PROGRAM ANALYSIS

Assignment 5

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DFA Specification for the AspectJ implementation:

Symbols:

1. **start**
   refers to the call to Server.start() for the respective instance.
2. **stop**
   refers to the call to Server.stop() for the respective instance.
3. **process**
   refers to the call to Server.process() for the respective instance.
4. **process_le3**
   refers to the process call after which total time is less than or equal to 3 seconds.
5. **process_gt3**
   refers to the process call after which total time exceeds 3 seconds.
6. **exit**
   refers to any kind of event that halts the program execution normally or more specifically exits from the main() method. It can be a System.exit() call or normal return from the main() method.

Finite State Automata:

Note :: >> means "is changed to" as in insertion automata
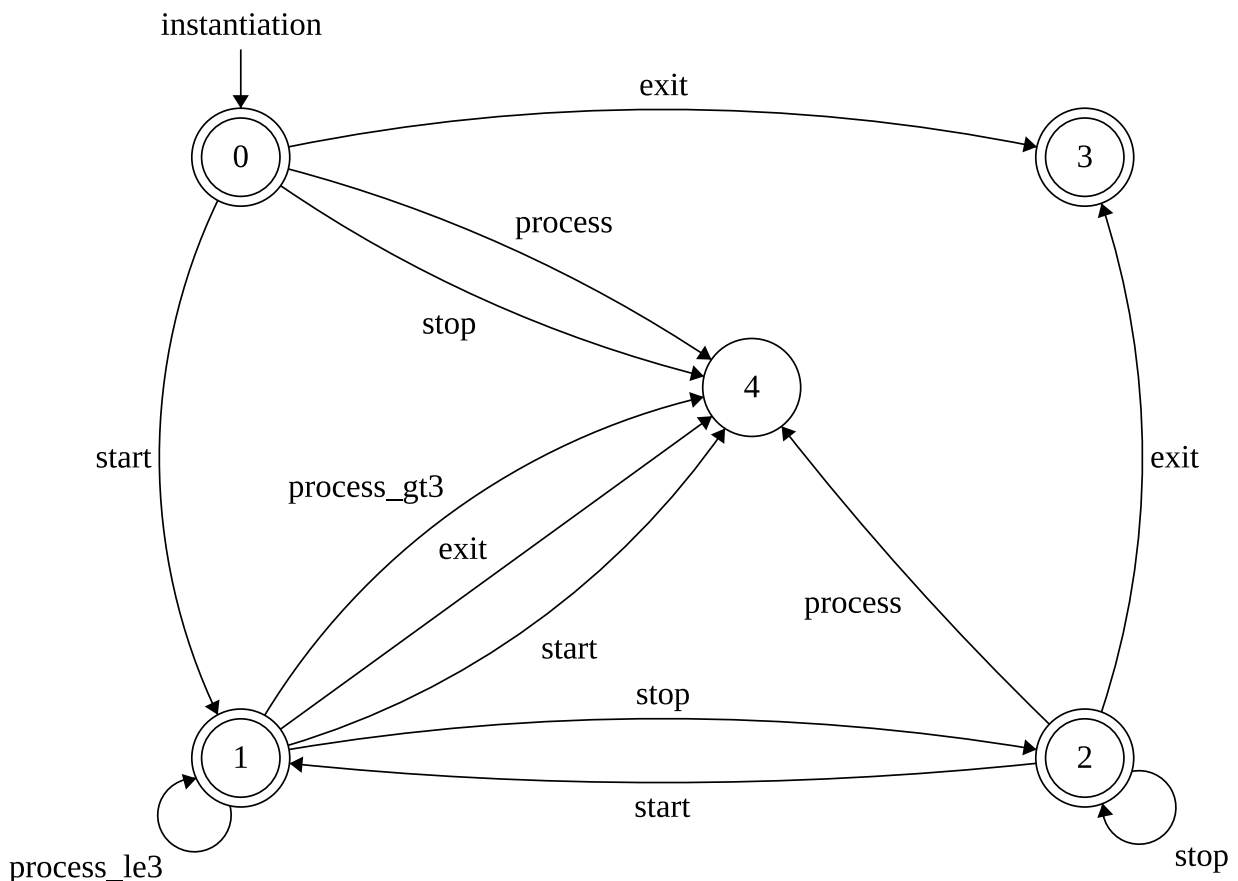
Explanation:

- **State 0**: Initial state. System enters it when a new Server reference is instantiated example a *new Server()* call.
- **State 1**: Started state. System enters it when the server is started. Server can keep processing as long as total time after processing is less than equal to 3 seconds [process_le3].
- **State 2**: Stopped state.
- **State 3**: Exited state. When the program has exited from execution like returning from main.
- **State 4**: ERROR state.