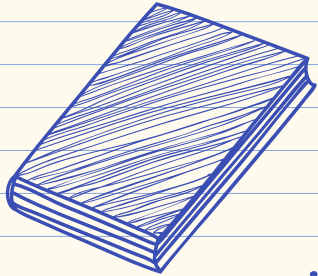




# Software Requirements

&  
Design Modelling



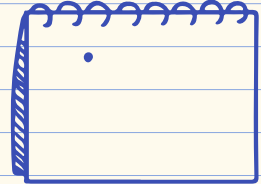
**CHILL GUYS**



Piushan | Vishal | Shamal



Dhanuja | Tenura | Mirco





# Presentation Content

1. Introduction
2. Review on SRS vs UML models
3. Introduction to CRC cards
4. Uses of CRC cards
5. Advantages of CRC cards
6. Disadvantages of CRC cards
7. Summary about CRC cards and outro

# Review - SRS vs UML Models

	SRS	UML MODELS
FOCUS	what system does	How system structured
ABSTRACTION	Functional requirements	Class Relationship
STAKEHOLDERS	All Stakeholders	Developers / Architects
FORMAT	Natural Language	Standardized Digrams
TIMING	Early Phase	Design Phase

Example:

SRS: "System shall allow saving documents"

UML: DocumentManager → save() → FileSystem



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# Introduction to CRC Cards

## CRC Example

EditorKeyCodes	
Responsibility	Collaboration
• Listen for keyboard events	• GUI
• Detect keyboard shortcuts (Ctrl+S, Ctrl+Shift+S, etc.)	• EditorFile
• Trigger appropriate file operations	• EditorEdit
• Trigger undo/redo operations	
• Trigger menu actions via Alt key	

- Index cards (originally)
- Three Physical components per card:
  - Class name: Entity/concept (top)
  - Responsibilities: What it does (left)
  - Collaborators: Which classes it works with (right)
- Lightweight, tangible design tool
- Created by Kent Beck & Ward Cunningham (1989)
- Philosophy: "If you can't fit it on a card, it's too complex"



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# Uses of CRC Cards

## Initial OO design exploration

- ☒ -----
- ☐ Identify candidate classes early
- ☐
- ☐ Discover object interactions
- ☐ Map domain concepts to structures
- ☐

## Design validation sessions

- \* Walk through use cases
- \* Role-playing with cards
- \* Identify design flaws before coding
- \* \_\_\_\_\_
- \* \_\_\_\_\_
- \* \_\_\_\_\_

## Refactoring guidance

- ☒ Detect responsibility overload .....
- ☒ .....
- ☐ Identify missing abstractions .....
- ☐ .....
- ☐ Spot tight coupling issues .....

## Team communication

- ▷ Shared understanding building
- ▷ Non-programmer participation
- ▷ Cross-functional alignment
- ▷ \_\_\_\_\_
- ▷ \_\_\_\_\_

# Advantages of CRC Cards



Low barrier to entry

- No special tools required
- Minimal learning curve
- Immediate start possible

Encourages collaboration

- Physical manipulation promotes engagement
- Team-based discovery process
- Democratic participation

EditorEdit	
Responsibility	Collaboration
• Perform undo operation	• GUI
• Perform redo operation	• UndoManager
• Delegate to UndoManager	

EditorKeyCodes	
Responsibility	Collaboration
• Listen for keyboard events	• GUI
• Detect keyboard shortcuts (Ctrl+S, Ctrl+Shift+S, etc.)	• EditorFile
• Trigger appropriate file operations	• EditorEdit
• Trigger undo/redo operations	
• Trigger menu actions v.a Alt key	

EditorFile	
Responsibility	Collaboration
• Create new files	• GUI
• Open existing .wyrd and .glyph files	• WyrdScriptExecutor
• Save files to disk	
• Save files with new name	
• Track current file path	
• Update window title	
• Handle file I/O errors	
• Exit application	

EditorColor	
Responsibility	Collaboration
• Change background color	• GUI
• Change text color	
• Change cursor color	
• Apply color themes (white, black, blue)	
• Ensure text readability with color combinations	
• Update UI menu item text	

EditorFormat	
Responsibility	Collaboration
• Toggle word wrap on/off	• GUI
• Create Font objects	
• Set text area font	
• Manage font selection (Arial, Comic Sans, Times New Roman)	
• Manage font size (8, 16, 20, 24, 28)	
• Update UI menu item text	

WyrdScriptExecutor	
Responsibility	Collaboration
• Execute WyrdScript files	• EditorFile
• Launch glyph.exe with file path	
• Display loading dialog	
• Capture script output	
• Capture error output	
• Display output in popup window	
• Handle execution errors	
• Run execution in separate thread	

Focuses on behaviour

- Responsibilities over attributes
- Interaction-centric design
- Avoids premature optimization

Prevents over-engineering

- Deliberate simplicity constraint
- Forces prioritization

Flexibility

- Easy to modify/discard
- Quick iteration cycles
- No tool lock-in

# Disadvantages of CRC Cards



Scalability limitations

Poor documentation artifact

Lack of detail

Limited notation

Impractical for large systems  
(>50 classes)

Physical space  
constraints

No method signatures

Missing cardinality  
information

Difficult to show  
patterns

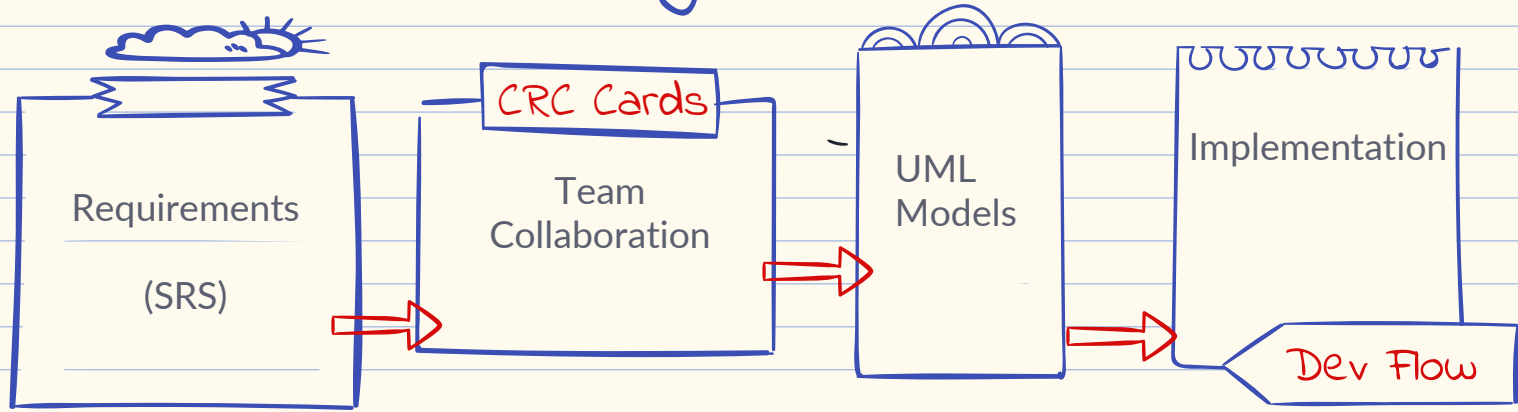
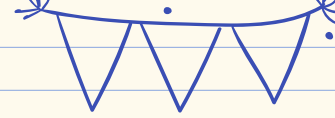
No formal inheritance  
representation

No change history

Cards get  
lost/damaged



# Summary & Conclusion



## Key Takeaways:

- Bridge between requirements and detailed design
- Best for early-stage discovery
- Complement, not replace, formal modelling
- Value in process, not just artifacts
- Encourages team participation
- Forces design simplicity

## when to use

- Starting new projects
- Exploring design alternatives
- Teaching OO concepts

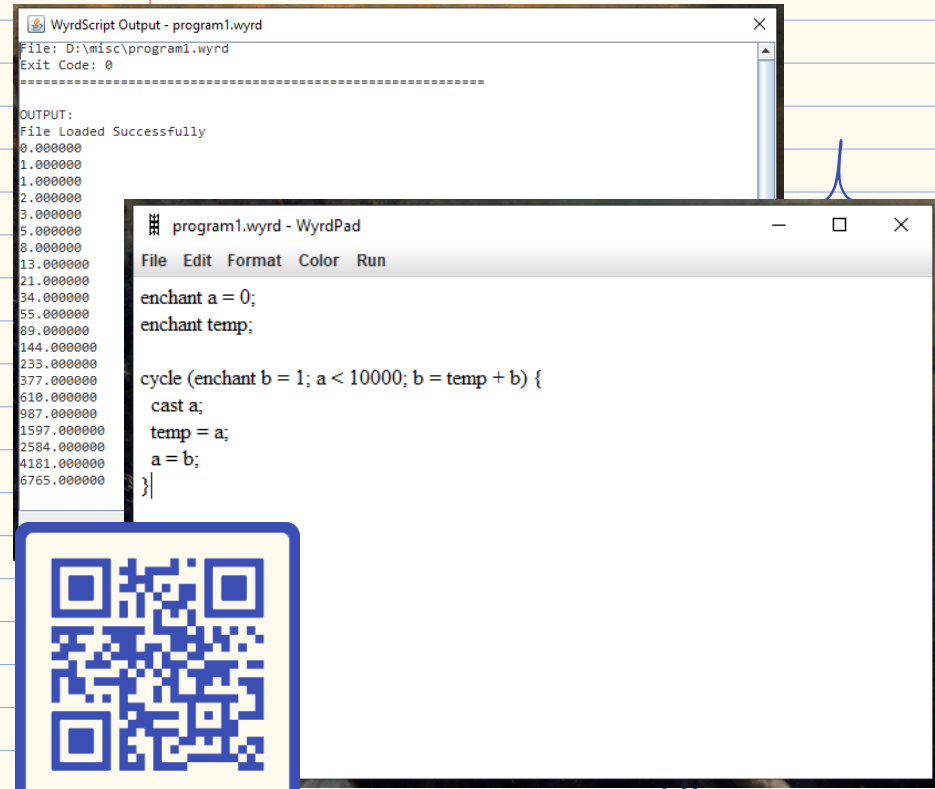


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# DEMO



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- Helps to understand how the implementation is done using SRS, UML Models and CRC.
- Build using java swing GUI framework.
- Purpose of the software: Native text editor for the WyrdLang programming language
- Source Code : <https://github.com/WyrdLang/WyrdPad>
- Download and try out the text editor using the QR Code.



Any  
Questions??



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[chillguyzzz.github.io](https://github.com/chillguyzzz)