CPSC203 – Introduction to Problem Solving and Using Application Software

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Introduction

- Principals of User Interface Design
- User Interface Design Process

Principals of User Interface Design

Principle	Description
Layout	The interface should be a series of areas on the screen that are used consistently for different purposes—for example, a top area for commands and navigation, a middle area for information to be input or output, and a bottom area for status information.
Content Awareness	Users should always be aware of where they are in the system and what information is being displayed.
Aesthetics	Interfaces should be functional and inviting to users through careful use of white space, colors, and fonts. There is often a trade-off between including enough white space to make the interface look pleasing without losing so much space that important information does not fit on the screen.
User Experience	Although ease of use and ease of learning often lead to similar design decisions, there is sometimes a trade-off between the two. Novice users or infrequent users of software will prefer ease of learning, whereas frequent users will prefer ease of use.
Consistency	Consistency in interface design enables users to predict what will happen before they perform a function. It is one of the most important elements in ease of learning, ease of use, and aesthetics.
Minimal User Effort	The interface should be simple to use. Most designers plan on having no more than three mouse clicks from the starting menu until users perform work.

Layout

- The screen should be divided into areas that are used consistently for the same purpose, e.g. top for commands and navigation, middle of the screen for input/output.

- The screen should be divided so as to provide natural intuitive flow and minimize the user's movement.

Content Awareness

- User must always be aware of where they are in the system with minimum effort.

- All interfaces should have titles.

- Menus should show you where you are, where you came from and where you can get to.

- Field labels should be short and specific.

- Field labels should be clear and unambiguous.

Aesthetics (1)

- The interface must be pleasing to the eye.
- All forms and reports must have a minimum amount of white space.
- The font size should not be less that 8 point and 10 point is usually preferred.
- Different font size should used to distinguish between different types of information,
- Underlining and italic makes text harder to read and should thus be avoided.
- San-serif fonts, e.g. Arial, Helvetica, are most readable for computer screens.

Aesthetics (2)

- Capital letters should only be used for titles.
- Too many different colours and patterns make for difficult reading and should thus be minimized.
- Colours can be used to differentiate between different types of information, e.g. to differentiate headings from regular text.
- Different colours tend to provoke emotions in different ways.
- Colour blindness.

User Experience

- Novice users vs. experienced users.
- The priority of novice users is ease of learning.
- The priority of experienced users is ease of use.
- Novice users and experienced users have different behaviour patterns.
- The user interface must provide a balance between quick access to commonly used functions and guidance through less well-known functions.
- Guidance can be possible switched on and off.

Consistency

- Consistency forms the basis of ease of use, ease of learning and aesthetics.

- The needs to be consistency in the navigation controls.

- There must also be consistency in the terminology used.

- Consistency will enable the user to predict the effect of his/her action.

Minimal User Effort

- The minimum amount of effect should be needed by the user to perform tasks.

- A minimum amount of mouse clicks or keystrokes should be used to execute actions.

- The "three clicks rule" can be used for this purpose.

- This rule states that each action should be performed with a minimum of three keystrokes or mouse clicks.
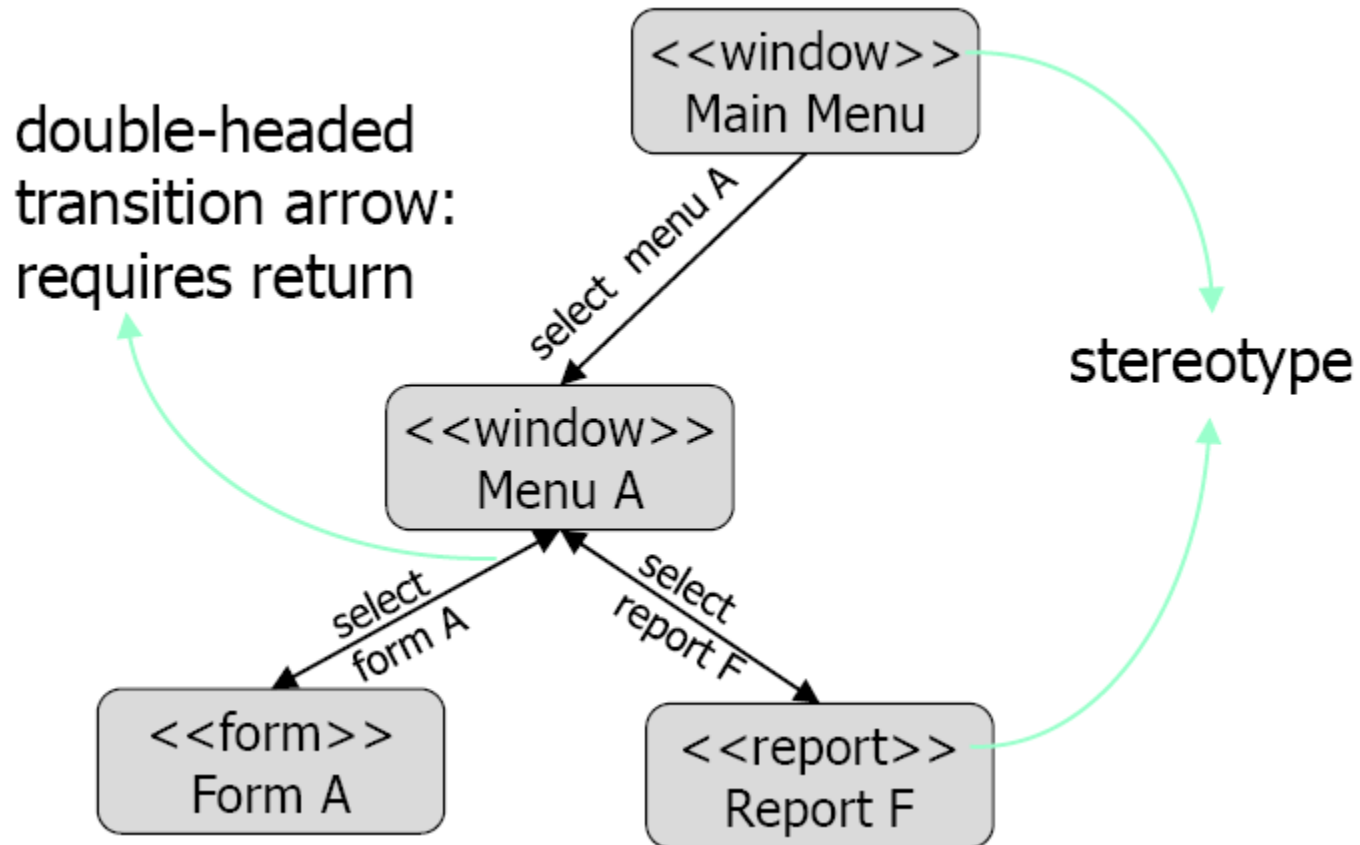
User Interface Design Process
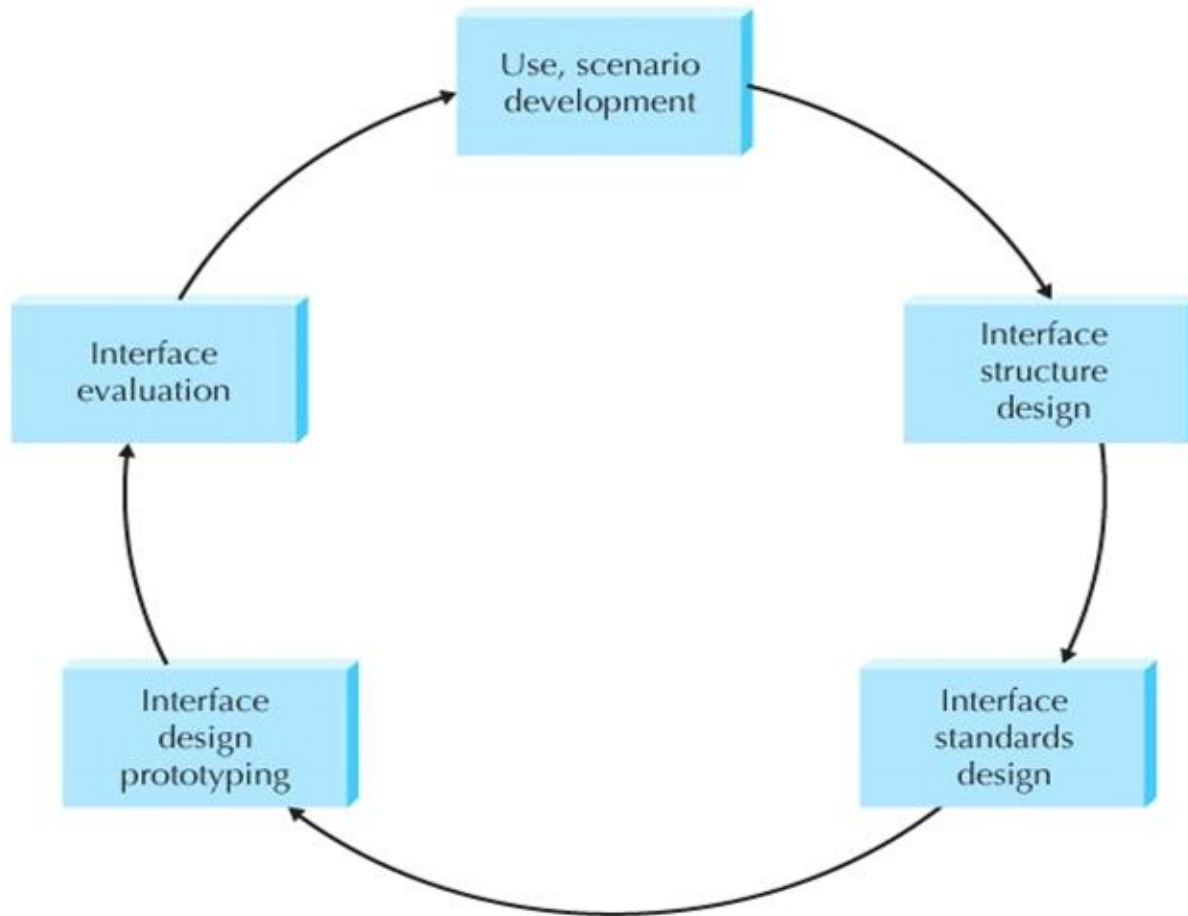
Window Navigation Diagram

- A Window Navigation Diagram (WND) is used to show how all the screens, forms, and reports used by the system are related and how the user moves from one to another.

Elements Of A WND

- Each box represents a user interface component, e.g. a menu or a form.

- Transitions between the components are illustrated by a double or single arrow.

- A single arrow indicates that a return to the calling state is not needed.

- A double arrow indicates that a return to the calling state is needed.

- Each component is described as a stereotype, e.g. <<form>>, <<menu>>.

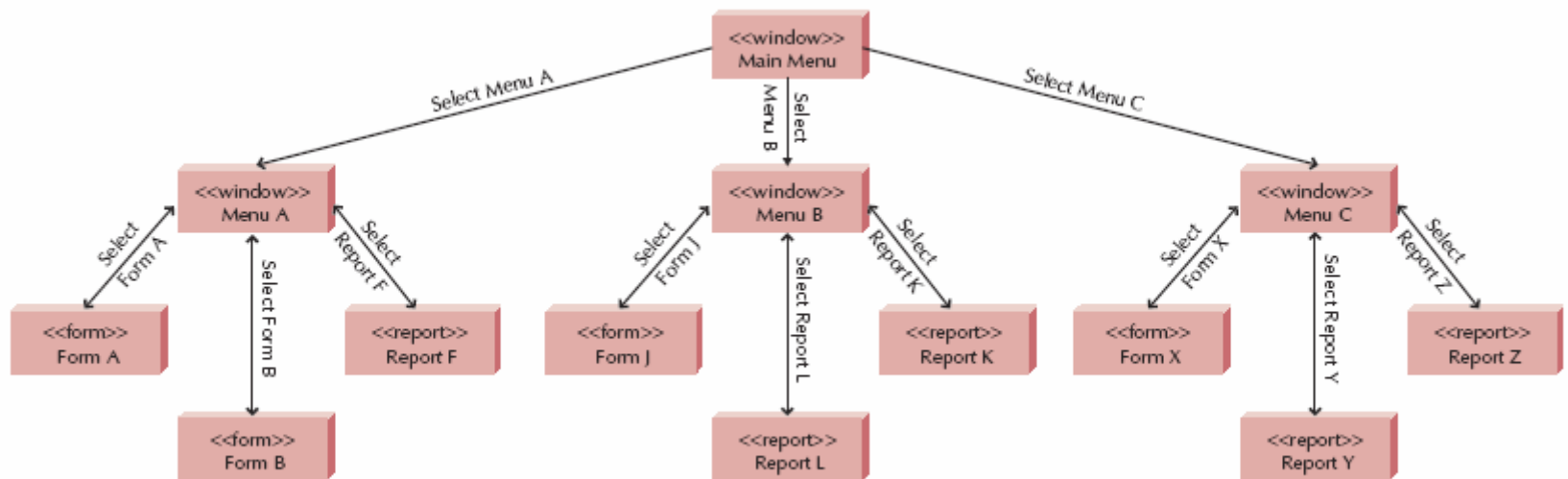- Each component is also given a label, e.g. Menu A, Form J.

Example (1)

double-headed transition arrow: requires return

<<window>>
Main Menu

select menu A

<<window>>
Menu A

stereotype

select form A

select report F

<<form>>
Form A

<<report>>
Report F

Example (2)

FIGURE 12-7   An Example Window Navigation Diagram

Interface Structure Design

- Usually defines several WNDs, showing how all screens, forms and reports are related

- Basic structure of WNDs follows from the use cases

- Examining the use scenarios may result in reworking the WNDs

Interface Standards Design

- Develop or reuse metaphors:
  - scroll bar
  - ear icon to symbolize an audio file
  - house symbol for home page
- Interface templates: Defining appearance of screens, forms, reports, e.g. menu ordering

Interface Design Prototyping

- A mock-up or simulation of screen, form, or report

- Common methods include
  - Storyboard (simple, cheap)
  - HTML prototype
  - Language prototype: exact representation of screens

Storyboard Example (1)
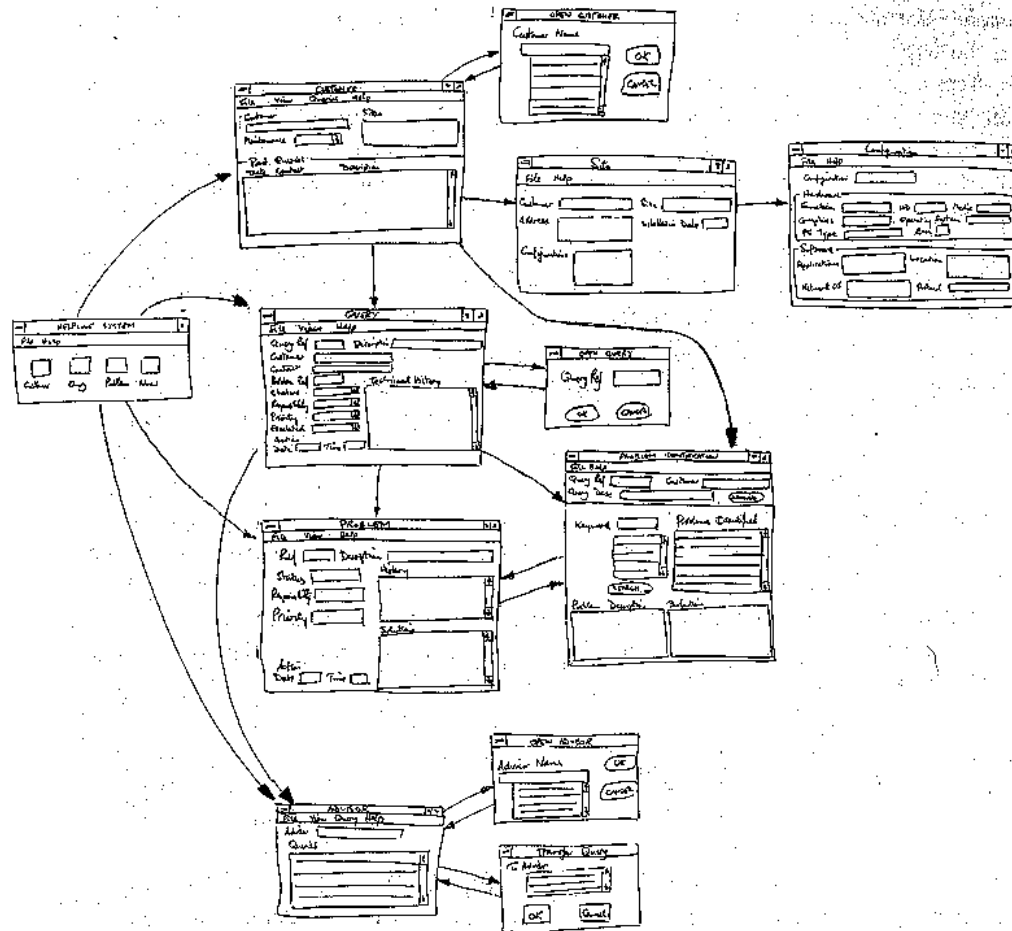
HTML Example

Storyboard Example (2)
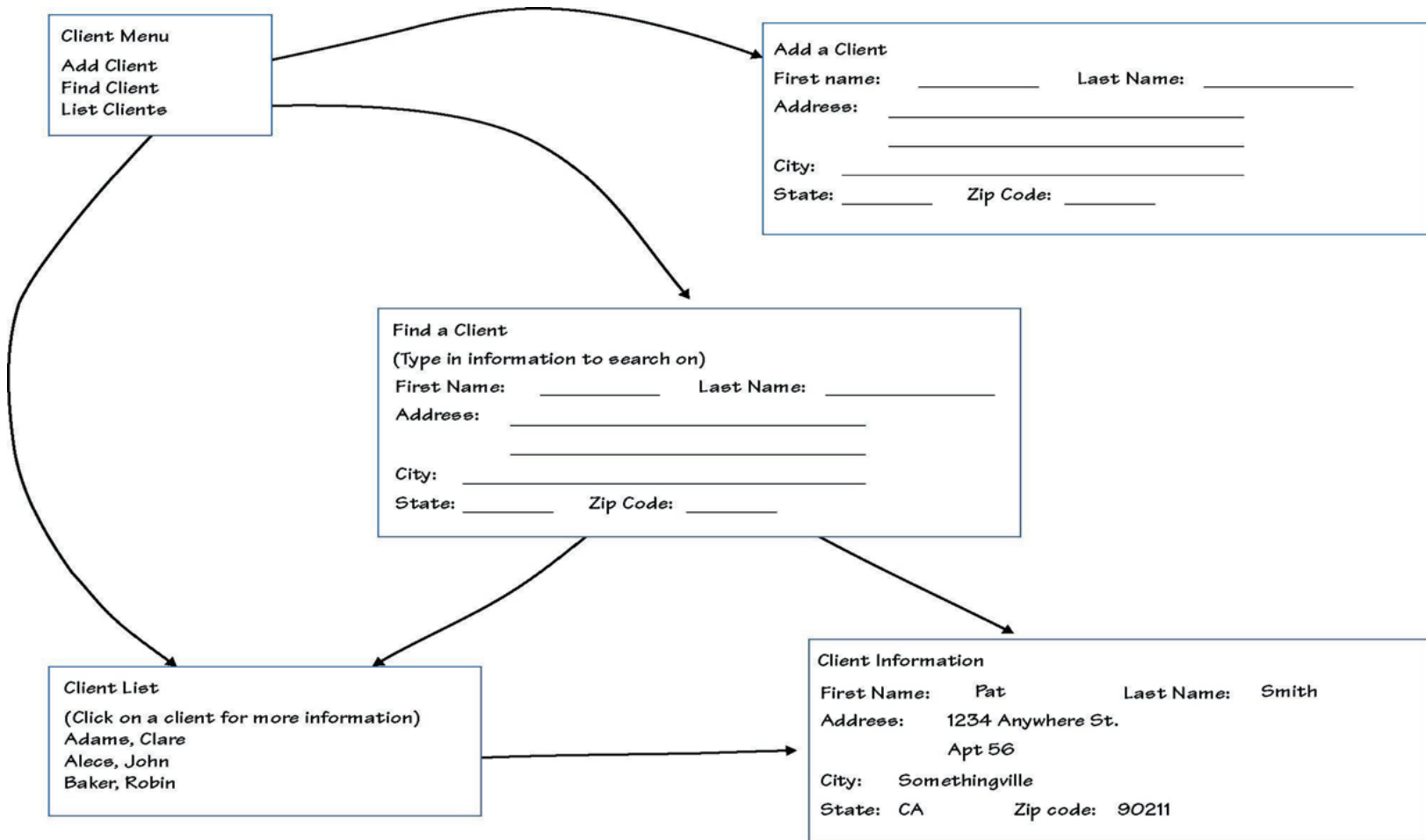
Language Prototype Example
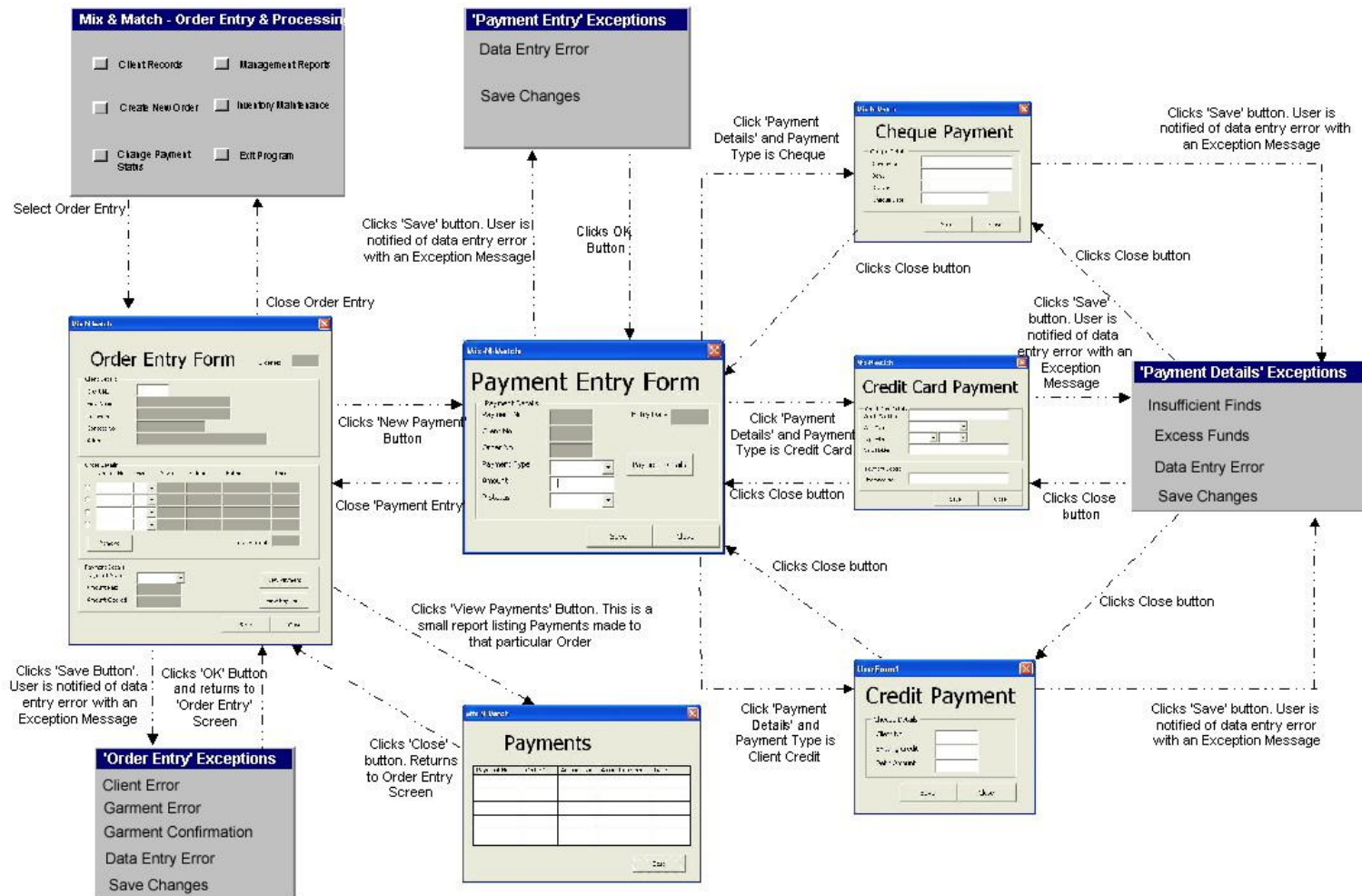
Interface Evaluation

- Interface evaluation is performed to identify areas of improvement for of the interfaces and hence is performed more than once during the software design process.