From Analysis to Design

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Design Process

Design Requirements

Three Basic Steps

Design Creation

Design Requirements

- Design must address all the explicit requirements of the SRS
- Design must be readable and comprehensible to the implementors
- Design should depict the complete system, including architectural, data, interface, and functional domains

Three Fundamental Steps

- Define the input to the output
  - output variables
  - input variables
  - processing variables
- Develop the logic
- Write the modules

Design Creation

- Drawing
- Team discussions
- Wireframe
- Mockup
- Prototyping
- Wizard of Oz Technique

Design Activities

Evolutionary Iteration

Design Artifacts

Evolutionary Iteration

- High level design
- Informal design
- Formal design
- Detailed design

Design Artifacts

- Architecture design
- Interface design
- Component design
- Data structure design
- Algorithm design

Design Techniques

Structured Design

Functional Design

Object Oriented Design

Event Driven Design

Structured Design

- top down development, step wise refinement
- structure, sequence, repetition
- requirements are decomposed into subprograms
- each subprogram has a single entry and exit point
- break each component into subcomponents
- analyze each subcomponent
- stop when nothing can be broken down any further

Functional Design

- problem seen as a seeries of transformations
- each component is seen as a (mathematical) function
- functionality is decomposed into a series of functions
- functions are equivalent to values

Object Oriented Design

- system is viewed as a series of communicating objects
- objects offer services
- objects send messages to other other objects
- objects perform services in response to messages

Event Driven Design

- identify the event
- identify the inputs to events
- identify the outputs from events