Software Engineering

هندسة البرمجيات

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Spiral Model

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What is Spiral Model?

- Another evolutionary approach to software development is the Spiral model, proposed by Barry Boehm in his paper in 1986, "A Spiral Model of Software Development and Enhancement".
- The diagrammatic representation of this model appears like a spiral with many loops. The exact number of loops in the spiral model is not fixed. Each loop of the spiral model represents a phase of the software process.

What is Spiral Model?

✧ Example:

The innermost loop might be concerned with requirements specification. The next loop with design, the next loop with implementation, and so on.

Each phase in this model is split into four sectors (or quadrants). The following activities are carried out. During each phase of the spiral model.

Spiral process model

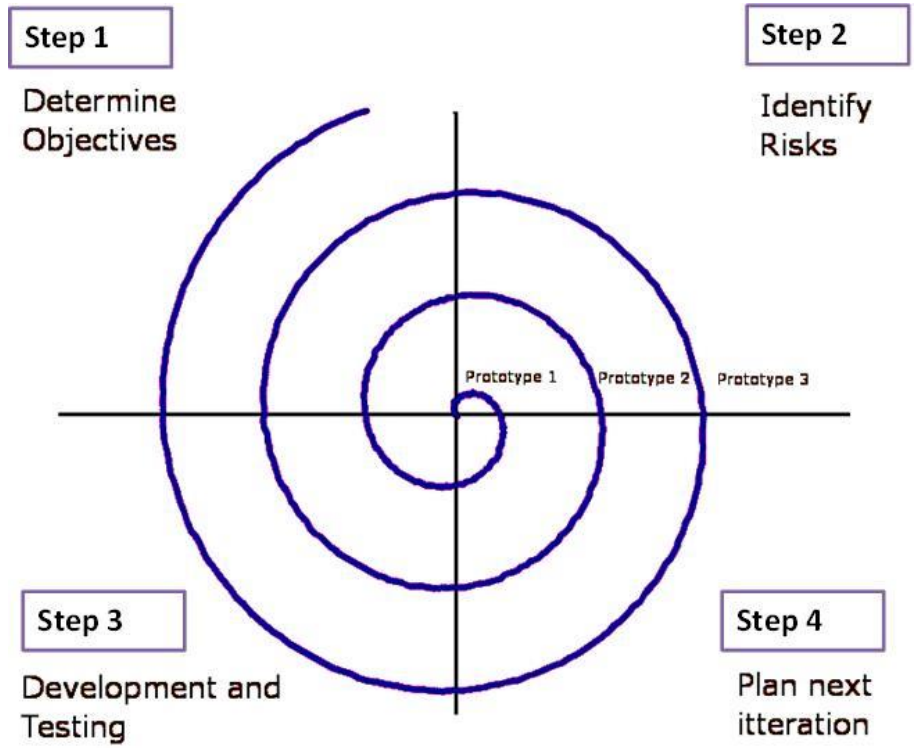

Figure 11: Spiral model

What is Risk in Software Engineering?

- Risk is an expectation of loss, a potential problem that may or may not occur in the future. It is generally caused due to lack of information, control or time. A possibility of suffering from loss in software development process is called a software risk.
- Loss can be anything, increase in production cost, development of poor quality software, not being able to complete the project on time.
- Software risk exists because the future is uncertain and there are many known and unknown things that cannot be incorporated in the project plan.

Phases of Spiral Model

First Quadrant (Determine objectives):

- During the first quadrant, it is needed to identify the objectives of the phase.
- Examine the risk associated with these objectives.

Second Quadrant (Identify risks):

- A detailed analysis is carried out for each identification project risk.
- Steps are taken to reduce the risks. For example, if there is a risk that the requirements are not suitable, a prototype system may be developed.

Phases of Spiral Model

Third Quadrant (Development and testing):

- Develop and validate the next level of the product after resolving the identified risks.

Fourth Quadrant (Plan next iteration):

- Review the results achieved so far with customer and plan the next iteration around the spiral.

Strengths & Weakness of Spiral Model

Strength:

- Addresses risks associated with software development.
- Suitable to develop medium and large projects.

Weakness:

- Unsuitable for small projects.
- Requires considerable risk assessment expertise. If a major risk is not discovered, problems will undoubtedly.

When to Use Spiral Model?

- For medium to high-risk projects (medium and large projects).
- When significant changes are expected.
- When users are not exactly sure what their needs.

Thanks