To instantiate and display the provided safety case pattern for a Generic PCA (GPCA) system in a hierarchical tree format, replace the placeholders with specific instances relevant to a hypothetical GPCA system, such as one for delivering insulin in diabetic care. Here is how the assurance case pattern could be instantiated and represented:

@Assurance\_case

- G1: Operational safety is verified in insulin delivery system

- S1: Argument over the satisfaction of all specifications over the insulin delivery system (undeveloped)

- C1: Specifications are given by the official medical regulatory standards

- G2: All operational hazards are mitigated

- S2: Argument over reliability in all suitable levels of the insulin delivery system (undeveloped)

- S3: Argument over operational hazards

- C2: Operational hazards are given by hazard analysis data

- G3: Pump mechanics failure is mitigated

- S4: Argument over the applied scenarios of pump mechanics failure

- C3: Scenarios related to pump mechanics failure during unexpected high dosage

- G4: Pump mechanics failure is mitigated under scenario of power outage

- S5: Argument over all specs related to power outage scenarios

- C4: Specs are given for power management and emergency shutdown

- G5: Power failure handling specs are appropriate for emergency shutdown scenarios

- S6: Argument the appropriateness of power failure specs over safety properties

- C5: Properties are given by system's safety requirements documentation

- G6: Shutdown mechanism property is appropriate for power failure specs

- S7: Argument over the source of the shutdown mechanism property definition

- C6: Source is given by system design documentation

- G7: System design source for safety properties is appropriate and trustworthy

- Sn1: Verified source credentials document

- G8: Shutdown mechanism property definition is sufficient

- Sn2: Detailed property specification document

@End\_Assurance\_case

This hierarchical tree structure, using dashes to denote different levels, clearly demonstrates how each element supports or relates to its parent element, and the role of specific strategies, goals, solutions, and contexts in a decomposed assurance case for the safety of a GPCA system. Note that some strategies are marked as undeveloped, indicating areas where further development or evidence is required to fully substantiate the safety argument.