The University of Western Australia
Dept. of Electrical & Electronic Engineering
Prof. Thomas Bräunl
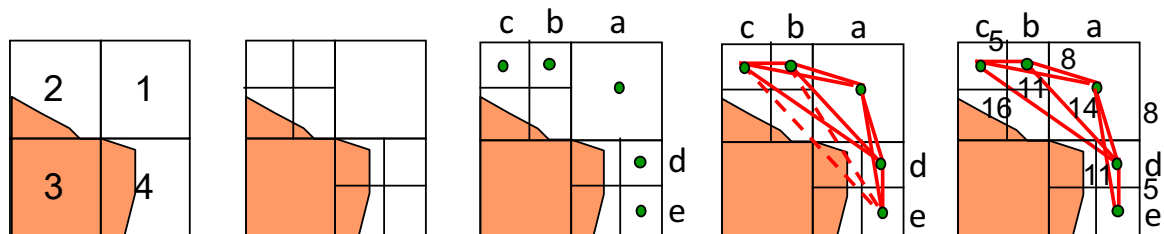
Mobile Robots
AUTO4508

Lab Assignment 4 – *Group* – Quadtree	**Points: 10**

Implement the Quadtree area decomposition algorithm for a given environment in occupancy grid format.

EXPERIMENT 1 (4 points)

Read and display the occupancy grid as a binary image of size 128x128 from file (1 means occupied, 0 means free).

Do a recursive subdivision of the area down to pixel-level.
Then print the center-point coordinates of the free-space areas

EXPERIMENT 2 (3 points)

Determine all collision-free paths between center-points and calculate their distances

EXPERIMENT 3 (1 point)

Calculate and print distances of all collision-free paths (in text and graphics form)

EXPERIMENT 4 (2 points)

Drive the robot from start (top left) to goal (bottom right) on a collision free course, following the Quadtree free nodes. You can use any path, not necessarily the shortest path.