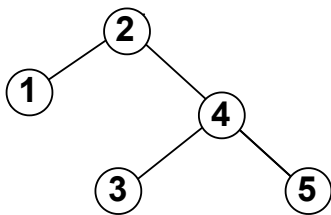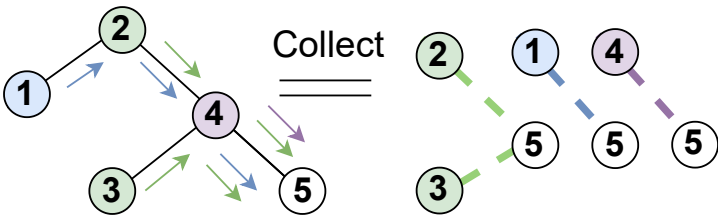**(a) Initial Graph**

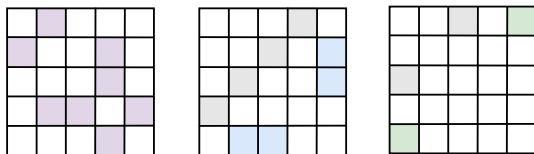**(b) k-hop Samples**
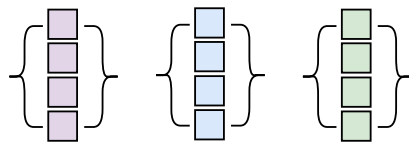
(c) Collate Inputs

Adjacency Matrices
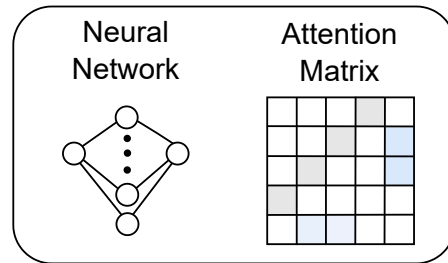
Feature-vectors

(d) Higher-order attention

k-hop Attention

Neural Network

Attention Matrix

$\beta(k)$

Self-attention graph

Collect