**RAPID APPLICATION DEVELOPMENT (RAD) & V MODEL AND THEIR DIFFERENCE FROM WATERFALL MODEL.**

**Rapid Application Development and its difference from Waterfall Model:**

* RAD was developed as a response to inadequacies of the waterfall model for developing software by James Martin in 1991.
* This development model prioritizes rapid prototyping and quick user feedback.
* This model enables the developers to make multiple iterations of the software, update it rapidly without the need to start the process from scratch every time as it is in the waterfall model.
* It has four major steps that are

1. Define the Requirements
2. Prototyping
3. Receive User Feedback
4. Finalize the build or software

* It is a continuous evolution of development as per the client’s requirement at that point of time.
* In prototyping stage, the developers create prototypes of the requirement with required functions and features as fast as possible.
* The prototypes are then reviewed by the clients and the user feedback is collected, this collected feedback is used to improve the quality of the product thus enabling client satisfaction.

The major advantages of RAD over Waterfall are:

* The requirements can be changed at any time which is not possible with waterfall model.
* The customer feedback is continuous during the development process which increases customer satisfaction by delivering the customer requirements with considerably fewer defects.
* The development time is very fast, and the review process is quick.
* As it integrates from the inception of the project, integration is easy and effective.
* Has Small and single teams which makes communication quick and fast information transfer.
* This model focuses on speed whereas the waterfall model focuses on bringing a working product to the customer.

**V MODEL and its difference from Waterfall Model:**

The V Model is basically an extension of the waterfall model and is based on the association of a testing phase for each corresponding development stage. So, for every single phase of the development cycle, a testing phase is directly associated. In V model the next phase of the cycle only after the successful completion of the previous phase.

As the execution process happens in sequential manner that resemble the alphabet ‘V’ it is also called Verification and Validation model. The verification phases are on one side of he V and the validation phases are on the other side of the V. The development phase and the associated testing phase are planned in parallel.

The Verification phase involve, Business Requirement Analysis, System Design, Architectural Design, Module Design, Coding.

The validation phase involves Unit testing, Integration testing, System testing, Acceptance testing.

As this model is similar to the waterfall model the requirements need to be well defined and documented.

The requirements cannot be changed and are fixed.

How is it different from Waterfall Model?

Well, though the V model is an extension of the waterfall model there are some differences between both which I would like to mention here:

1. In V model the testing activities start right from inception of the project whereas in waterfall it is done after the completion of development.
2. V model is a simultaneous or parallel process where as waterfall is a continuous process.
3. V model is slightly more flexible when compared to waterfall model.
4. The Cost of development in V model is comparably higher to that of the waterfall model.
5. Because of simultaneous testing activity being carried out in V model the number of defects in the software are lesser when compared to Waterfall model.