Team 8 | DSAI

SORTING VISUALIZER

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Merge Sort

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Shell Sort

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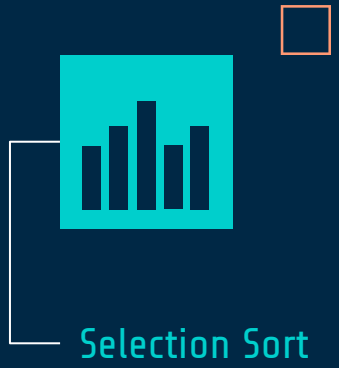
Selection Sort

PROBLEM STATEMENT

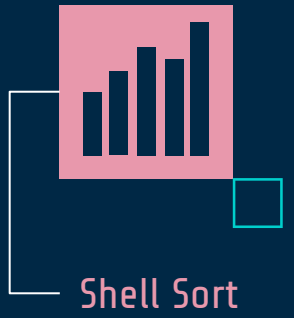


PROBLEM

Explaining and visualizing different sorting algorithms

Design

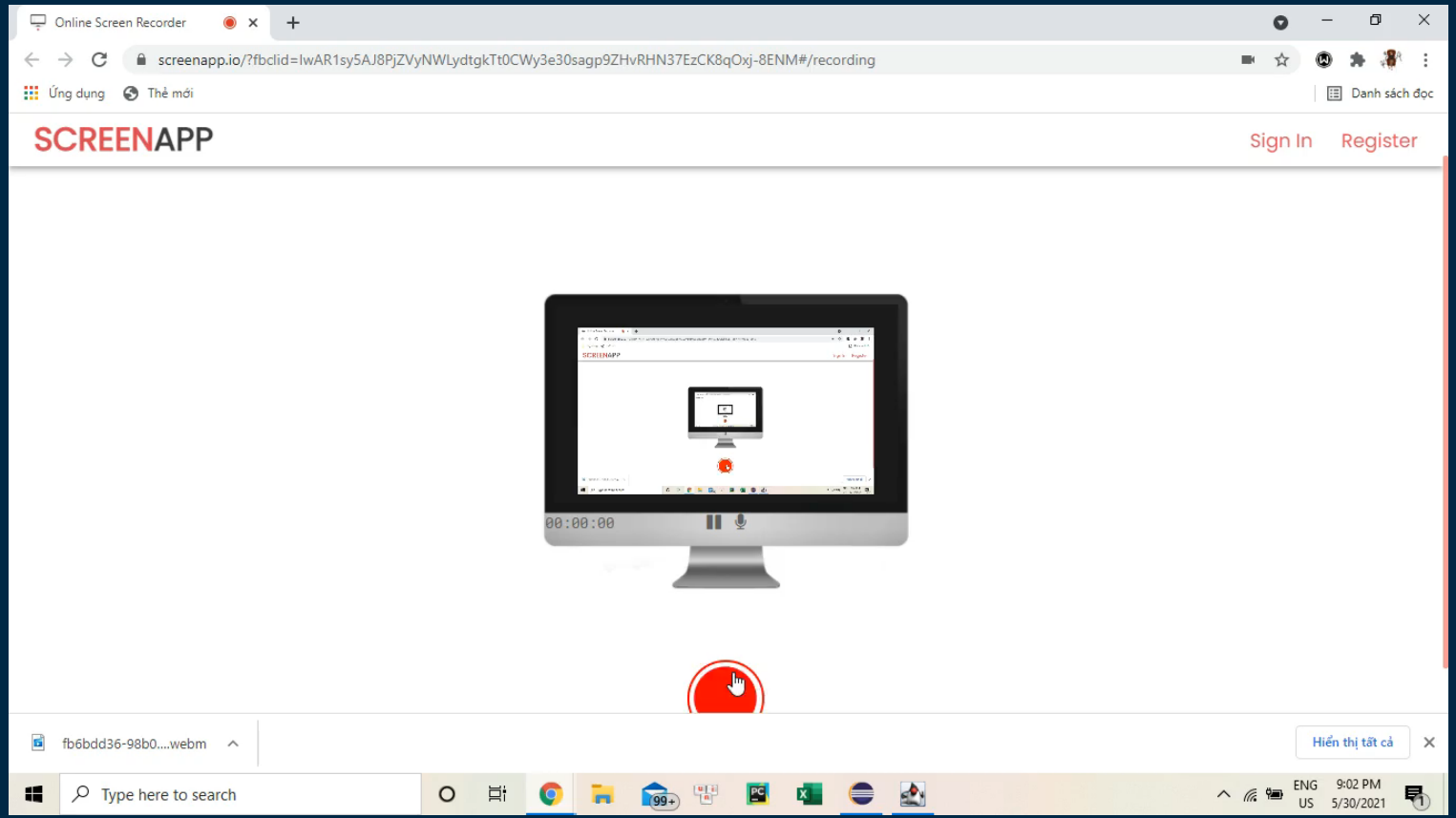
Design an UI for the problem with different features



TARGET

Help users have a better insight about how algorithms work

DEMO VIDEO


Online Screen Recorder
screenapp.io/?fbclid=IwAR1sy5AJ8PjZVyNWLydtgkTt0CWy3e30sagp9ZHvRHN37EzCK8qOxj-8ENM#/recording
Ứng dụng
Thẻ mới
Danh sách đọc
SCREENAPP
Sign In
Register
00:00:00
fb6bdd36-98b0....webm
Hiển thị tất cả
Type here to search
ENG
US
9:02 PM
5/30/2021

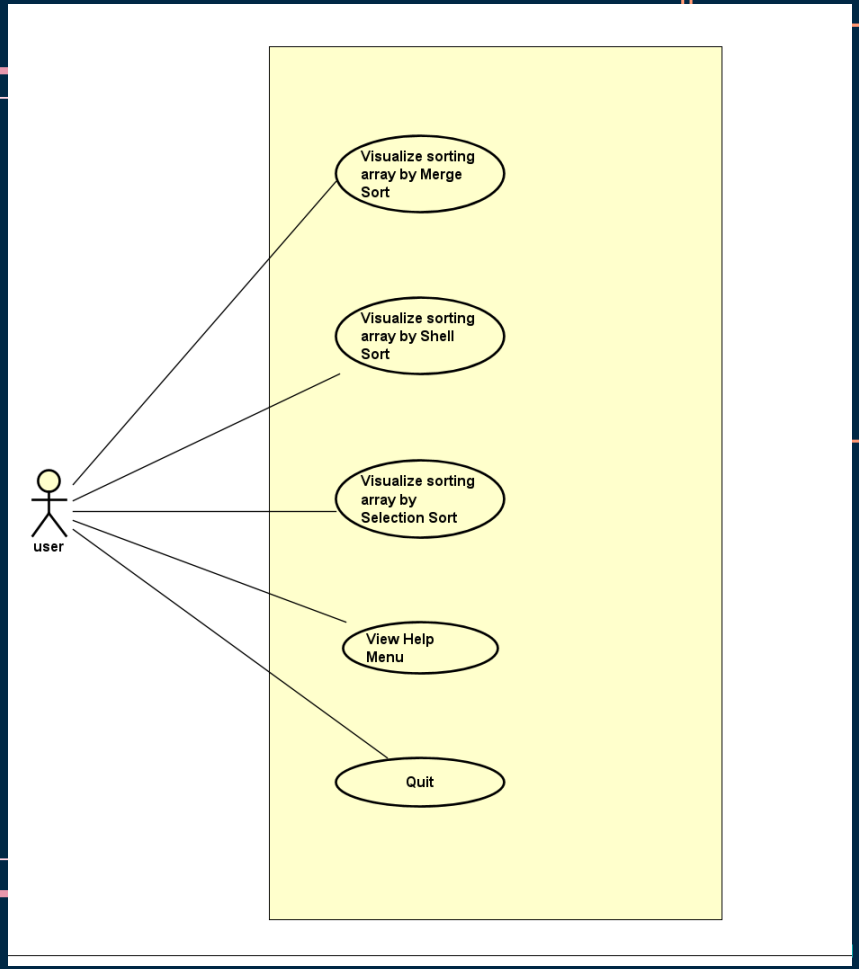
USE CASE DIAGRAM

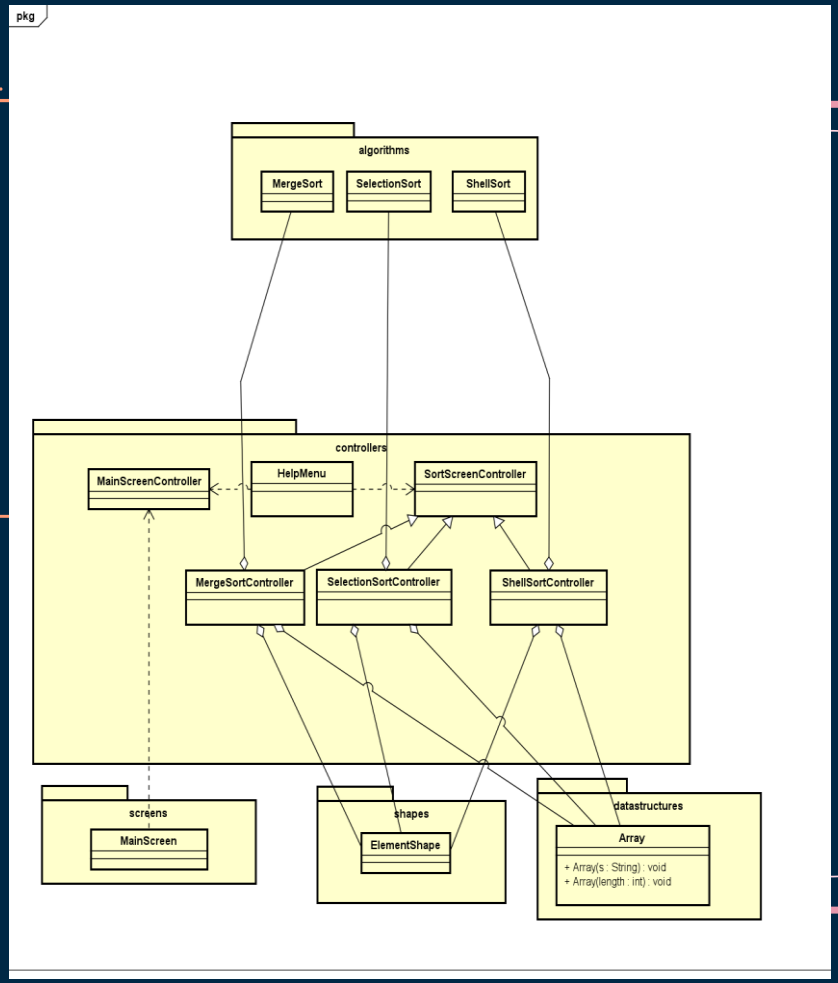
Users can start visualizing by select a sort type

- Take all user command from the GUI
- Notice the user if there is anything wrong with his input
- Run the designated algorithm
- Run/Reset the visualization based on user command.

Users can view the help menu

Users can quit the program





CLASS DIAGRAM

Package datastructures: store the main data structure (customized array).

Package algorithms: store 3 sorting algorithms for visualizing.

Package controllers: store all the screen controllers.

Package main screen: store the main screen class of the application.

Package shapes: store the class ElementShape which is used for visualization in the GUI.

Array & Shape

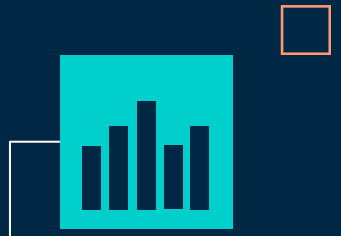
Array

Two constructors for customizing and randomizing a new array
Clone method for cloning an array
A getter for array's length
Handle user input exception

Shape

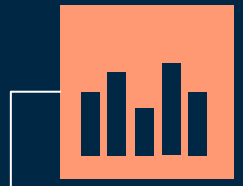
3 main constructor represents 3 different shape types used for different purpose of visualization.
There are two types of TranslateTransition.

PACKAGE ALGORITHMS



SelectionSort

Sort an original array of integers and an customized array of shapes Getters for transitions, shapes state at each steps



MergeSort

Sort an original array, then encode the sorting process, and corresponding UI effect into an array, called steps

ShellSort

Sort an original array of integers, store necessary data for the process. Provide Getters for transitions, state of array at each steps.

PACKAGE CONTROLLERS

SelectionSortController

Sort the array by selection sort, then display the stored “states” to corresponding step.

Sort the array by merge sort, then take the encoded “steps” array. Finally, decode and put it on the UI.

MergeSortController

ShellSortController

Sort the array by shell sort, display the stored “states” corresponding to User Action by system of ButtonListener.

SelectionSortController


THANKS FOR YOUR ATTENDING !