

# Security Engineering

## 7th Problem Set

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# Section 1

## Graph Algorithms

# Kruskal's Algorithm

- 1 Sort edges according to weight
- 2 Select the smallest edge. If it forms a cycle, discard it. Else, include it into your result.
- 3 Repeat Step 2 until there are  $V-1$  edges in your spanning tree

# Dijkstra's Algorithm

- 1 Create a Set  $S$  to keep track of vertices included in the shortest path tree.
- 2 Assign a distance value to all vertices. Pick a vertex with which you will start and assign it to the value 0. All other values are assigned to *infinite*.
- 3 While  $S$  does not include all vertices:
  - 1 Add a vertex  $v$  which is not in  $S$  and has minimum distance value and add it to  $S$ .
  - 2 Update the distance values of all adjacent vertices of  $v$ .

## Section 2

### Mini project 2

Questions?