Exercise:

Berlin Tram Map colouring problem. [10 marks] See the pdf file in moodle representing the tram network in the city of Berlin. The tram routes in the city are M1, M2, M4, M5, M6, M8, M10, 12, M13, 16, M17, 18, 21, 27, 37, 50, 60, 61, 62, 63, 67, 68. You can observe that when tram routes intersect at any point in the tram network, they have different colours. This makes is possible to easily track the route of a tram through the network (please try out what would be the difficulty if all routes were depicted with the same colour). The question is how to do this with the minimum number of colours (so that they are all nice and distinct). Think of ways of doing this on your own. The raw data is on moodle, in the form of the pdf map and the route intersection info (in csv format).

1. Provide your specific solution for the Berlin tram routes. You need to specify the number of colours used and which colours are used for which routes.

2. Explain your procedure in your own words (you may be asked about this in a short oral exam!), written in the form of a flow chart which can be implemented for larger problems.