**SDLC MODEL**

**(Software development logic cycle)**

**Definition =** SDLC defines the complete cycle of development i.e. all the tasks involved in planning, creating, testing, and deploying a Software Product.

In that we see learn about,

1. **SDLC Cycle**
2. **Phases**
3. **Process**
4. **Model**

**SDLC Cycle**

|  |  |
| --- | --- |
| **Phases**   * Requirement gathering and analysis * Design * Implementation or coding * Testing * Deployment * Maintenance | **Models** |

**SDLC MODELS**

**(Software development life cycle)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Models** | **Concepts** | **Used in** | **Steps** | **Advantages** | **Disadvantages** |
| **1) Waterfall model** | It is the very first model that is used in SDLC. It is also known as the linear sequential model. | It is used in Small Projects | 1.Requirement Gathering  2. System Analysis.  3.coding  4.Testing  5.Implematation  6.Operations and maintenances | No complexity and makes the project easily manageable. | Cost higher as the changes would be required in all the phases. |
| **2) Iterative model** | The iterative incremental model divides the product into small chunks. | The software application is large. | **1.n-1**  -Testing  -Verify  **2.Iteration n**  **-**Design  -Coding  -Testing  -Verify  **3.n+1**  -Design  -Coding | Easier to manage the development process. | Consumes more resources |
| **3) Spiral Model** | Spiral model is a combination of both, iterative model and one of the SDLC model. It can be seen as if you choose one SDLC model and combined it with cyclic process | 1.The project is large  2.Requirements are unclear and complex | 1.Objective identification  2.Alternate Evaluation  3.Product Development  4.Next phase planning | Changes can be done at the later stage and Cost Estimation becomes easy | It is not used for small project and Risk assessment expertise |
| **4) V-Model** | It also known as Verification &Validation Model. In this model Verification &Validation goes hand in hand i.e. development and testing goes parallel. | Small to medium-sized projects where requirements are clearly defined and fixed. | **1.Verification**  - Requirement gathering  -System analysis  -Software design  -Module design  - Coding  **2.Validation**  **-**Coding  -Unit testing  -Integration testing  -System testing  -Acceptance testing | 1. Each phase has specific deliverables  2. Utility of the resources is high. | Very rigid, like the waterfall model and very expensive |
| **5) Big Bang Model** | Money and efforts are put together as the input and output come as a developed product which might be or might not be the same as what the customer needs. | Project is small like an academic project or a practical project. | 1.Time  2. Effort  3.Testing  4.Software | Simple and easy implement | Risky model |
| **6) Agile Model** | Agile Model is a combination of the Iterative and incremental model.  This model focuses more on flexibility while developing a product rather than on the requirement. | Project size is small. | 1.Devolpment  2.Design  3. Requirement  4.Test  5.Deploy | Allows more flexibility to adapt to the changes and  The new feature can be added easily. | Lack of documentation and  Agile needs experienced and highly skilled resources. |
| 7) Prototype Model | The prototype model is a model in which the prototype is developed prior to the actual software. | Engineer Product | 1.Requirement gathering  2.Design  3.Prototype  4.Customer Evaluation  5.Refined prototype  6.Final prototype | Involvement of a customer from the initial stage reduces any confusion in the requirement or understanding of any functionality. | Since the customer is involved in every phase, the customer can change the requirement of the end product which increases the complexity of the scope and may increase the delivery time of the product. |
| 8) RAD (Rapid Application Development) Model | RAD is a linear sequential software development process model that emphasizes a concise development cycle using an element based construction approach. | The project that modularizes in a short span time |  | This model is flexible for change.  In this model, changes are adoptable. | It required highly skilled designers.  All application is not compatible with RAD. |
| 9) Incremental Model | Incremental Model is a process of software development where requirements divided into multiple standalone modules of the software development cycle. | Project has a lengthy development schedule. |  | Errors are easy to be recognized.  Easier to test and debug  More flexible. | Need for good planning  Total Cost is high.  Well defined module interfaces are needed. |