**Project 4 Part 4 (k-means combined with kdtrees)**

Create a copy of your labe and rename the copy l044.cpp

Create part4() method that:

1) asks the user if it wants to generate points. If the user says yes then 50 points are generated and saved in the file points.txt (Ex:  [points.txt](https://fcps.blackboard.com/bbcswebdav/pid-44730188-dt-content-rid-49831481_2/xid-49831481_2)

 ). Follow the format provided (you may have an empty line at the end of points.txt, but when your code should work whether there is an empty line at the end or not)

2) whether the user asked to generate or not the points now the application will read the points from points.txt (do not hardcode 50!!!!so the file may have 50 points, more or less) then creates the kd-tree for the points read from the file.

3) You will create the output file named clusters.ppm in which all the points will be displayed  using 5 different colors (each point will be displayed using a very small circle of radius 2 for better visibility). In the ppm also display the centroids using the color black and a circle of radius 5 (feel free to also use a bold line, that can be achieved by drawing a circle of radius 4 and a circle of radius 5)

4) Complete the document below with the result of 2 runs :

[Project 4 Part 4.docx](https://fcps.blackboard.com/bbcswebdav/pid-44730188-dt-content-rid-49831482_2/xid-49831482_2) [Project 4 Part 4.docx - Alternative Formats](https://fcps.blackboard.com/webapps/blackboard/content/listContent.jsp?course_id=_1516674_1&content_id=_43601203_1&mode=reset)

  a) one random run of your code when the user selects yes to generate the 50 random points

  b)  a run right after a random run in which you select not to generate the random points (Hint: if you run 2 consecutive times one with creating the file and one without creating the file, the clusters.ppm file should be the same both times)

**Due date Sunday 2021/02/14**