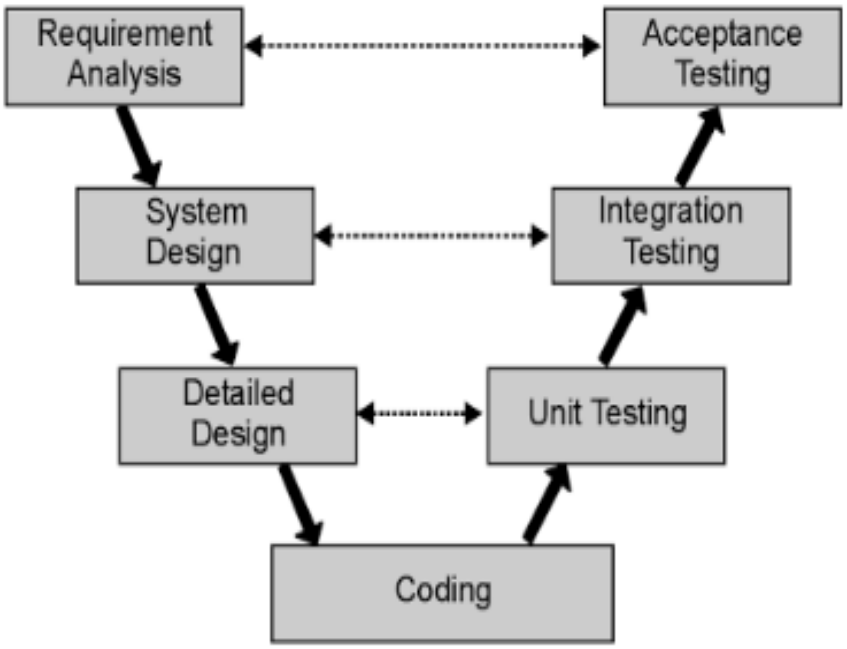
**The V-model**

This model was developed to relate the analysis and design activities with the testing activities and thus focuses on verification and validation activities of the product.




The V Model

Just like the waterfall model, the V-Shaped life cycle is a sequential path of execution of processes. Each phase must be completed before the next phase begins. Testing is emphasized in this model more so than the waterfall model though. The testing procedures are developed early in the life cycle before any coding is done, during each of the phases preceding implementation.

Requirements begin the life cycle model just like the waterfall model. Before development is started, a system test plan is created. The test plan focuses on meeting the functionality specified in the requirements gathering.

The high-level design phase focuses on system architecture and design. An integration test plan is created in this phase as well in order to test the pieces of the software systems ability to work together.

The low-level design phase is where the actual software components are designed, and unit tests are created in this phase as well.

The implementation phase is, again, where all coding takes place. Once coding is complete, the path of execution continues up the right side of the V where the test plans developed earlier are now put to use.

The advantages and disadvantages of the model are listed below

**Advantages**

- The model is simple and easy to use.
- The V model focuses on testing of all intermediate products, not only the final software.
- Testing of the product is planned in parallel with a corresponding phase of development.
- The model plans for verification and validation activities early in the life cycle thereby enhancing the probability of building an error free and good quality product.

**Disadvantages**

- The model does not support iteration of phases and change in requirements throughout the life cycle.
- It does not take into account risk analysis.

**When to use the V-Shaped Model**

- Excellent choice for systems requiring high reliability – hospital patient , control applications.
- All requirements are known up-front
- When it can be modified to handle changing environments beyond analysis phase.