

Designing and Implementation of

Algorithm Visualizer

webapp

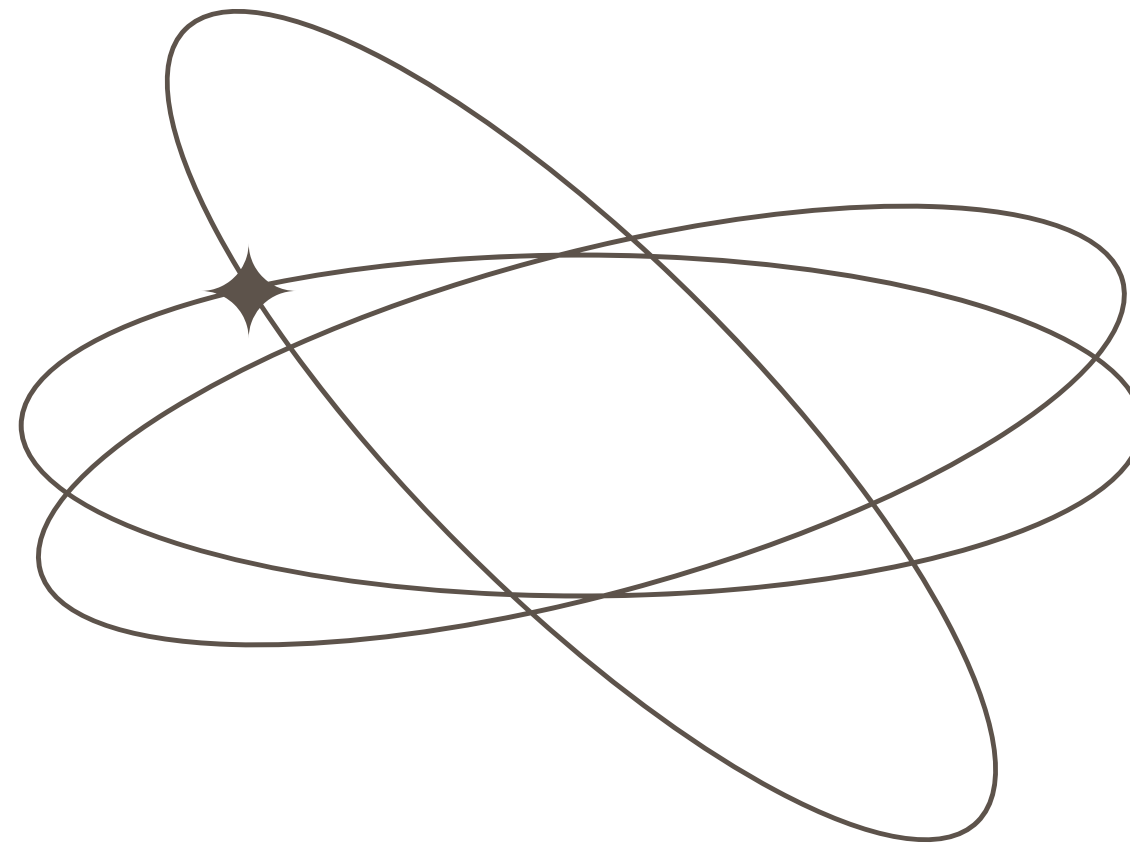
Team Members

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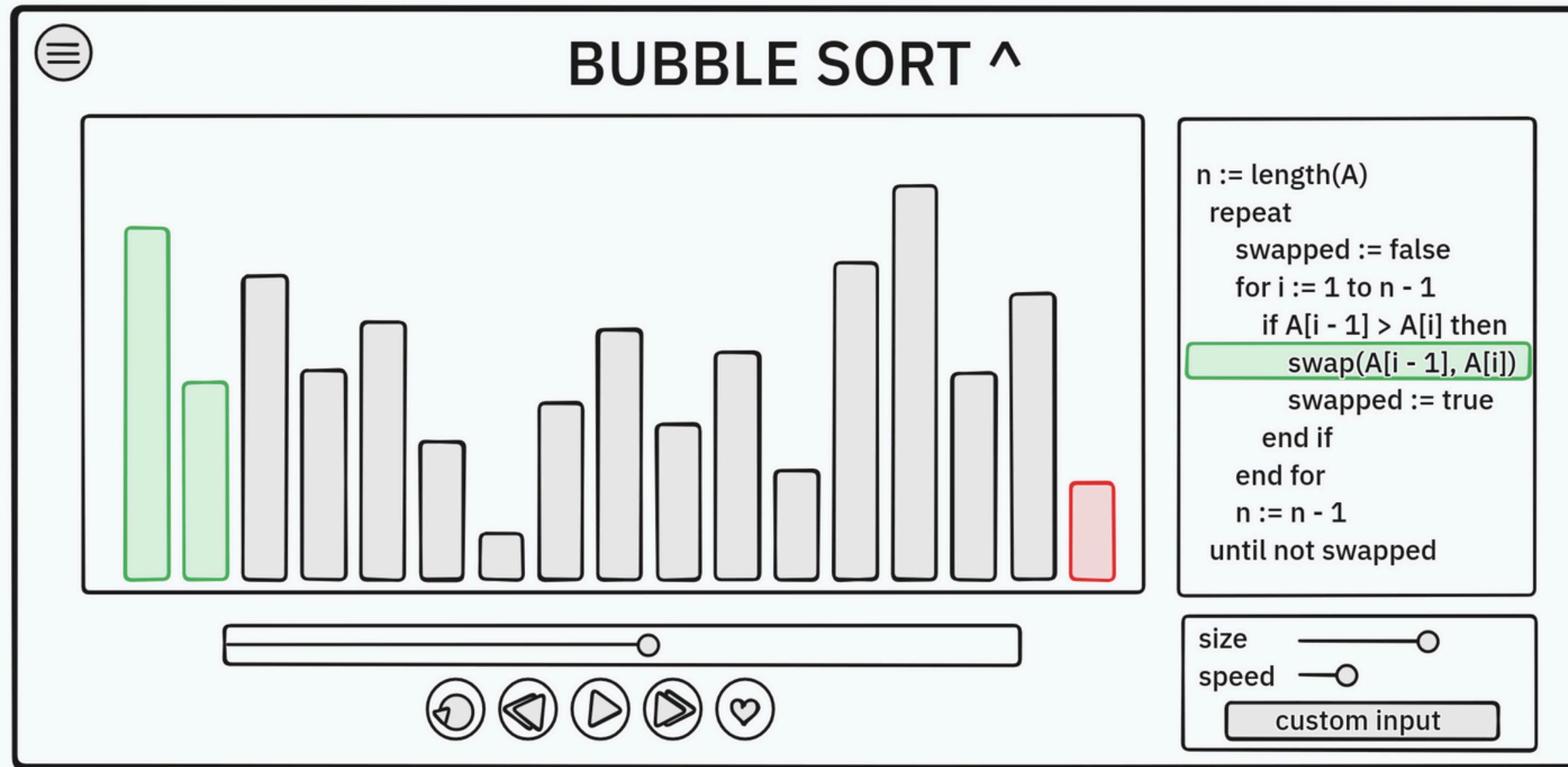


Project Guide

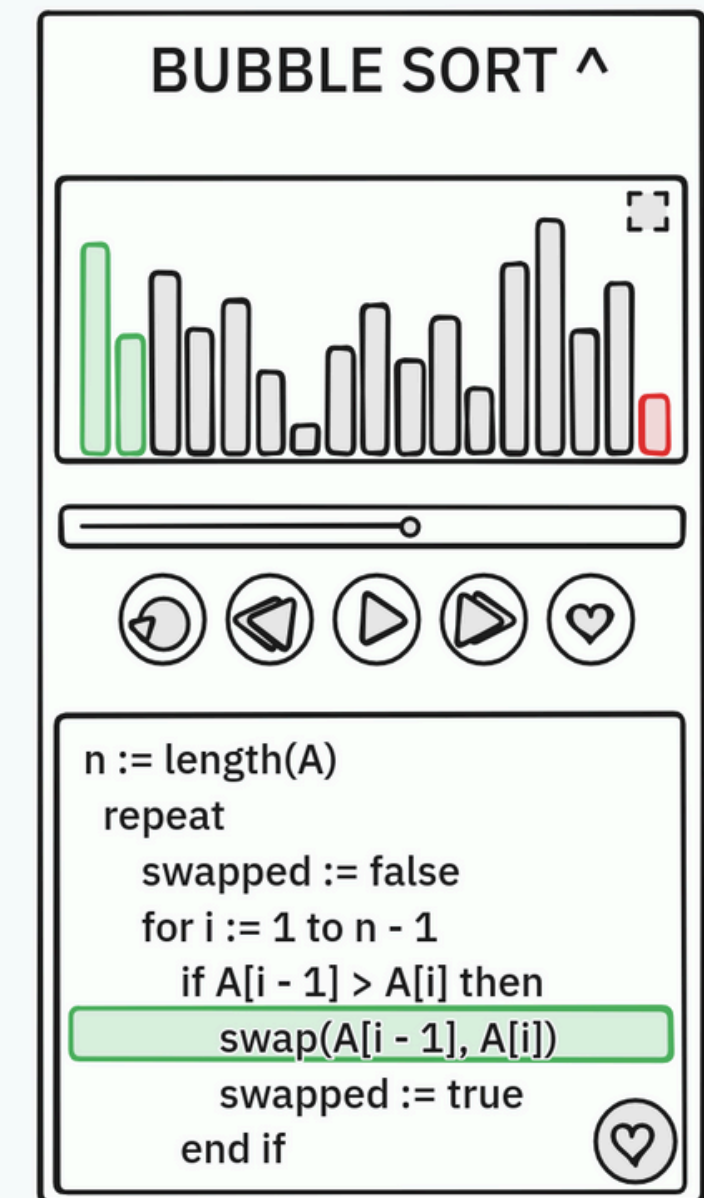
Dr. C. Anbuananth

Implementation Details

Responsive Design



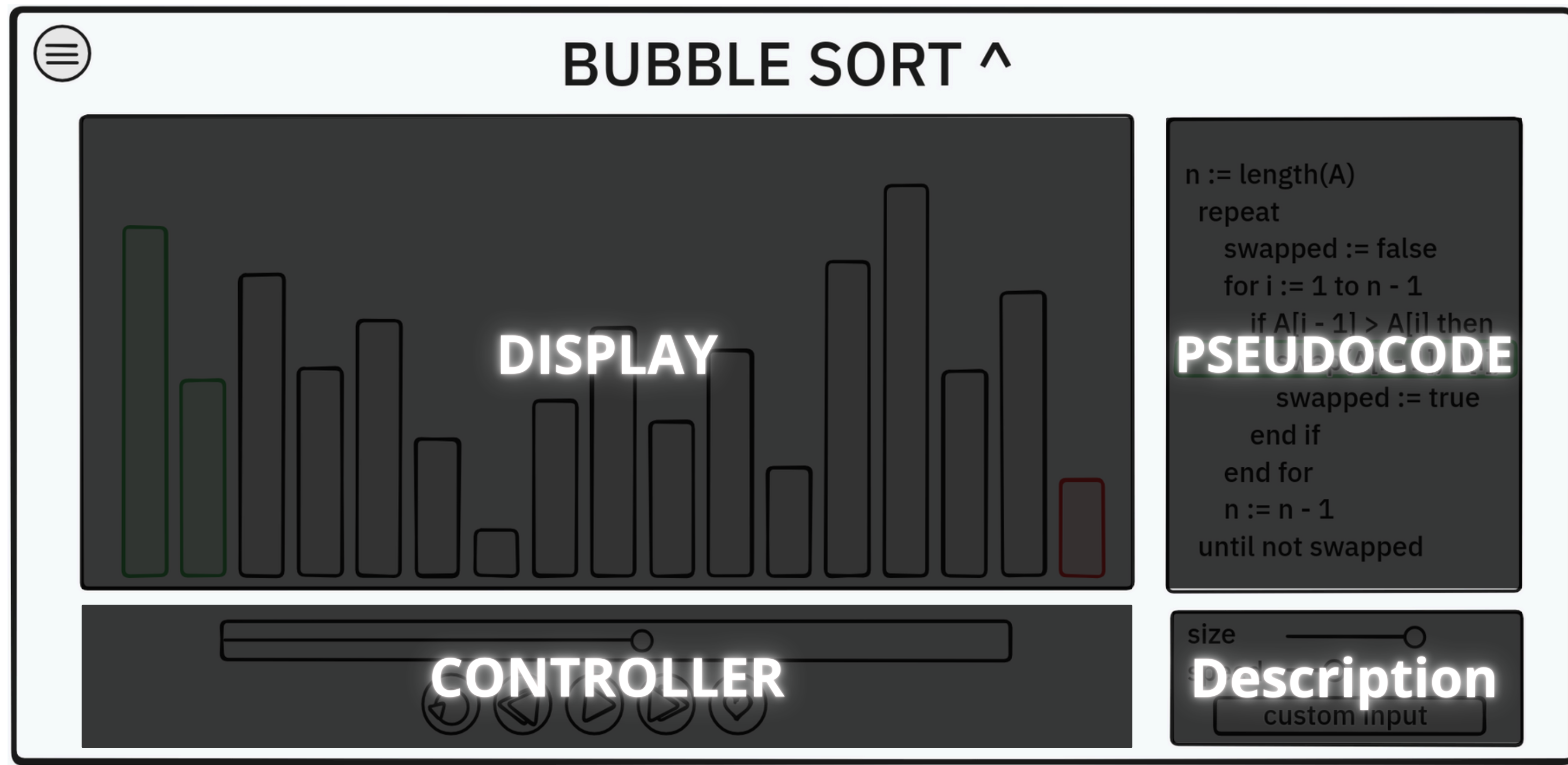
Desktop



Mobile

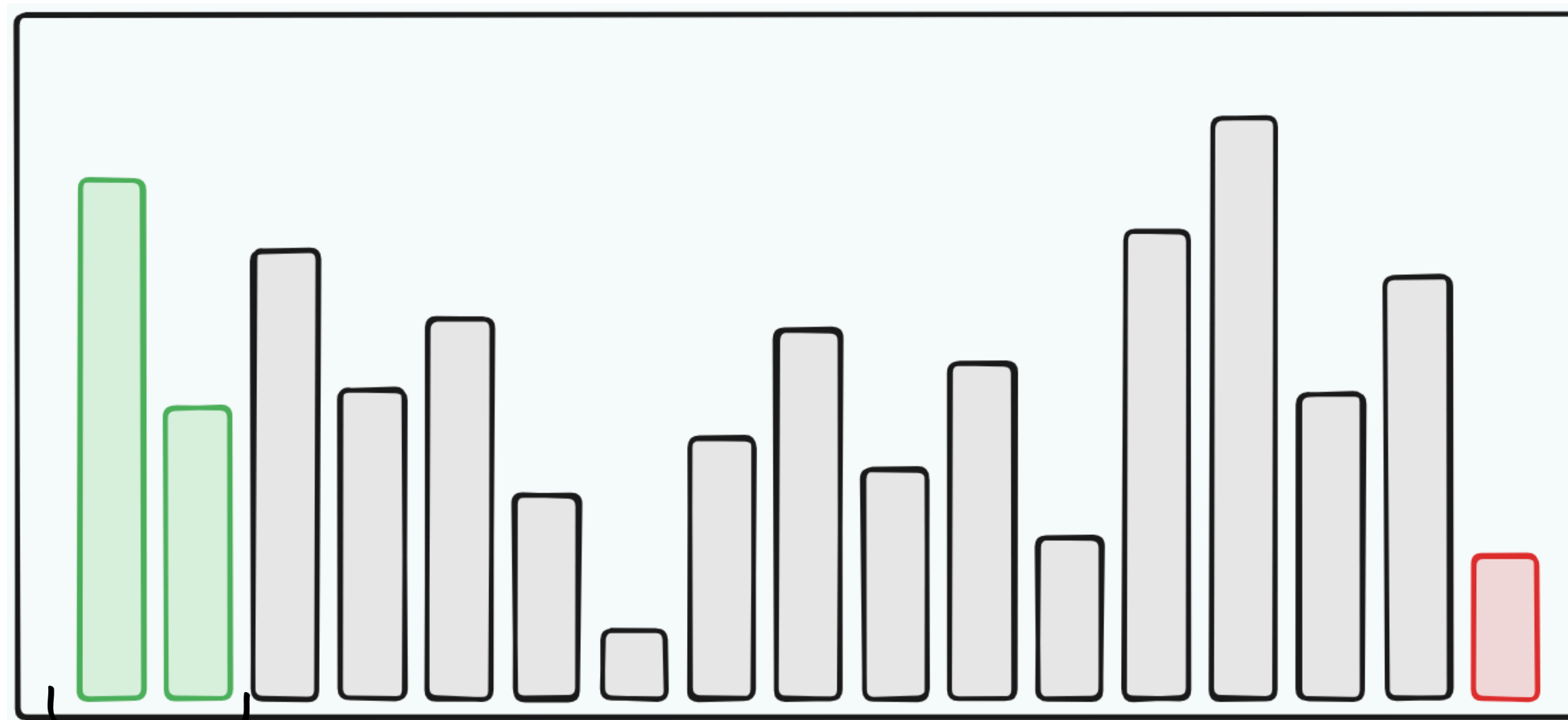
Implementation Details

Modular Design



Implementation Details

Display Module



- Displays bar animation
- Synchronize with algorithm
- Animation using Framer-Motion
- Highlights current focused bars

Implementation Details

Pseudocode Module

```
n := length(A)
repeat
  swapped := false
  for i := 1 to n - 1
    if A[i - 1] > A[i] then
      swap(A[i - 1], A[i])
    swapped := true
  end if
end for
n := n - 1
until not swapped
```

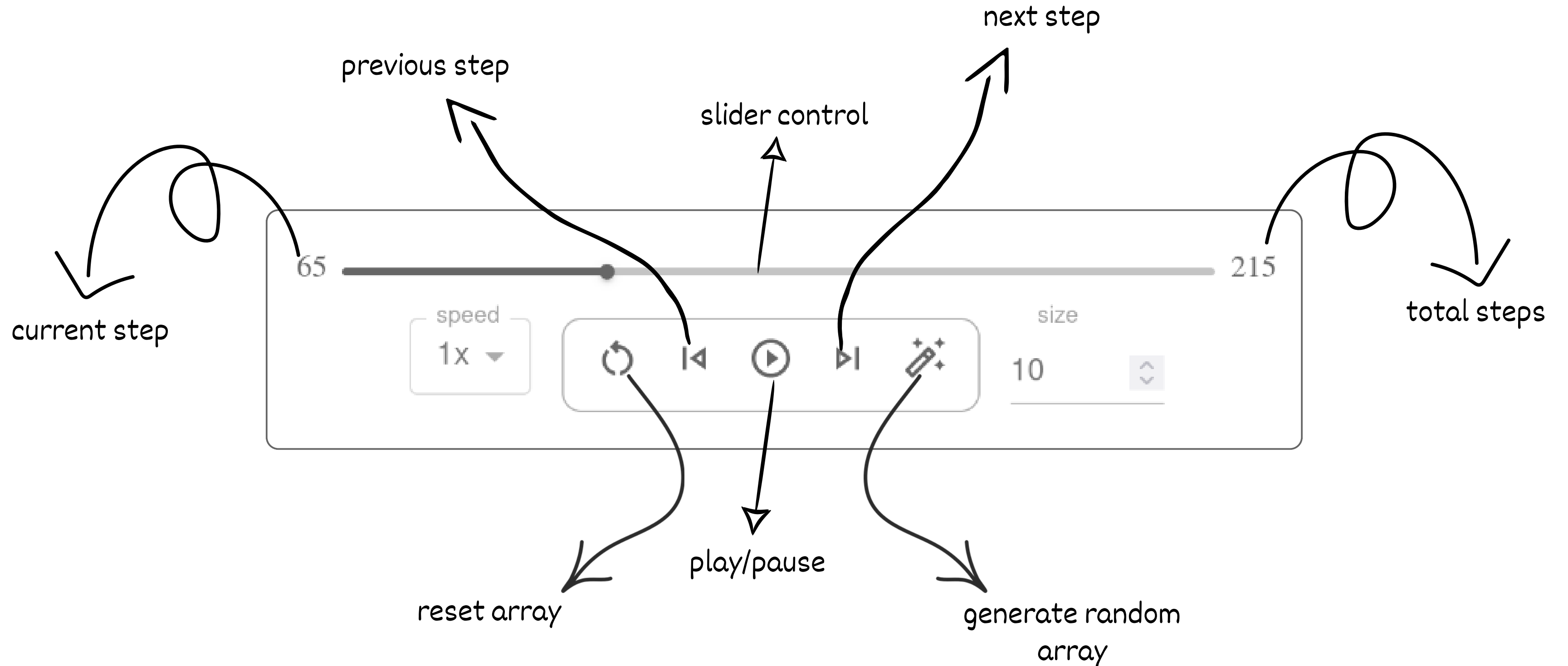
currently executing code



- Pseudocode of the selected algorithm
- Synchronize with animation
- Animation using Framer-Motion
- Highlights currently executing line

Implementation Details

Controller Module



Data Representation

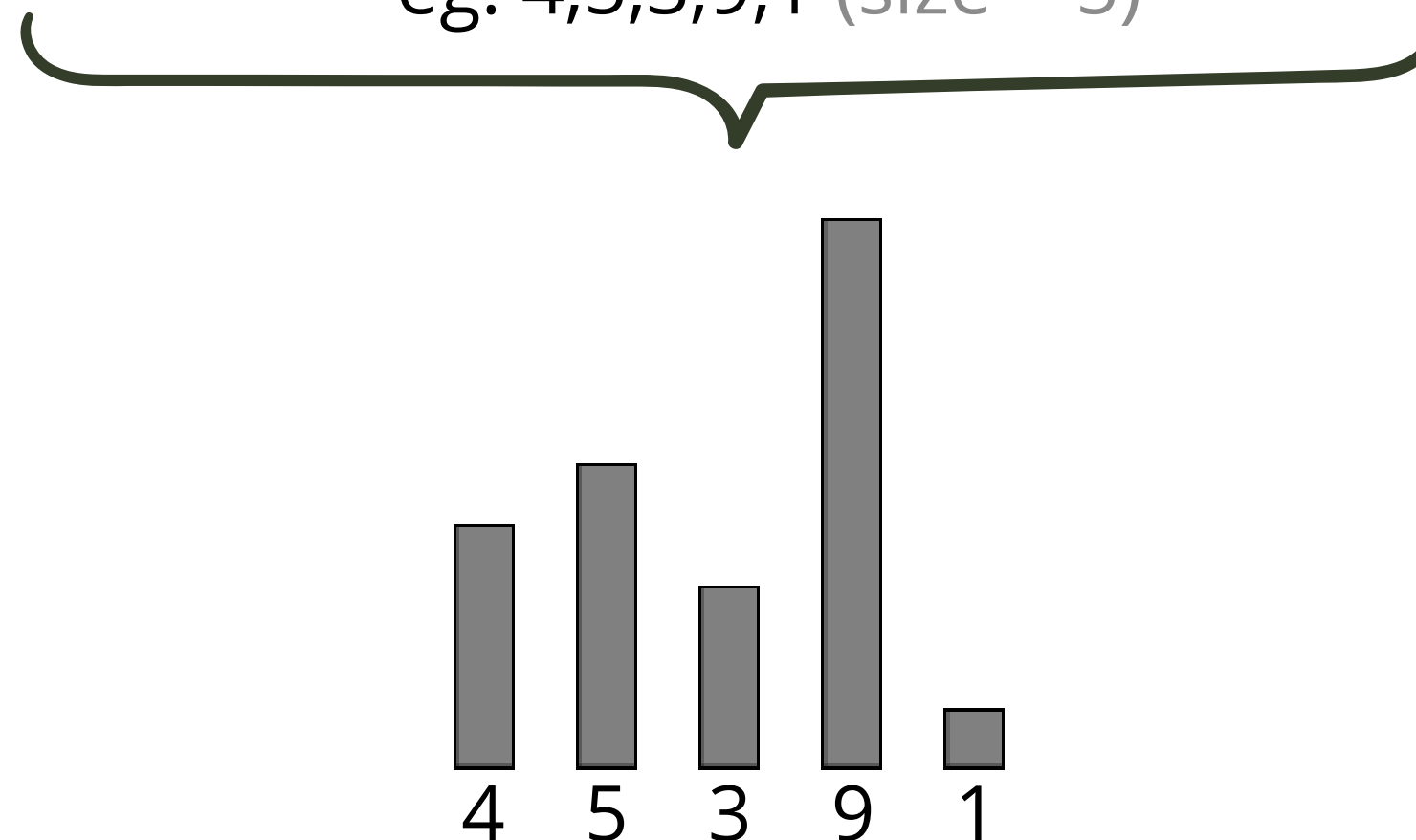
Random Array Generation

- Array of numbers generated using javascript random method
- size of the array determined by the user
- lower and upper bound of the value is pre-defined

User Custom Input

- User provides input of numbers separated by comma
- size of the array determined by the the number of values entered
- lower and upper bound of the value is pre-defined

eg: 4,5,3,9,1 (size = 5)



Experimental Results

Experiments and tests have been done for bug fixes and improvements

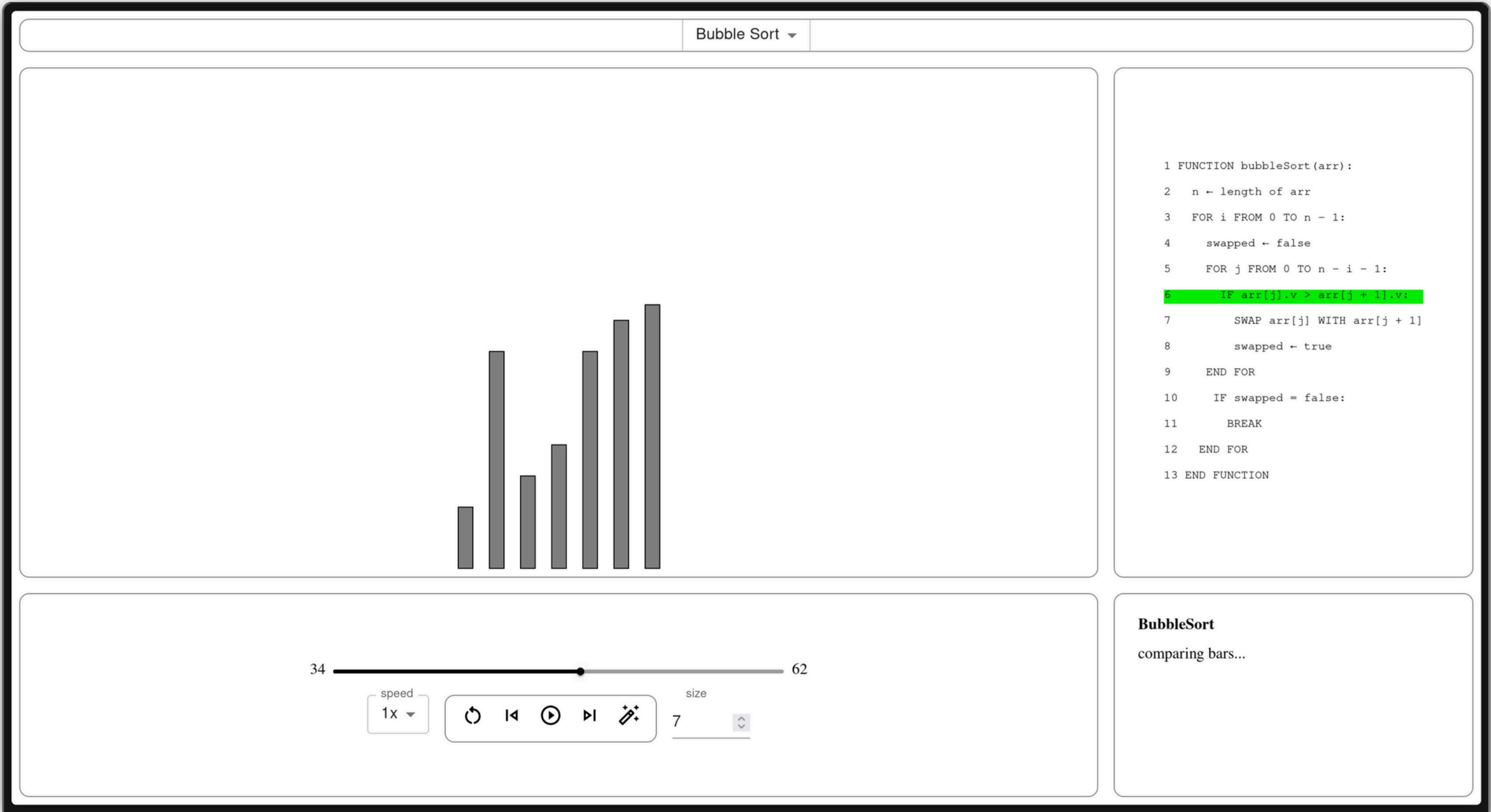
Bug Fixing

- Sequential animation
 - sync → async animations
- Sync animation and pseudocode
 - animation based → log based function
- Responsive slider control
 - async → sync animation

Improvements

- Improve code maintainability
 - separate logic from visuals
- Smooth animation
 - Framer-motion
- Better UI elements
 - Material UI

Screenshot [live link](#)



Conclusion

Improvements Made

- Integrated Framer Motion for smoother animations and better performance.
- Used Material UI for a cleaner and more modern UI design.
- Fixed animation issues, making the app more responsive and fluid.

Future Enhancements

- Adding more sorting and pathfinding algorithms.
- Further improving UI/UX for better user interaction.

