How to run the program

There are two java files, readImage.java and CBIR.java. Executable .class files are already provided, so to execute the program, you only need to run: **java CBIR**

In the off chance the command doesn't run or one of the text files was incidentally altered/missing, run the following commands in this order:

javac readImage.java
java readImage
javac CBIR.java
java CBIR

How to use the system

After starting up the program by running **java CBIR**, you should see a light blue canvas split in half, with the left half containing icons for each image in the database, and the right half containing buttons for query retrievals.

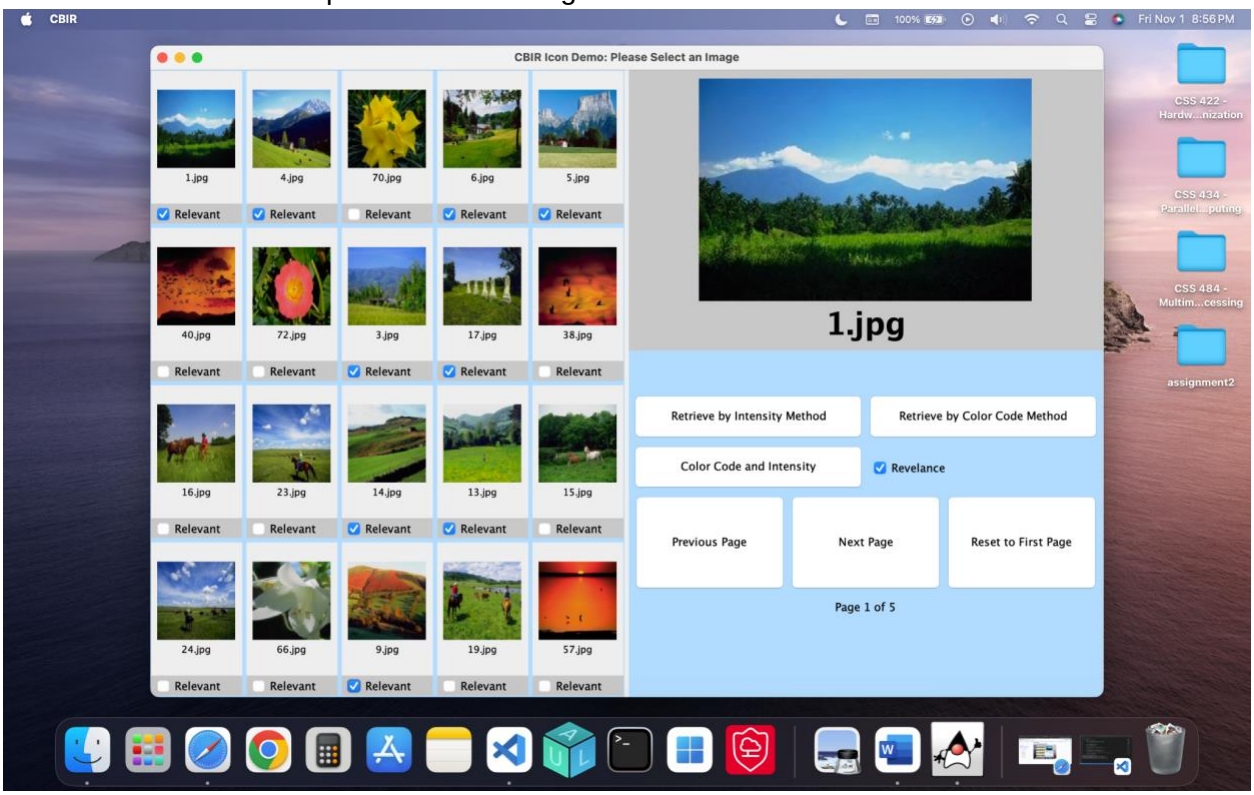
- There are 100 total images displayed, but the screen will only display 20 images at a time. To view other images beyond what is currently displayed, you can use the "Next Page" and "Previous Page" buttons.
- Below the available buttons, you will see a text labeled "Page 1 of 5". This tells you that there are 5 total pages to switch from and what page you are currently on. Clicking "Next Page" while on page 5 or clicking "Previous Page" on page 1 will not do anything.
- The order of images is based on the number the image corresponds with. So when first running the program, it is sorted in sequential order from left to right, top to bottom. If you click any of the change pages or sort by feature buttons, you can reset to the original sequential ordering of the image icons by clicking the "Reset to First Page" button. This will also take you back to the first page.
- To select an image, simply click the image icon and it will show up in an enlarged size on the top right of the screen. From there, you can sort the image database by clicking the "Retrieve by Intensity Method", "Retrieve by Color Code Method", or "Color Code and Intensity". Those buttons will sort the image icons based on the color histogram comparison results. Instead of the ordering of images being based on the number the image corresponds with, it will be ordered by images closest to the selected image based on the retrieval method. Closeness varies based on the color histogram comparison button you chose. However, the first image (top left) will always be the selected image.
- If you click on the "Relevance" checkbox, then "Relevant" checkboxes will appear below each image. You can use those checkboxes for relevance feedback.

- NOTE: relevance feedback is only applied to the “Color Code and Intensity” button. The other two buttons are not affected and queried results are static.
- To use relevance feedback:
    a. First click the “Relevance” checkbox.
    b. Select a queried image for display then click the “Color Code and Intensity” button.
    c. Check off any images you deem are relevant and reclick “Color Code and Intensity” to view updated query retrieval results.
    d. NOTE: If you uncheck the “Relevance” checkbox and check it off again, checked images will not still be checked.
- To quit the application, press the red “x” icon located on the top left corner of the canvas.

Screen Dumps

Initial query result

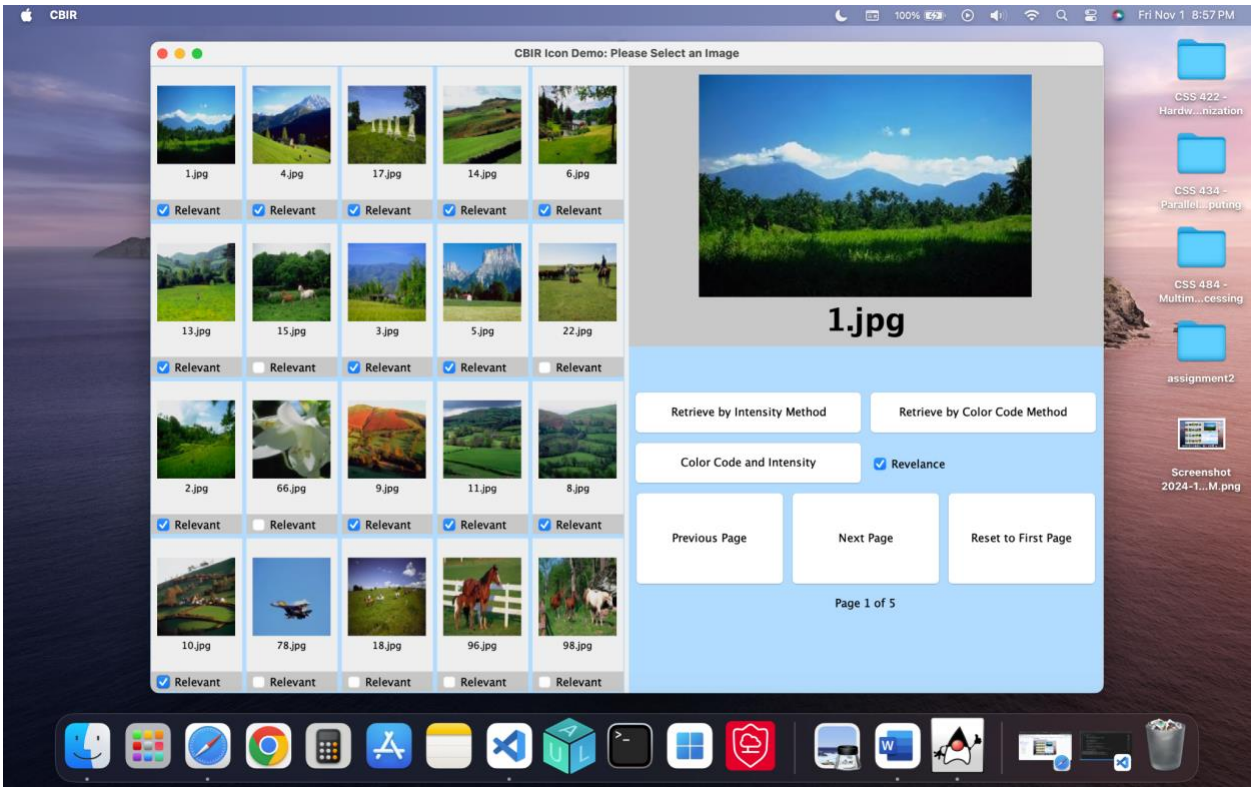
(before doing RF, with relevant images selected for the RF analysis)
Precision value for the top 20 retrieved images : **9/20**



1st RF iteration

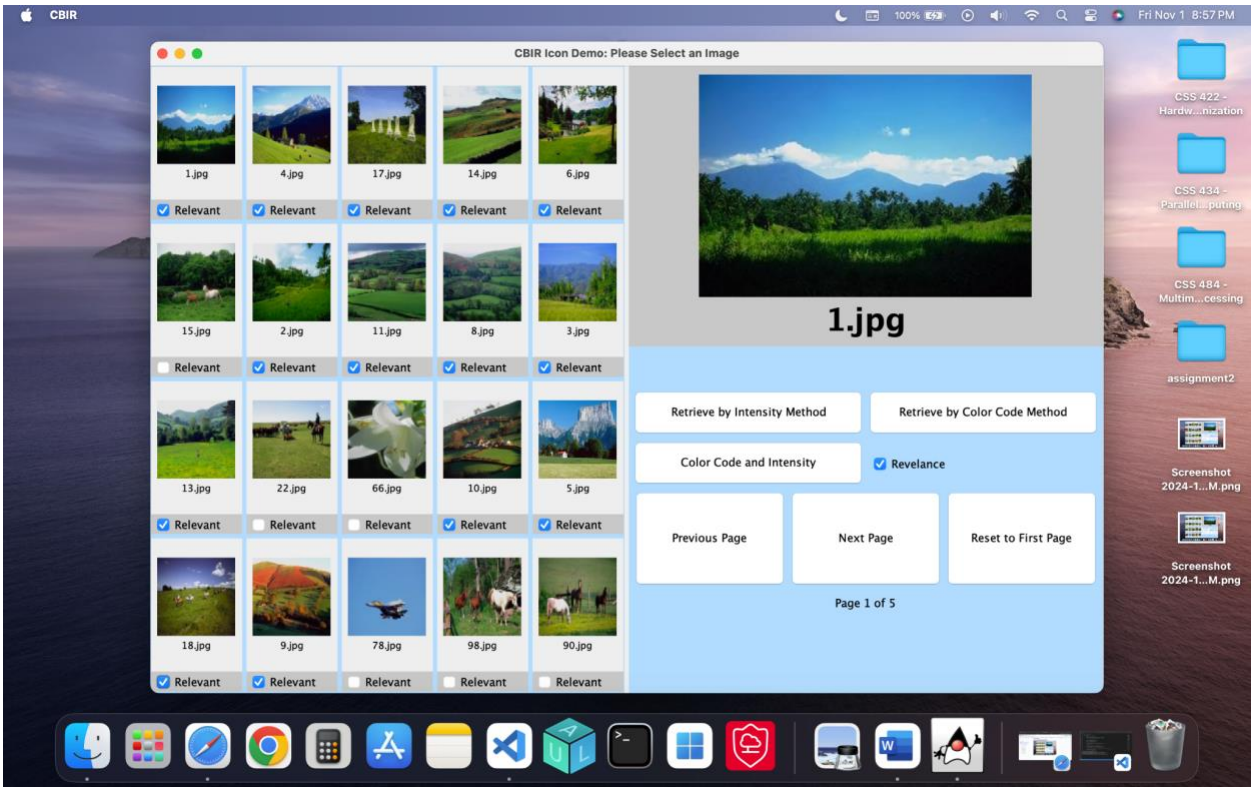
(With relevant images selected for the 2nd RF analysis)

Precision value for the top 20 retrieved images : **13/20**



2nd RF iteration

(With relevant images selected for the 3rd RF analysis)
Precision value for the top 20 retrieved images : **14/20**



3rd RF iteration

Precision value for the top 20 retrieved images : **14/20**