Assignment 1: Formally define a schedule. In addition, formally define the following concepts in suitable order: serial schedule, complete schedule, complete transaction, $\text{SHUFFLE}(T)$ and transaction.

Assignment 2: Consider the following set of transactions $T$:

$$
T := \{ T_1, T_2 \}
$$

$$
T_1 := r_1(x)w_1(x)c_1
$$

$$
T_2 := r_2(x)r_2(y)w_2(y)c_2
$$

Are the following operator sequences $s_i$ schedules per definition? If so, are the schedules serial or complete?

$$
s_1 := r_1(x)r_2(x)r_2(y)w_1(x)w_2(y)
$$

$$
s_2 := r_1(x)
$$

$$
s_3 := r_2(x)r_1(x)w_2(y)r_2(y)w_1(x)
$$

$$
s_4 := r_2(x)r_2(y)r_1(x)w_1(x)c_1w_2(y)c_2
$$

$$
s_5 := r_2(x)r_2(y)r_1(x)w_1(x)r_2(y)w_2(y)c_1c_2
$$

$$
s_6 := r_2(x)r_2(y)w_2(y)c_2r_1(x)w_1(x)c_1
$$

Assignment 3: 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 4: Consider the following schedules $s_1$ to $s_{10}$:

$$
s_1 := r_1(x)w_1(x)r_2(x)r_3(z)w_3(x)r_1(z)
$$

$$
s_2 := w_2(x)w_2(y)r_1(x)r_1(y)w_1(y)r_2(y)
$$

$$
s_3 := r_1(x)w_1(x)r_2(y)w_2(y)r_1(y)r_2(x)
$$

$$
s_4 := w_1(y)w_2(y)r_2(y)r_1(x)w_3(z)
$$

$$
s_5 := r_1(x)w_1(x)r_2(y)r_3(y)w_2(x)w_3(x)
$$

$$
s_6 := w_2(x)w_1(x)w_1(y)w_2(y)w_1(y)w_3(z)
$$

$$
s_7 := w_2(x)w_2(y)r_1(x)r_1(y)w_1(y)w_3(z)
$$

$$
s_8 := w_1(x)r_2(x)w_2(z)r_3(z)w_3(y)w_1(y)
$$

$$
s_9 := w_2(x)r_2(y)r_1(x)r_1(y)w_1(y)r_2(y)
$$

$$
s_{10} := r_1(x)w_1(x)w_2(x)w_3(z)r_3(y)r_3(x)
$$
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 5: 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?

Exercise 3 2/2 Good Luck!