorithm
42. Dijkstra's Algorithm
43. Bellman-Ford Algorithm
44. Topological Sorting
45. Floyd-Warshall Algorithm
46. Bipartite Graph Checking
47. Max Flow (Ford-Fulkerson Algorithm)

48. ## Question

49. Graph vs Tree
50. Forest (in Tree)
51. Forest > Graph > Tree > Linked list
52. Operators
  - Binary operators
  - Priority
  - Infix
  - Prefix (Polish notation)
  - Postfix (Reverse Polish notation)

General

1. How does Logarithms work
2. File structure vs Data Structure
3. Where is the DS used?
4. Void vs null
5. Dynamic data structure
    a. Uses
    b. Example
6. Dynamic memory management/ allocations
7. Heap be used over a stack
8. Data abstraction
9. Post fix expression
10. Signed number
11. Pointers in DS
    a. Uses
12. Huffman’s algorithm working
13. What is recursive algorithm
    a. Divide and conquer on recursion
14. Which is the fastest sorting algorithm available?
15. Multi linked
16. Sparse matrices
17. Disadvantages of implementing queues using arrays
18. Void pointer
19. Lexical analysis
    a. Lexeme
    b. Pattern

Hosting

1. **Nginx**
2. **Commands**
    a. systemctl nginx status
    b. restart and reload
3. Contex
    a. Eg: http, events, server
    b. Worker process and connection
    c. Directive & block
    d. Location block
        i. root, alias, try_files
4. Master Process
5. Worker Process
6. Firewall
7. DDOS protection
8. K8s IC
9. Sidecar proxy
10. Virtual host
11. Brute force
12. WAF
13. UFW
14. TCP vs UDP
15. TCP vs TCL
16. **Load Balancing**
    a. Round robin
    b. Least connection
    c. IP hash
17. Caching
18. **Proxy**
    a. Proxy server
    b. Reverse proxy
    c. Forward proxy
    d. Load balancer vs reverse proxy
19. Nginx vs Apache
20. Working of HTTPS
21. **SSH**
22. How does it work??
23. Private key
24. Public key
25. **SSL**
26. How does it work??
27. **Linux**
28. apt
29. rm
30. mkdir
31. touch
32. mv
33. nano
34. more, less
35. head, tail
36. >, <
37. /
    a. bin
    b. boot
    c. dev
    d. etc
    e. home
    f. root
    g. lib
    h. var

System Design

1. Dark scale distributed system
2. Scaling
    a. Vertical
    b. Horizontal
    c. Auto
        i. pros and cons
3. Asynchronous system
    a. Queue system
4. Scaling database and server
5. Rate limiter vs Limiter
6. **API Rate Limiting**
    a. Token Bucket
        i. pros and cons
    b. Leaky Bucket
7. Concereny controller
8. Handling Failure

Theory

9. **Components of System Design**
    a. Logical
        i. Data
        ii. Database
        iii. Users
        iv. Applications
        v. Cache
        vi. Communication protocol
        vii. Infra
        viii. Message queues
        ix. Presentation layer
    b. Tangible
        i. data - Text, image
        ii. database - SQL, NoSQL
        iii. App - Java, node
        iv. Cache - Reddist, mem-cache
        v. Infra - AWS, GCP
        vi. Comm - API, RPC, Message
        vii. Queues - Kafka, RabbitMQ
10. **Client Server Arch**
    a. Thick and Thin client
    b. 2-Tier, 3-Tier, N-Tier Client
11. **Fault and failure**
    a. Fail safe
    b. Fault tolerant
    c. graceful fail
    d. Testings
    e. Transient vs Permanent fault

Other

12. Critical and non critical tasks

Git

53. **THEORY**
54. **Centralised** Version control system vs **Distributed** Version control system
55. Config
56. Working directory
57. Staging area
58. git init
59. git clone
60. git status
61. git log
62. **Creating Version**
    - git add *file*
        i. git add - - all
        ii. git add .
    - **git commit**
        i. -m "<*message*>"
        ii. Commit without staging
    - commit id
        i. check sum
        ii. content
            1. author details
            2. preview details
            3. date
            4. etc..
        iii. sha-1 hash
    - label
    - **branch**
63. touch
64. **git log**
    - git log
    - git log - - all
    - git log –p -1
    - git log graph
65. git diff
66. git diff –staged
67. **Restore**
    - git restore
    - git restore –staged
68. **Branching**
    - git branch <*branchName*>
    - git branch
    - git branch —all
    - Creating branch
    - Deleting branch
    - git checkout vs git switch
    - switching b/w branches
    - commit id
    - branch name
69. **Stashing**
    - git stash
    - git stash apply
    - git stash drop
    - git stash list
70. **Merging**
71. git merge <*branchName*>
72. **Types of merging**
    - fast-forward merge
    - **recursive merge**
        i. conflict
73. **Git server**
    - git remote add <*name*> <*url*>
        i. git remote
        ii. git remote -v
    - git push <*remoteName*> <*branchName*>
    - git push set upstream
    - **Cloning**
    - git clone <*url*>
    - git pull
    - pull vs pull request?
    - pull vs fetch
74. **Tags**
    - Simplified
    - Annotated
    - git tag
    - Should Pushing tags
75. **Forking**
76. git rebase
77. vim .gitignore
78. gist
79. **ci cd**
80. git projects
81. **GOOD TO KNOW**
82. rebase
83. tree

SQL: Postgres

1. **Theory**
2. SQL vs NoSQL (Relational vs non-relational)
3. Web-scaled
4. When to use SQL and NoSQL
5. Expression, Statement, Operators
6. **Data types SQL**
    a. null, bit
    b. int, real / float
    c. char, varchar, text
    d. boolean
    e. date, datetime, timestamp
    f. xml/json
    g. – char vs varchar vs text
    h. – datetime vs timestamp
    i. – JSON vs JSONB
7. **Operators**
    a. Arithmetic, Logical, Comparison, Bitwise
8. Primitives: Integer, Numeric, String, Boolean
9. Structured: Date/Time, Array, Range / Multirange, UUID
10. Document: JSON/JSONB, XML, Key-value (Hstore)
11. Geometry: Point, Line, Circle, Polygon
12. Customizations: Composite, Custom Types
13. **Postgres**
14. **complex queries**
    a. Aggregation
    b. Subquery
    c. Window Function
15. **foreign keys**
16. **triggers**
    a. Trigger Timing
    b. - BEFORE and AFTER
    c. - Uses
17. **updatable views**
18. **transaction integrity**
19. **multiversion concurrency control**
20. **functions**
    a. Stored Procedures
    b. Window functions
    c. Aggregate functions
21. **operators**
22. **aggregate functions**
23. **index methods**
24. **procedural language**
25. Forks
26. client/server model
27. **Data types Unique to Postgres**
    a. interval
    b. point
    c. bigserial
    d. etc...
28. Database cluster
29. **Constraints**
    a. UNIQUE
    b. NOT NULL
    c. PRIMARY KEY
        i. as UUID
    d. FOREIGN KEY
    e. CHECK (<condition>)
    f. - Adding & removing constraints after creating table
30. **Commands**
    a. list db
    b. to connect
    c. list tables
    d. Move to super
    e. list specific table
    f. List current table
31. Creating
    a. Database
    b. Table
32. Drop
    a. Drop DB
    b. Drop Table
    c. Drop constraints
33. Commands
        i. – or /* */
    b. Database migration
        i. Add, Delete, Migration
        ii. Up migration
        iii. Dow migration

34. Functions

a. SELECT
    i. LIMIT
    ii. FETCH
    iii. OFFSET
    iv. AS
    v. DISTINCT
    vi. GROUP BY
        1. HAVING
        2. GROUPING SETS
        3. ROLLUP
        4. CUBE
    vii. Having vs Where
    viii. Limit vs Fetch
b. FROM
c. WHERE
    i. AND, OR
    ii. LIKE, ILIKE
    iii. BETWEEN
    iv. IN
    v. IS NULL, IS NOT NULL
d. ORDER BY
    i. DESC, ASC
e. DELETE
f. DELETING FOREIGN KEY
    i. CASCADE
g. UPDATE
    i. SET
h. RENAME COLUMN
i. **JOIN**
    i. INNER JOIN
        1. ON
    ii. LEFT JOIN
    iii. RIGHT JOIN
    iv. FULL JOIN (FULL OUTER JOIN)
    v. SELF JOIN
    vi. CROSS JOIN
    vii. NATURAL JOIN
j. VIEWS
    i. Pros and Cons
    ii. CREATE VIEW
    iii. Materialized View
        1. Write amplification
k. UNION
l. COALESCE
m. NULLIF
    n. Index
        i. multi index
35. AUTO_INCREMENT
36. ON CONFLICT
    a. DO NOTHING
    b. Upserting
    c. - DO UPDATE
        i. EXCLUDED
37. Date functions
    a. INTERVAL vs AGE
38. Aggregate functions
    a. AVG, MIN, MAX, SUM, ROUND, COUNT, CONCAT
39. Scalar Functions
    a. LCASE, CASE, LEN, MID, ROUND, NOW, FORMAT ,
    b. INITCAP , LEFT , RIGHT , CONCAT , ABS , CEIL , FLOOR,
    c. UPPER AND LOWER in psql.
40. Aggregate vs Scalar
41. Window function
    a. OVER
    b. - PARTITION BY, RANK, LEAD, LAG
    c. CASE
42. SQL Commands
    a. DDL
        i. CREATE, ALTER, DROP, TRUNCATE
        ii. DROP vs TRUNCATE
    b. DML
        i. INSERT, SELECT, UPDATE, DELETE
    c. **DCL**
        GRANT, REVOKE
    d. TCL
        i. COMMIT
        ii. ROLLBACK
        iii. SAVE POINT
    e. DQL
        i. SELECT
43. 3-Schema architecture
    a. Internal level
    b. Conceptual level
    c. External level
44. BIGINT VS BIGSERIAL
45. Combining queries
    a. UNION, UNION ALL

b. INTERSECT, INTERSECT ALL
c. EXCEPT, EXCEPT ALL

46. **Normalisation**
    a. **Levels**
        i. 1NF, 2NF, 3NF etc..
        ii. BCNF
    b. **Anomalies**
    c. - Insertion anomalies
        i. Data redundancy
        ii. Missing data
    d. - Deletion anomalies
        i. Losing data
    e. - Updation anomalies
        i. inconsistency
        ii. Updating values on so many records unnecessarily

47. **Relationship**
    a. one to one
    b. one to many
    c. many to may

48. **Transaction & ACID**

49. **- Transaction**
    a. COMMIT
    b. ROLLBACK
    c. SAVE POINT
        i. RELEASE SAVEPOINT
    d. LOCK
        i. Exclusive Locks (X-Locks)
        ii. Shared Locks (S-Locks)
        iii. Update Locks (U-Locks)
        iv. Intent Locks
        v. Read and Write Locks

50. **- ACID**
    a. - Atomicity
    b. - Consistency
        i. Consistency in data
        ii. Consistency in reads
    c. - Isolation
        i. Read phenomena
        ii. - Dirty reads
        iii. - Non-repeatable reads
        iv. - Phantom reads
            1. Serialotions
        v. - (Lost updates)
        vi. Isolation level
        vii. - Read uncommitted
        viii. - Read committed
        ix. - Repeatable Reads
        x. - Transactions are Serialized
    d. - Durability
    e. How to implement ACID properties

51. EXPLAIN
52. Heap Scan
53. Parallel Scan
54. Planner

55. Other theory and functions

56. COPY
57. OLTP
58. MUCC

59. Pendings

60. Delete vs truncate
61. candidate key vs super key
62. stored procedure
63. ER diagram.
64. Practice nested queries.

Microservice

Concepts & Theory

20. What is a service?
21. Monolithic arch
    a. pros and cons
22. Microservice arch
    a. pros and cons
23. **Monolithic vs Microservice**
    a. deployment, scalability, reliability, development, flexibility, debugging
24. Security
25. **Cloud computing**
    a. Public IP address
    b. On-premises
    c. Iaas, Cass, Pass, Faas (Server less computer), Saas
    d. Private could
    e. Hybridge cloud
26. Scaling
27. Blue Green Deployment
28. Cloud Native vs Cloud Ready
29. Event-Driven Architecture
    a. Event producer
    b. Event broker
    c. consumer
    d. pub/sub
    e. eventual consistency
    f. cache layer
    g. idempotent
30. 12 Factor App
    a. Codebase
    b. Dependencies
    c. Config
    d. Backing services
    e. Build, release, run
    f. Processes
    g. Port binding
    h. Concurrency
    i. Disposability
    j. Dev/prod parity
    k. Logs
    l. Admin processes
31. Load balancing
    a. Round robin
    b. Least connection
    c. IP hash
32. Service Registry
33. Failed fast
34. Service Discovery
35. **Tools**
    a. os
    b. language
    c. api management
        i. postman
    d. messaging
        i. kafka
        ii. rabbitMQ
    e. toolkits
        i. fabric8
        ii. seneca
    f. orchestration
        i. kubernetes
        ii. Istio
    g. monitoring
        i. prometheus
        ii. logstash
    h. serverless tools
        i. claudia
        ii. AWS lambda
36. **Principles behind microservices**
    a. Independent and autonomous service
    b. Scalability
    c. Decentralisation
    d. Resilient services
    e. Real time load balancing
    f. Availability
    g. CICD
    h. Continuous monitoring
    i. Seamless API integration
    j. Isolation from failures
    k. Auto provisioning
37. **Security**
    a. Defence in depth mechanism
    b. Token and API gateway
    c. Distributed tracing
    d. First session
    e. Mutual SSL
    f. OAuth
38. API gateway
    a. client performance

    b. security
    c. rate limiting
    d. monitoring logging
    e. BFF
39. SOA vs Microservices
40. **Communication**
    a. Types
        i. synchronous blocking communication
        ii. asynchronous non blocking communication
    b. Request response
        i. REST over HTTP
        ii. RPC
    c. Event driven
        i. kafka

Design Patterns

1. need?
2. Aggregator
3. **API gateway**
4. Chained or chain of responsibility
5. Asynchronous messaging
6. Orchestration vs Choreography
7. **Database pattern**
    a. Database Per Service
    b. Shared Database
8. Event sourcing
9. Branch
10. Multi-tenant
    a. pros and cons
11. **CQRS**
12. **Circuit breaker**
13. SAGA
    a. Choreography
    b. Orchestration
14. Decomposition
    a. Vine or Strangle
15. **Database**
    a. Decentralised Data Management
        i. pros and cons
    b. **Data Consistency in microservice**
        i. Saga Pattern
        ii. Event-Driven Architecture
        iii. CQRS
        iv. Idempotent Operations
        v. Consistency Models
    c. Database per Microservice
    d. Shared Database
    e. Data Virtualization
    f. Distributed Data Mesh
16. **CI/CD**
    a. Github actions
    b. pros and cons
    c. running in parallel
    d. **Testing**
        i. unit tests, integration tests, and end-to-end tests.
    e. Artefact Repository
        i. JFrog
17. **Github actions**
    a. Workflows
    b. Events
    c. Jobs
    d. Actions
    e. Runners
    f. Using variables in your workflows
    g. Sharing data between jobs
        i. artefacts
            1. actions/download-artifact
    h. Literals
    i. Contexts
        i. uses
        ii. Context availability
        iii. github context
        iv. env context
        v. var context
        vi. job context
    j. Polyglot Persistence
18. **- commands**
    a. name
    b. on
        i. push
            1. branches
    c. jobs
        i. needs
        ii. steps
        iii. uses
        iv. with
        v. run

vi. if
vii. matrix
viii. outputs

19. **Transactions in microservice**
    a. Two-phase commit
        i. voting phase
        ii. commit phase
        iii. pros and cons
    b. SAGA
        i. backward recovery
        ii. forward recovery
    c. correlation id
    d. imp of logging and monitoring

Docker

1. What, Why, When
2. Architecture
    a. client and server
    b. - server => docker engine
3. Container
    a. kernel namespaces
    b. C groups
    c. Container vs Virtual machine
4. Images & Container
    a. image vs container
    b. Isolated process
5. **Images**
    a. Image layers
    b. - base image layer
    c. - instruction layers
    d. - writable container layer
    e. Layer caching
6. docker run <ubuntu> vs docker pull <ubuntu>
7. Port mapping
8. Data persistence
9. DB Migration
10. Bind mounts.
11. run, start, rm
12. -t, -p

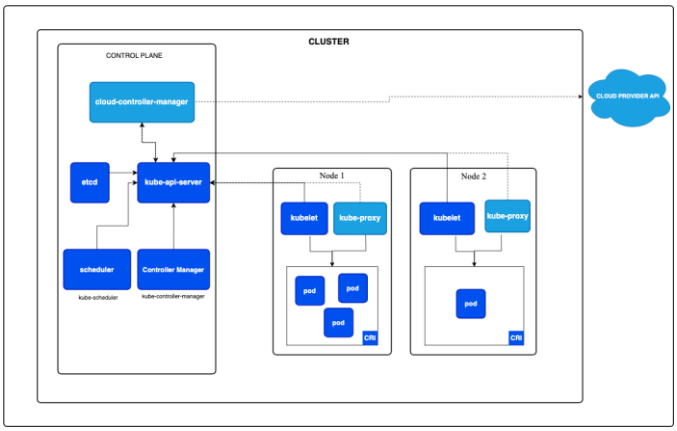
13. Commands

14. docker init
15. docker tag
16. docker build
    a. -t
    b. buildx
17. docker run
    a. --name
    b. -it
    c. -e
    d. -d
    e. -p
        i. port mapping
    f. --net
    g. --rm
18. docker container
    a. ls
    b. stop
        i. -t
    c. prune
    d. rm
        i. -f
19. docker logs <container>
    a. --follow/ -f
20. docker image
    a. ls
    b. history
        i. --no-trunc
21. docker network
    a. ls
    b. create <name>
        i. -d
        ii. --subnet
        iii. --gateway
22. **Manage containers**
    a. Docker container ls || docker ps
    b. Docker container ls -a || docker ps -a
    c. * Start
    d. * Stop
    e. * Restart
    f. * rm
    g. Docker system prune -a
23. **Network commands**
    a. Docker network ls
    b. Docker inspect bridge
24. **Volume**
    a. types
    b. - bind mounts.
    c. - volume mounts/ named volumes
    d. bind vs named mounts
    e. scratch space
    f. Volume claim
    g. docker volume
        i. create
        ii. inspect
    h. docker rm -f
25. dockerignore
26. **Docker hub**
    a. docker
        i. pull
        ii. push
        iii. rmi
27. **Docker compose**

a. docker compose
    i. up
    ii. down
    iii. watch
    iv. ps
b. services
    i. image
    ii. ports
    iii. environment
    iv. restart
        1. always
        2. on-failure
        3. unless-stopped
    v. depends_on
    vi. resources
        1. limits
        2. reservations
    vii. volume mapping
        1. read only, write only
c. networks
d. secrets
e. volumes
    i. driver

28. **Dockerfile**
    a. FROM
    b. COPY
    c. WORKDIR
    d. RUN
    e. CMD
    f. EXPOSE
    g. ENTRYPOINT
    h. ENV
    i. ARG
    j. USER
    k. LABEL
    l. RUN VS CMD
29. **Docker network**
    a. Bridge
    b. Host
    c. None
    d. overlay
    e. macvlan
    f. IPvlan
30. Docker daemon

Kubernetes



31. aka k8s
32. pros
    a. other pros from doc
33. imperative vs declarative
34. self heading/ auto-heal
35. scaling, auto-scale
    a. HorizontalPodAutoscaler
36. cluster
37. context
38. namespaces
39. annotation
40. namespaces vs annotation vs labels
41. Finalizers
42. Node
    a. master node
    b. worker node
    c. node pool
    d. Node status
    e. Node heartbeats
    f. Node controller
        i. what it does
        ii. CIDR block
    g. Node topology
    h. Graceful node shutdown
        i. grace period
        ii. non-graceful shutdown
43. **Pod**
    a. communicate via
    b. ephemeral
    c. atomic
    d. scaling
    e. Pods life cycle
        i. when creating
        ii. when deleting
            1. grace period
    f. Pod state
        i. pending
        ii. running
        iii. succeeded
        iv. failed
        v. unknow
        vi. CrashLoopBackOff
    g. init container
    h. Multi container pods
        i. sidecar pattern
        ii. ambassador pattern
        iii. adaptor pattern
44. Container
    a. Images
    b. - Serial and parallel image pulls
    c. - image pull policy
    d. Container Environment
    e. Container Lifecycle Hooks
        i. PostStart
        ii. PreStop
45. Kubelet
46. Selectors
    a. metadata > labels
    b. spec > selector
47. **Workloads**
    a. pod
    b. replicaSet
        i. self-heading
        ii. template
    c. deployment
        i. replicas
        ii. revisionHistoryLimit
        iii. Strategy
            1. RollingUpdate
            2. - maxSurge
            3. - maxUnavailable
            4. - default
            5. - rollback
            6. - rollout
            7. Recreate
    d. daemonSet
        i. daemon controller
        ii. uses
        iii. spec > toleration
    e. statefulSet
        i. persistent identifier
        ii. creation & deletion

iii. uses
iv. headless service

f. job, cron job
g. replicaSet vs deployment
h. pods vs deployment

48. Volumes
    a. persistent volume
        i. claim
        ii. HostPath
        iii. drawback
        iv. reclaim policies
            1. delete (default)
            2. retain
        v. access modes
            1. ReadWriteMany
            2. ReadOnlyMany
            3. ReadWriteOnce
        vi. states
            1. available
            2. bound
            3. released
            4. failed
    b. storage class
    c. static and dynamic
49. Objects
50. ConfigMap
    a. static
    b. solve static with volume
51. Secret
    a. type
52. **Service**
    a. clusterIP
        i. port
        ii. targetPort
    b. nodePort
    c. load balancer
        i. L4
        ii. round robin
    d. ingress
        i. L7
53. NodePort
54. **k8s Cluster arch**
    a. **Node**
        i. container runtime
            1. containerized
            2. CRI-O
        ii. kubelet
        iii. kube proxy
    b. **Control Plane / Master node**
        i. kube-api server
        ii. kube-scheduler
            1. factor when scheduling
        iii. Kube controller manager
            1. built-in controllers
            2. Node controller
            3. job controller
            4. endpointSlice controller
            5. serviceAccount controller
        iv. Cloud controller manager
        v. ETCD
        vi. Addons
        vii. - DNS
        viii. - WEBUI (dashboard)
        ix. - cluster level logging
        x. - container resource monitoring
55. Cluster > Node > pod > container
56. CRI
57. Garbage Collection
58. Mixed Version Proxy
59. KubeCTL
60. Minikube
    a. rollout
61. Open Service Broker.
62. Ingress
63. Docker Swarm vs Kubernetes
64. **Security**
65. **Image**
    a. Untrusted registries
    b. Vulnerabilities in tools of OS or libraries
66. Authentication & Authorization
67. practices
    a. use linear images
    b. image scanning
    c. don't use root user
    d. manage user and permission
        i. RBAC
68. statefulSet
    a. master

b. slave

69. Yaml

70. apiVersion
71. kind
72. metdat
    a. name
    b. label
    c. namespace
73. spec
    a. containers

74. Commands k8s

a. alias k=kubernetes
b. k get
    i. pods
    ii. svc
    iii. deploy
c. k delete -f <deployment.yaml> -f <service.yaml>
d. k exec <pod> – nslookup <svc>

75. k config
    a. current-context
    b. get-contexts
    c. use-context <name>
    d. delete-context <name>
76. namespace
    a. k get ns or namespace
    b. k create ns <name>
    c. k delete ns <name>
    d. k config set-context --current --ns=<namespace>
    e. k get pods -n <namespace>
77. node
    a. k get nodes
    b. k describe node
78. Probes
    a. startup
    b. readiness
    c. liveness

79. Good to know

80. grep
81. docker compose watch - https://www.youtube.com/live/I-htDVxmFGM?si=5Um3NCnMi0BeAgCz
82. chroot
83. Service Mesh

Message Broker

Kafka

1. used as key value but stored as binary in kafka
2. default port
3. serialisation and deserialization
4. pros and cons
5. Kafka cluster
    a. Fault Tolerance
    b. Scalability
    c. Distributed Processing
6. **Kafka Broker**
    a. topics
        i. compacted topics
    b. partitions
        i. leader
        ii. follower
        iii. replication
            1. replication factor
            2. key
    c. segments
7. **Producer**
    a. record
        i. header
        ii. key
        iii. value
        iv. timestamp
    b. retention period
    c. ack /nack
        i. no acks
        ii. leader acks
        iii. all acks
8. **Consumer**
    a. Queue vs Pub Sub
    b. Consumer group
9. Offset
10. Connectors
11. At most once
12. At least once
13. Exactly once
14. Exactly-Once Semantics
    a. Idempotent
    b. Two-Phase Commit
    c. alt
15. Persistent storage
16. Steam processing
17. Distributed system
    a. leader
    b. follower
    c. zoo keeper
        i. Metadata Management
        ii. Leader Election
        iii. Synchronisation
        iv. Heartbeats and Timeouts
        v. Monitoring
        vi. default port
        vii. gossip
18. long polling
19. Kafka Connect

RabbitMQ

84. TCP
85. HTTPv2
86. AMQP
87. RabbitMQ server
    a. default port
    b. Exchange Queues
88. Heartbeats
89. Connection pool
90. Channels
    a. Multiplexing
    b. Concurrency
91. Message TTL
92. Message Acknowledgment
    a. Strategies
    b. Automatic Acknowledgment (Ack)
    c. Positive Acknowledgment
    d. Negative Acknowledgment (Nack)
    e. Rejection with Requeue
    f. Rejection without Requeue
93. **Exchanges**
    a. Fanout exchange
        i. pros and cons
        ii. uses
    b. Direct exchange

        i. pros and cons
        ii. uses
    c. Header exchange
        i. pros and cons
        ii. uses
    d. Topics exchange
        i. pros and cons
        ii. uses
    e. Dead Letter Exchanges and Queues
94. Polyglot persistence
95. Durability
    a. Durable Queues
    b. Persistence message
    c. Combined Durability
    d. rabbitMQ
96. Routing Key
97. Request response
    a. architecture
    b. breaks
    c. pros and cons
98. Publish subscribe (pub/sub) model
    a. Queue/Channels/Topics
    b. Publisher/producer
    c. Consumer
    d. pros and cons
99. Multiplexing
100. Channel
101. Push model

gRPC

102. why?
103. http
104. protobuffer
105. Unary gRPC
106. Server streaming
107. Client streaming
108. Bidirectional

TypeScript

Git Repo

Fore more info click here

Theory

1. What is typescript
2. Disadvantages
3. Statically typed language
4. **Compiling project**
    a. tcs index.ts
5. setting type
    a. let age: number 20
6. Types
    a. implicit types an explicit types
    b. any type
    c. You will lose type case (It's not recommend to use any)
    d. unknown
    e. never
    f. enum
    g. Tuple
7. Objects
    a. Readyone
    b. Method
    c. Specitif valus
    d. Return type
8. Type alias
9. Union type
10. Type intersection
11. Literal types
12. Nullalbe type
13. Optione property, element, call
14. Interface
    a. Reopening interface
    b. Inheritance
15. Class
    a. Modifiers
    b. Getters and setters
    c. Abstand class
    d. Overrifdienr
    e. Diff b/w class and abstand class
16. Generics

Next.js

17. **Theory**

18. Prerendering
    a. SSG (Static site generation)
    b. SSR (Server side rendering)
    c. Suspense SSR Arch
        i. HTML streaming
        ii. Selective hydration
    d. ISR (Incremental site generation)
    e. RSC (React server components)
    f. Pros and cons
19. **Routing**
    a. file based
    b. app based
    c. how to route
    d. dynamic route
    e. Catch all segments [...<slug>]
        i. optional catch all [[...]]
    f. Navigation
        i. Link component
            1. replace
        ii. usePathname
            1. startWith
        iii. useRouter
            1. push()
            2. replace()
            3. back()
            4. forward()
    g. Parallel Routes
        i. slots (@)
        ii. pros and cons
        iii. default.tsx
    h. Conditional Routes
    i. Intercepting Routes
        i. (.)<route>
        ii. (..)<route>
        iii. (..)(..)<route>
        iv. (...)<route>
20. **Routing metadata**
    a. why?
    b. static vs dynamic metadata
    c. priority
    d. layout vs page metadata
    e. title metadata
        i. absolute
        ii. default
        iii. template
21. **Pages**
    a. not-found.tsx & notFound()
    b. loading.tsx
    c. error.tsx
        i. Error boundary
        ii. error object
        iii. reset
        iv. error bubbling
    d. File colocation
    e. private folder
        i. _
        ii. advantages
        iii. %5F
    f. Route groups
22. **Layout**
    a. nested layout
    b. route group layout
23. **Templates**
    a. why?
    b. templates vs layout
    c. using both
24. **Component hierarchy**
    a. Layout > Template > Error Boundary > Suspense > Erro Boudy (not found) > Page
25. Route Handlers
26. RSC (React server component)
27. API routes
28. Rending
    a. client side
    b. server side
29. Date fetching
30. STyling
31. Optimization

32. Layouting
33. Loading state
34. Error bordering
35. SEO
    a. Metadata
36. Fetching data
    a. Using server comp
    b. In parallel
    c. Fetch data where It's used

    d. Streaming and suspense
37. Deduplication
38. Caching
    a. ISR (Incremental site generation)
    b. {cache: force-cache}
    c. {cache: no-store}
    d. {next: {revalidate: 60}}
39. Dynamic params

NestJS

1. What
2. Why use NestJS
3. Module
    a. Global modules
    b. Third party modules
4. Dependency injections
5. **Decorators**
    a. Decorator factor
    b. TS vs JS
    c. Call, apply, bind
    d. This context in different functions
6. Bootstrap
7. Nest CLI
    a. create module
8. Controllers
9. Providers
10. Injectables
11. Nest validation
12. Pipes
    a. types of pipes
13. Class validators
    a. pipes vs class validators
14. Accessing code expires req
15. Strategy
16. Guards
    a. global
    b. local

Blockchain

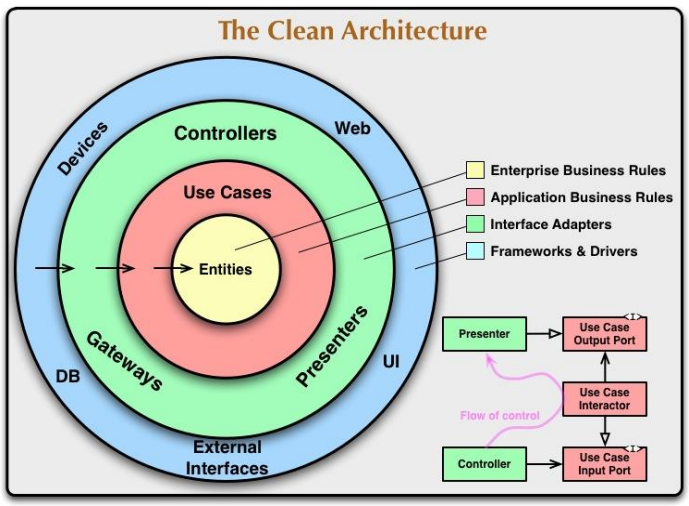
1. Centralised vs Decentralised
2. Blockchain
3. Ledger
4. Block
    a. data,
    b. hash,
    c. prev hash,
    d. Genesis block
5. Security
    a. Proof of work
        i. proof fo stake
    b. Consensus Rule
        i. Copy of chain in network
    c. Cryptographic proof
    d. Algo
        i. SHA256
        ii. RSA
        iii. MD5
6. Crypto
    a. no conversion
    b. centralised
    c. use case
        i. patient records
        ii. real estate - lottery
7. Smart contracts
8. Ethereum
    a. Solidity
9. Mining
10. Gas fees

Clean Code

1. You are not done when it work
2. Invest the time to spend to write the program to make the program clean
3. Clean code what is expect when to read the code
4. Function should be verb (not noun)
5. **Function**
    a. Every things in the function should have the same abstraction
    b. Functions should be small
    c. Function should not have more than 3 params
    d. Don't pass boolean to a function
    e. Avoid switch statement
    f. The should not any side effect
    g. If a function return void, it should have side effects
    h. if a function returns a value, it should not have side effects
6. File should be <100 lines

7. SOLID Design Principles

8. - Single responsibility
9. - Open-closed
10. - Liskov substitution
11. - Interface segregation
12. - Dependency inversion



Clean Architecture

1. Things

2. Dependency Inversion Principle
3. Interface adapters
4.
5. Entities
    a. They have no dependency
6. Use cases
    a. they only depend on entities
    b. Interactor
    c. Interface
7. Controllers
8. Gateway
9. Presenter
10. Devices
11. Web
12. Database
13. UI
14. External Interface

15. Related Topics

16. Dependency Injection

17. Rules

18. Data flow from outside to inside

19. Videos

20. [Using Clean Architecture for Microservice APIs in Node.js with MongoDB and Express]

Python

1. Basic

- Syntax
- Variables and Data Types
    1. Integers
    2. Floats
    3. Strings
    4. Booleans
    5. Lists
    6. Tuples
    7. Dictionaries
    8. Sets
- Type casting
- Indexes and Negative Indexes
- Slicing
- Scope of variables
- Operators
    1. Arithmetic Operators
    2. Comparison Operators
    3. Logical Operators
    4. Assignment Operators
    5. Bitwise Operators
    6. Augmented assignment operators

2. Control Flow

- Conditional Statements
    - If
    - elif
    - else
- Conditional Expressions (terinory)
- Loops
    - for loop
    - while loop
    - break, continue, pass
- Comprehensions
    - List Comprehensions
    - Dictionary Compre...
    - Set Compre...
- Exception Handling
    - Try
    - except
    - finally
    - Else
    - raise
- Context Managers
- “With“ statement

3. Function

- Function
    - docstring
    - return
- Lambda Functions
- Types of function arguments
    - Defualt argument
    - Keyword argument
    - Positional Arguments
    - Arbitrary Keyword Arguments
- call by sharing
- Genarator
- Iterator
- Decorators
- Recursion
- Map
- Filter
- Reduce
- eval

4. Object-Oriented Programming (OOP)

- Classes and Objects
    - constructor
    - Deconstructor
    - self parameter
- Instance Variables
- Methods
    - Static method
    - Instance method
    - Class method
    - Magic Methods / Dunder
        - init, str, new, repr, etc.
    -
- Inheritance
    - Single Inheritance
    - Multiple Inheritance
    - super()
    - Method Resolution Order (MRO).
    - C3 Linearization Algorithm.
- Polymorphism
- Encapsulation
- Abstraction
- Metaclasses

5. Modules and Packages

- Importing Modules
- Creating Modules
- Using Packages
- init.py
- Standard Library Modules

6. File Handling

- Reading Files
- Writing Files
- Working with File Paths
- Context Managers

7. Other topics

- Pickling.
- Programming Paradigms in Python.
- Memory Allocation.
- Memory Management Mechanisms.
- Referance conting.
- Garbage collection.
- Memory Leak in Python.

8. QA

- role of init.py in package?
- Python is Intrepreter language ?
- Deffrence between oops and pops ?
- Multy thrud language ?
- Mutable vs immutable?
- Shaloow coppy, deep coppy ?
- What is .pyc file ?
- Generate random number between 1 and 100 using lambda function?
- Deffrent between “is” and “==”?
- Different between “__name__” and “__main__” ?
- What is iterable ?
- What is primitive and non primitive ?

staticmethod vs classmethod
Regex
Multy processing
split

Others

1. SASS

2. @import "../node_modules/bootstrap/scss/bootstrap";
3. @use & @forward

4. REST API

5. it's about communication
6. RESTful
7. pros
    a. simple & standardised
    b. scalable & stateless
    c. high performance due to cachings
8. **Request**
    a. General (start line)
        i. method/target/version
    b. operation: get, post, put, delete
    c. endpoint
    d. header
        i. API key
        ii. authentication data
    e. body/ parameter
9. **Response**
    a. General (start line)
        i. version/statuscode/statustext
    b. header
        i. content type
    c. body
        i. requested resource
10. **HTTP Methods**
    a. GET
    b. POST
    c. PUT
    d. DELETE
11. Idempotent
12. Headers
13. Status code
    a. 1xx: Informational
    b. 2xx: Success
        i. 200 - Success
        ii. 201 - Success and created
    c. 3xx: Redirect
        i. 301: moved to new URL
        ii. 304: not changed
    d. 4xx: Client Error
        i. 401: Unauthorised
        ii. 402: 402 Payment Required
        iii. 403: Forbidden
        iv. 404: page not found
    e. 5xx: Server Error
14. MIME type
15. HTTP v2
16. TCP and IP

17.CI CD (git)

18. JSDoc

19. /**
    * function description
    * @param {string} description
    */
20. Params
21. Returns

22. Sequelize

23. Testin

24. Swagger