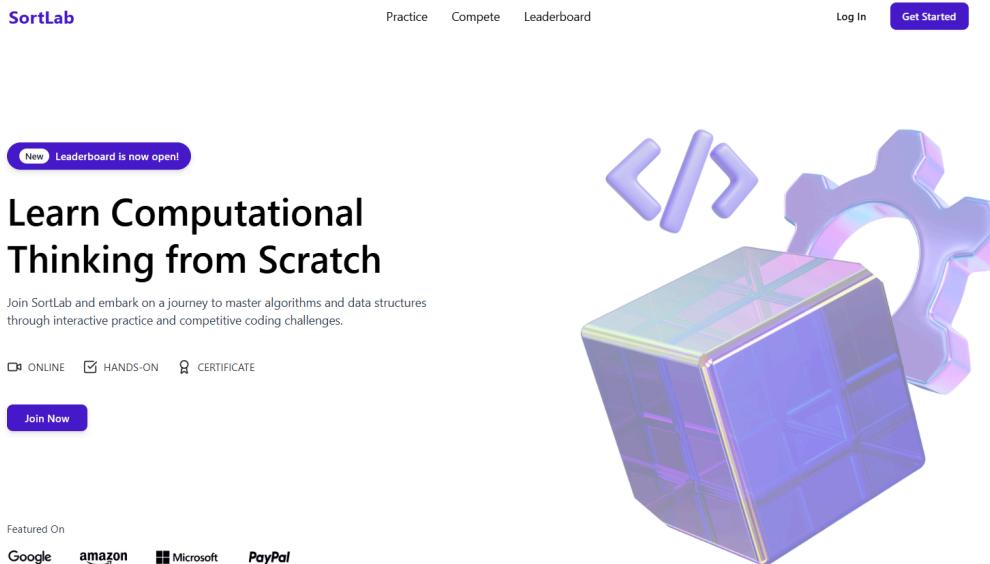


Dokumentasi SortLab - *Front End*

18223122 Anggita Najmi Layali



Live demo: <https://sortlab-sand.vercel.app/>
Repositori: <https://github.com/qitaa001/sortlab-fe.git>

1. Tentang SortLab

SortLab adalah platform pembelajaran interaktif untuk memahami algoritma *sorting*. Pengguna dapat belajar melalui modul dan video yang disediakan, juga memahami cara kerja suatu algoritma sorting secara visual melalui *visualizer*.

Batasan:

Kecuali video yang di-*embed* dari YouTube, semua fitur **SortLab** dikembangkan sepenuhnya pada *sourcecode*. Saat ini website masih berjalan di sisi *front-end*, sehingga beberapa fitur (seperti autentikasi dan leaderboard) masih belum berfungsi sepenuhnya, masih menggunakan data *dummy* dalam array statik, dan belum terhubung ke *database*.

Tech Stacks:



2. Struktur Direktori

```
sortlab/
  public/                                # Asset statis
    - insertion/
    - bubble/
    - merge/

  src/
    component/                            # Komponen template UI
      - footer.tsx
      - navbar.tsx
      - breadcrumb.tsx
      - layout-template/ # Template layout
        - library.tsx
        - visualizer.tsx

    app/                                    # Routing Next.js (App Router)
      - practice/
        - bubble-sort.tsx
        - insertion-sort.tsx
        - merge-sort.tsx

    package.json
    tailwind.config.js
    README.md
```

3. Page dan Section

The screenshot shows the SortLab homepage. On the left, there's a large white area labeled "Homepage". The main content area has a white header with the SortLab logo and navigation links for Practice, Compete, Leaderboard, Log In, and Get Started. Below the header, a banner says "Leaderboard is now open!". A central call-to-action button says "Join Now". To the right, there's a large graphic featuring a Rubik's cube, code brackets (< >), and a gear, symbolizing computation and development. Below this graphic, a purple banner at the bottom of the page lists "SOLUTIONS FOR DEVELOPERS" and "Single platform to learn, practice, and compete in coding". It includes icons for Active Users (100K+), Skills in Library (1000+), and School Partners (100+). The footer contains copyright information and a small circular icon.

Practice Page

The screenshot shows the SortLab platform's practice section. At the top, there's a purple header with the text "Practice Makes Perfect" and a subtitle "Study theory in the Library and experiment with step-by-step Visualizers. Build confidence by seeing algorithms in action". Below the header, there are four cards, each representing a different sorting algorithm:

- Bubble Sort:** Shows a 3D representation of numbers being compared and swapped. Progress: 80%.
- Selection Sort:** Shows a 3D representation of numbers being selected and placed in order. Progress: 60%.
- Insertion Sort:** Shows a 3D representation of numbers being inserted into their correct positions in an array. Progress: 70%.
- Merge Sort:** Shows a 3D representation of arrays being merged together. Progress: 0%.

At the bottom left, it says "© 2023 SortLab. All rights reserved." and at the bottom right, there's a small circular icon.

Setiap kategori sort memiliki library dan visualizernya masing-masing yang dapat diakses dengan memilih card terkait.

> Library

The screenshot shows the SortLab platform's library section for Bubble Sort. At the top, it says "All Tasks > Bubble Sort". Below that, there are two tabs: "Library" (which is selected) and "Visualizer". The main content area features a large video player with the title "Bubble Sort in 2 minutes" and a play button. Below the video, there's a description: "Bubble Sort is the simplest sorting algorithm that works by repeatedly swapping the adjacent elements if they are in the wrong order. The pass through the list is repeated until the list is sorted." It also includes sections for "How Bubble Sort Works", "Complexity Analysis", and "Characteristics".

Complexity Analysis:

- **Time Complexity:** $O(n^2)$ in the worst and average case, $O(n)$ in the best case (when the array is already sorted).
- **Space Complexity:** $O(1)$ (in-place sorting).

Characteristics:

- Bubble Sort is stable.
- It is an in-place sorting algorithm.
- Not suitable for large datasets due to its $O(n^2)$ time complexity.
- The graph describing the Bubble Sort time complexity looks like this:

A graph showing Time on the vertical axis and Number of values (n) on the horizontal axis. A curve starts at the origin and rises increasingly steeply, labeled $O(n^2)$.

Pada section Library, terdapat materi dan youtube video yang dapat digunakan sebagai sumber belajar.

	<h3>> Visualizer</h3> <p>Pada visualizer, pengguna dapat memasukkan input jumlah array dan elemen array (opsional). Kemudian klik apply dan run untuk melihat bagaimana proses dan urutan sorting yang terjadi. Pengguna dapat melihat jumlah proses yang diperlukan untuk mengurutkan sejumlah elemen.</p>
Compete Page	<p>SortLab</p> <p>Challenge Yourself and Compete with the Best</p> <p>Bubble Sort 80% Selection Sort 60% Insertion Sort 70% Merge Sort 0%</p> <p>© 2025 SortLab. All rights reserved.</p>
	<h3>> Quiz</h3> <p>All Tracks > Bubble Sort Quiz</p> <p>Bubble Sort Quiz</p> <p>Test your understanding of the Bubble Sort algorithm</p> <p>Exercise: Using Bubble Sort on this array, how does the array look like after the FIRST run? Array: [7, 14, 11, 8, 9] Attempts: 0/3 [] [] [] [] Submit Answer Show Answer ★ Total Points: 0</p> <p>Exercise: Using Bubble Sort, what does the array look like after the SECOND run? Array: [5, 3, 8, 4, 2] Attempts: 0/3 [] [] [] [] Submit Answer Show Answer ★ Total Points: 0</p> <p>Pada kuis, kunci jawaban hanya dapat diakses setelah 3x input jawaban salah.</p>

Leaderboard Page

SortLab

Practice Compete Leaderboard

Log In Get Started

Leaderboard

Total Registered
1277

Total Participant
255

Benchmark Time
12d : 6h : 41m : 58s

Blademir Malina Tori
@sortby_torb
44,872 pts
44 Wins - 20 Games

Robert Fox
@robert_fox
42,515 pts
40 Wins - 19 Games

Molda Glinda
@molda_glinha
40,550 pts
43 Wins - 16 Games

Global Ranking

Rank	User	Wins	Quizzes	Points
1	Blademir Malina Tori	443	20	44,872
2	Robert Fox	440	19	42,515
3	Molda Glinda	436	18	40,550
4	Darlene Robertson	430	17	39,800
5	Jerome Bell	425	16	38,500
6	Cameron Williamson	420	15	37,250
7	Courtney Henry	415	14	36,000

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Login Page

SortLab

Practice Compete Leaderboard

Log In Get Started

Sign in

Don't have an account? [Sign up](#)

Google

Or continue with email

you@example.com

.....

Register Page

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Log In Get Started

Create an account

Join us and start your journey today!

Google

or sign up with email

Full Name

Email Address

Password

Confirm Password

Already have an account? [Sign in](#)