

Waterfall Model: It is the software development process with linear sequential flow. Here, each phase depends on the deliverables of the previous phase and corresponds to the specialization of a task. It tends to be less iterative and follows the phases of system requirement, software requirement, preliminary program design, Analysis, Program Design, Coding, Testing, and Operation.

Rapid Prototype: It is an iterative model that aims to quickly improve the design using a regularly updated prototype. It aims to save time and money by solving common design issues before development begins, helps businesses to reach the market quicker, and puts a focus on the development of business needs. It involves three basic steps: Prototyping, feedback, and Improvement. Feedbacks helps in making new iteration of the prototype. This process continues until the exit criteria are met.

Spiral Method: It has 4 main phases: “Determine objectives, alternatives, and constraints”, “Evaluate alternatives, identify and resolve risks”, “Develop, verify next level product”, and “plan next phase” which goes in many loops. In each loop, the features of the product dated and analyzed and the risks at that point of time are identified and are resolved through prototyping.

XP: XP helps team achieve their agility with higher quality, fewer bugs, and greater flexibility. It can adopt any changing requirements at any point during the project's life cycle. The main specifications are user stories, release and iteration planning, test-driven development, pair programming, refactoring, and continuous integration. XP believes in communication, simplicity, ‘feedback and courage.’ And goes through Coding, testing, listening, and designing for development.

Scrum: Scrum is a lightweight, iterative, and incremental framework for managing complex work. It has a cross-functional, self-organizing team which makes all the development decision. It has 3 main roles: Product Owner (PO), development team, and scrum master-who help team to achieve their goal. A product backlog is organized by PO which is divided into sprint backlog during a sprint planning meeting in each iteration/sprint. The short daily scrum meeting is held to talk about their work completed, plan, or any obstacles. Each sprint ends with a sprint review and retrospective meeting where they update their documentation and discuss obstacles respectively.

Cleanroom: It is a software development process based on defect avoidance rather than defect removal. The formal specification of the software is drawn with the help of state diagram. Then the software is partitioned into increments that are developed and validated separately. A structured programming technique helps in the stepwise refinement of specifications. A limited number of constructs are used to maintain correctness preserving transformation to the specification to create the program code. Each increment is mathematically verified, and the final system is statically tested to determine its reliability.

Formal Methods: It is techniques and tools based on mathematical and formal logic to design and implement software. It uses a language that is formally defined; uses notation used for specific representation; semantic, which uses objects to describe the system; and a set of relations, which uses rules to indicate the objects for satisfying the specifications. For every formal specification, there will be formal proof that can be justified from sets of rules which eliminates ambiguity and subjectivity inherited when drawing an informal conclusion. Model checker which is a finite state machine model to check if the system satisfies requirement expressed as formulas given in a logic.

CMM: It is a framework that is used to analyze the approach and technique followed by an organization to develop software products while giving guidelines to further enhance the maturity of its products. This model divides the development process (DP) maturity into 5 different levels with the help of some key process areas at each level except level 1. In the 1st, initial, level DP is disorganized and inconsistent. 2nd, Repeatable level focuses on establishing basic project management policies and uses experiences with earlier projects for managing new similar natured projects. 3rd, the Defined level does documentation of the standard guidelines and procedure and has specific software engineering and management processes. 4th, Managed level does quantitative management of its system and processes against present metrics and data. 5th, Optimizing level focuses on continuous process improvement in the organization using quantitative feedback.

Feature Driven Development: It is an iterative and incremental agile framework aimed at serving a large number of teams working together on a project based on object-oriented technology. It focuses on short iteration each of which serves to work out a certain part of the system’s functionality which makes it a good choice for big companies. It has 5 processes in sequence: Develop an overall mode, build a features list, Plan by feature (set different in a group and prioritize them like a product backlog in scrum), Design by feature, and Build by feature. After the current iteration’s feature is tested and gone into the product, we take the next priority feature and repeat the design/implementation cycle.

Self Grading:

	Exceptional 100%	Good 90%	Acceptable 70%	Developing 50%	Missing 0%
Correct 30%	There is no misinformation.	One "nit-pick" detail is incorrect.	One serious error.	Two serious errors.	The study sheet is not a reliable source of information.
Complete 50%	All the most important aspects of the models are listed.	The highlights are present but one minor omission exists.	One major omission, something that really should be listed.	Two major omissions.	The level of detail is insufficient to help with a test.
Readable 20%	It is obvious that some thought went into the layout of the document.	All information is easy to find and read.	With effort, all the required information can be found.	One of the following applies: ugly, poorly organized, spelling error(s), too small.	Little effort has been put in the readability of the document.