

1 Connect the Dots

Connect the dots is a simple game that uses a graphical interface. This involves tracing from point to point in numerical order to complete an image. In this lab, you will be implementing a digital version of this game using MATLAB graphics.

The game should display the puzzle and ask the user to click on a point. If the user clicks on a dot, the number next to that dot is displayed in the figure title as a message. If that dot is the correct one, or the next one in the sequence, it is connected by a line with the previous one. If the dot is incorrect or the user did not click on any dot, the game asks for another click. If the user clicks outside of the figure window at any time, the game ends. After the game is finished, the figure title should display either that the game was won with all dots connected, or that the user quit.

From the course webpage, download the files `connectDots.m`, `positions.mat`, and `connect_dots.jpg` into the same directory. Use the following command to obtain the data for positions.

```
load positions
```

A variable `positions` should now be in your workspace. This is an `n-by-2` matrix that contains the coordinates of the dots in order to be clicked. So `positions(i, 1)` is the x coordinate of the `i`th dot, and `positions(i, 2)` is the y coordinate of the `i`th dot.

If you try to run the function `connectDots`, you will notice that it is incomplete! Your objective in lab today is to complete it to successfully run connect the dots. Search for locations where it says `% ADD CODE HERE` and implement your own solution.

Start by completing subfunctions `isWithinLims` and `getSelectedNodeIndex`. It is helpful to understand these well before moving on to the main function.

Now that the subfunctions are complete, go through and fill the if and while conditions. Use the subfunctions where they are necessary. It is important to understand what each variable represents in this case, so read the existing code carefully!

Finally, complete any remaining segments that were not already covered. You should be able to have a running version after this, so test and debug your game!