Transaction Processing
Exercise 3

Assignment 1: Explain the criteria of correctness and formally define view and conflict serializability. Hereby, consider the complexity to check the serializability. In what context are the mentioned concepts.

Assignment 2: Consider the following schedules $s_1$ to $s_{10}$:

\[
\begin{align*}
    s_1 & := r_1(x)w_1(x)r_2(x)r_3(z)w_3(x)r_1(z) \\
    s_2 & := w_2(x)w_2(y)r_1(x)r_1(y)w_1(y)r_2(y) \\
    s_3 & := r_1(x)w_1(x)r_2(y)w_2(y)r_1(y)r_2(x) \\
    s_4 & := w_1(y)w_2(y)r_2(y)r_1(x)w_3(z) \\
    s_5 & := r_1(x)w_1(x)r_2(y)r_3(y)w_2(x)w_3(x) \\
    s_6 & := w_2(x)w_1(x)w_1(y)w_2(y)w_1(y)w_3(z) \\
    s_7 & := w_2(x)w_2(y)r_1(x)r_1(y)w_1(y)w_3(z) \\
    s_8 & := w_1(x)r_2(x)w_2(z)r_3(z)w_3(y)w_1(y) \\
    s_9 & := w_2(x)r_2(y)r_1(x)r_1(y)w_1(y)r_2(y) \\
    s_{10} & := r_1(x)w_1(x)w_2(x)w_3(z)r_3(y)r_3(x)
\end{align*}
\]

Test the schedules for VSR and CSR (conflict equivalent to serial schedule + conflict graph)! If possible, construct a serial schedule using the conflict graph and topological sorting.

Assignment 3: Explain the following properties:

1. Prefix-closure
2. Commit-closure
3. Prefix-Commit-closure

Which of the both concepts view and conflict serializability fulfills these properties?