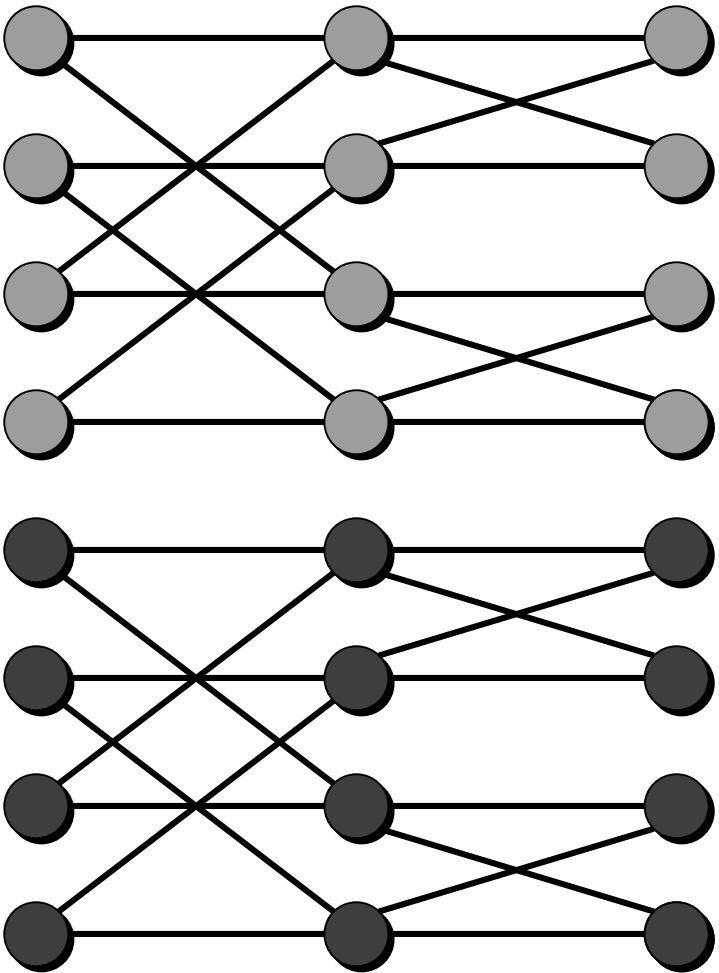Decomposing a Butterfly