Exercise 1
Given the following query graph, enumerate all connected subgraph-complement-pairs as produced by DPccp (not just connected subgraphs!):

```
R_0 ---- R_1 ---- R_4
|          |          |
R_3 ---- R_2
```

Exercise 2
Given the following query graph, perform two simplification steps, and show the resulting query graph after each step. Assume

\[ |R_0| = 10, \ |R_1| = 20, \ |R_2| = 50, \ |R_3| = 500, \ |R_4| = 5000, \]
\[ f_{01} = 0.1, \ f_{12} = 0.1, \ f_{23} = 0.01, \ f_{30} = 0.2, \ f_{14} = 0.05 \]

```
R_0 ---- R_1 ---- R_4
|          |          |
R_3 ---- R_2
```

Exercise 3
Given the following join tree, give the reordering restrictions for the individual joins and show the resulting query graph for DPhyp (attention: right outer join!):

```
\text{\textls[-10]{\textbullet\text{-}}}_{A.x=B.y}
\text{\textls[-10]{\textbullet\text{-}}}_{B.x=C.y}
\text{\textls[-10]{\textbullet\text{-}}}_{C.x=E.y}
\text{\textls[-10]{\textbullet\text{-}}}_{C.y=D.x}
\text{\textls[-10]{\textbullet\text{-}}}_{E.x=F.y}
```

\begin{align*}
A & \quad \bowtie_{A.x=B.y} \\
B & \quad \bowtie_{B.x=C.y} \\
C & \quad \bowtie_{C.x=E.y} \\
D & \quad \bowtie_{C.y=D.x} \\
E & \quad \bowtie_{E.x=F.y}
\end{align*}