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CS605 Assignment 1 Solution

Fall 2026

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CS605 — Software Engineering II

Assignment No. 1 — Fall 2026

A software company is developing a hospital management system. Requirements change frequently, developers must test continuously, the company wants to reduce project risks by building in small increments, and quality assurance and documentation run throughout the process. The question is which lifecycle model fits this situation best.

The most suitable model: the Spiral Model

The most suitable model is the Spiral Model, proposed by Barry Boehm. It is a risk-driven, iterative model: the project moves through repeated cycles (loops of the spiral), and each cycle passes through four quadrants — setting objectives and constraints, identifying and analysing risks (often with a prototype), engineering the product for that cycle, and evaluating the result with the customer before planning the next cycle. Each cycle delivers a working increment of the hospital system, so the system grows in small, usable steps instead of arriving all at once at the end.

This fits the scenario at every point. Changing requirements are handled because each new cycle re-plans in the light of the latest needs, rather than freezing requirements at the start as the waterfall model does. Continuous testing is built in, because every increment is engineered and tested before it is accepted. Risk is reduced deliberately: the riskiest parts — patient records, safety and data security in a hospital system — are analysed and prototyped early, when fixing them is still cheap. And because quality assurance and documentation are produced in every cycle, they are never left to a rushed phase at the end.

Five advantages of the Spiral Model

• Risk reduction: major risks are identified and resolved early in each cycle, before they can damage the whole project.

• Changing requirements are welcomed: new or changed needs are taken up in the next cycle instead of breaking a frozen plan.

• Early working versions: customers see and use real increments early, so feedback corrects misunderstandings while change is cheap.

• Continuous testing and quality assurance: every increment is tested, so defects are found early and quality stays high.

• Better planning for large projects: cost and schedule estimates improve with each cycle, which suits large, complex, high-risk systems like a hospital management system.

For a hospital system, where a failure can harm patients and requirements genuinely keep changing, the Spiral Model’s combination of increments, risk analysis and continuous testing makes it the right choice.