QUIZ-1

Section – A

You are tasked with designing a Finite State Machine (FSM) to model the behavior of an automatic washing machine. The washing machine has the following states and functionalities:

1. The machine is Idle off and waiting for user input.
2. The machine fills the tub with water.
3. The clothes are soaked in water for 10 minutes.
4. The clothes are washed for 10 minutes.
5. The machine drains the water, refills the tub, and rinses the clothes.
6. The machine spins the clothes to dry them for 5 minutes.
7. The machine is paused by the user or due to a power outage. It can resume from the state it was in before being paused.
8. The machine is stopped abruptly (e.g., power outage). It will resume from the same state when power is restored.

The machine can be used for individual functions like **only washing, only rinsing, or only spinning.**

Part-1:

S1- Idle

S2- Filling

S3- Soaking

S4- Washing

S5- Rinsing

S6- Spinning

S7- Paused

S8- Stopped

Part 2:

E1 – User Input

E2 – Tub fills with water

E3 – Soaking time completes

E4 – Washing time completes

E5 – Rinsing process completes

E6 – Spinning process completes

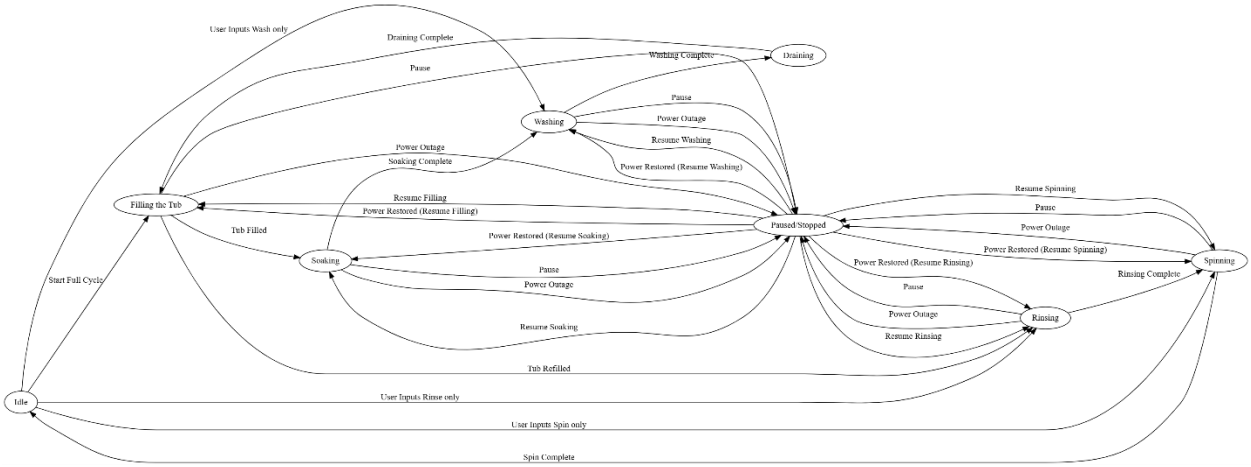
E7 – User pauses the machine

E8 – Power outage occurs

E9 – Power restores

E10 – User resumes

Part 3:



Part 4:

$\forall S \in \{Filling, Soaking, Washing, Rinsing, Spinning\} \land PowerOutage(S) \Rightarrow Stopped$

Where S = current state of the machine.

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