Compulsory assignment 3 – INF 102

Additional notes for each task:

Task 1 – Printing tree-structured directories

For this task I used an undirected graph to connect the items to each-other from the hierarchy-structure presented in the text file. After this is modified depth first search to keep track of the depth of a search and used this to indent the items.

Task 2 – Finding the shortest path in a maze

For this task I made a 2d Boolean array in the size of the maze and mapped to it where every wall is. After this I made a graph of all the points in the maze which were ***not*** walls. And connected them by looping trough the array and connecting "this" point to the one ahead and the one above if present. After this is used breadth-first search to find the shortest path from the start-vertex to the end-vertex.

Task 3 – Renewing the sewage system

For this task I started with finding every edge possible from a given toilet to all the other toilets. And calculated the Euclidean distance between two toilets in a separate method I made. From this information I constructed an Edge-Weighted Graph that could hold all the toilet/vertices together with the "length" between the individuals. After this I used the Prim's algorithm to find the shortest path to connect all the toilets.

NB: Reads file from arguments -> original code ran the program on a fixed string variable (with .txt path) even while testing for other inputs.
Example: *private final static String TOILET_FILE = "connectingToilets/random_toilet_map.txt"*
program would run an execution on this ***in addition*** to the input from tests.

➔ See code for additional commenting and code specific explanations.