***Lecture from 11.10***

This is not the full lecture from 11.10 (the rest is on paper).

A prototype is a software program development to test, explore or validate a hypothesis i.e. reduce risks

An exploratory prototype also known as a throwaway prototype, is intended to validate requirements or explore design choices.

* UI porotype – validate user requirements
* Rapid prototype – validate functional requirements
* Experimental porotype – validate technical feasibility

An evolutionary prototype is intended to evolve steps into a finished product.

Iteratively “grow” the application, redesigning and refactoring along the way

***First do it,***

***then do it right,***

***then do it fast.***

***Design***

*Design* is the process of specifying how the specified system behavior will be realized from software components. The results are architecture and detailed design documents.

***Design is an iterative process, proceeding in parallel with implementation.***

***Conway’s Law***

*Organizations that design system are constrained to produce design that are copies of the communication structures of these organizations.*

***Implementation and Testing***

***Implementations*** is the activity of constructing a software solution to the customers requirements.

***Testing*** is the process of validating that the solution meets the requirements.

The result of the implementation and testing is a fully documented validated solution.

***Maintenance***

Maintenance is the process of changing system after it has been deployed.

Corrective maintenance – identifying and repairing defects

Adaptive maintenance – adapting the existing solution to new platforms

Perfective maintenance – implementing new requirements.

***Maintenance activities***

“Maintenance” entails:

* Configuration and version management
* Reengineering (redesigning and refactoring)
* Updating all analysis, design and user documentation

*Repeatable automated tests enable evolution and refactoring*

***Maintenance costs***

“Maintenance” typically accounts for 70 % of the costs.

***Methods and Methodologies***

*Principle* – general statement describing desirable properties

*Method* - general guidelines governing some activity

*Technique* - more technical and mechanical than methods

*Methodology* – package from methods and technologies

***Next lecture***

***Requirements Engineering Activities***

*Feasibility study*: Determine if the user needs can be satisfied with the available technology and budget

*Requirements analysis*: find out what system stakeholders require from the system

*Requirements definition:* define the requirements in a form understandable to the customer

*Requirements specification:* define the requirements in detail (Written as a contract between client and contractor)

*“Requirements are for users; specifications are for analysts and developers.”*

***Requirement analysis:***

Sometimes called requirements elicitation or requirements discovery

Technical staff work with customers to determine

* The application domain
* The services that the system should provide and
* The systems operational constraints

***Problems of requirements analysis :***

Various problems typically arise

* Stakeholders don’t know what they really want
* Stakeholders express requirements in their own terms
* Different stakeholders may have conflicts requirements
* Organizational and political factors may influence the system requirements
* The requirements change during the analysis process
* New stakeholders may emerge.

***Requirements evolution***

Requirements ***always evolve*** as a better understating of user needs developed and as the organizations objective change.

It is essential to ***plan for change*** in the requirements as the system is being developed and used.