Error Handling

Goals for Software User Interface (*correspond to error*)

- Meminimalisir kesalahan Pengguna

- Menyediakan kemudahan dalam menangani kesalahan

Types of user errors

1. Perceptual Errors
2. Cognitive Errors
3. Motor Errors

Cause of Perceptual Errors

➢ insufficient perceptual cues: failure to detect important inform.

➢ invisible modes or states

➢ failure to capture the user's attention

➢ lack of perceivable feedback.

Examples of Perceptual Error

- Display objects that are visually similar : examples : **B/8   Z/2   I/1**.
- *Insert mode or   caps lock mode*.
- Important messages are visually indistinct from other parts of the display.
- Keys may be pressed in error: In word processor, type words after hit **Alt**.

Cause of Cognitive Errors

➢ taxing the memory and problem-solving capabilities.

➢ *lack of* or *poor* mnemonic aids.

➢ Inconsistency.

➢ lack of context or status information.
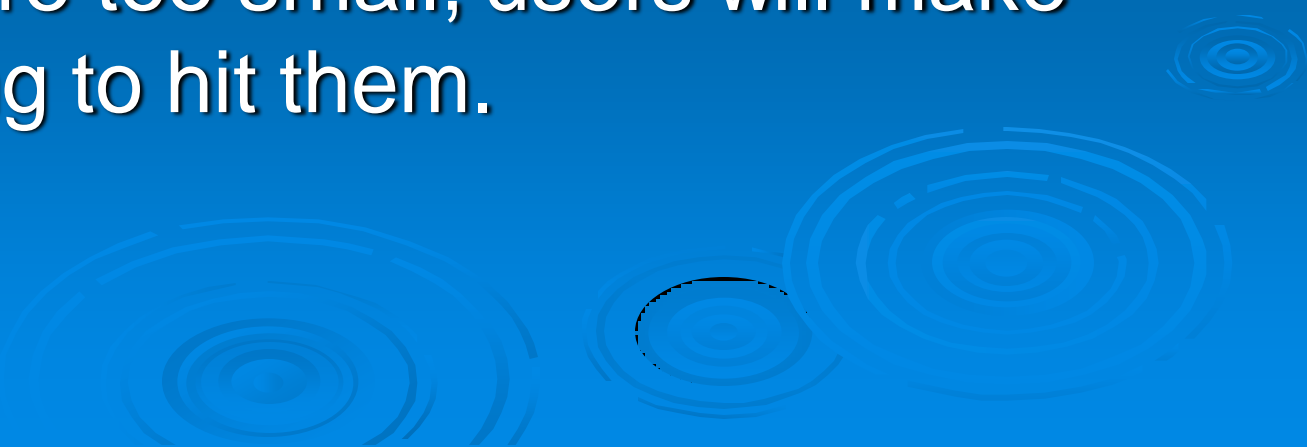
➢ Mental calculations and translations.

Examples of Cognitif Error

➢ Tax recall memory: command language with positional syntax, insufficient instruction on fill-in form.

➢ Arbitrary function key assignment.

➢ Inconsistency argument order in Command language syntax

➢ Menus that do not include context information regarding where the user came and what choices were made on the way.

➢ An interface that requires users to compare two lists and find items in common, translate inches into centimeter.

Cause of Motor Errors

➢ taxing the eye-hand coordination and level of motor skill.

➢ highly similar motor sequences or "capture errors".

➢ pressure for speed.

➢ requiring a high degree of eye-hand coordination.

➢ requiring other types of skills.

Examples of Motorik Error

➤ Quick transitions between the fourth and little fingers.

➤ Click mouse: *single* or *double*.

➤ Typist make more errors when they are pressured for speed.

➤ If targets are too small, users will make errors trying to hit them.

Error Handling

- Error Prevention
- Error Recovery

Guidelines for Error Prevention

➢ Minimize Error : Perceptual, Cognitif, Motorik

➢ Test and monitor for errors and "engineer" them out

How to Minimize Perceptual Errors?

➢ Eliminate *invisible modes*.

➢ Use *coding techniques* effectively to make different objects look more dissimilar: color, shape, reverse video, bold, and other visual codes.

How to Minimize Cognitive Errors?

➤ Maximize recognition and reduce recall tasks.

➤ Provide mnemonic aids.

➤ Build consistency, rules, and patterns into interface.

➤ Provide status and context information.

➤ Minimize mental calculation and transformation.

How to minimize Motor Errors.

➢ Careful key placement and Screen layout.

➢ Minimize use of SHIFT, CTRL, etc.

➢ Don't use similar mnemonic: **SEA** (Search) and **SEN** (Send).

➢ Large targets and clear visual feedback.

➢ Minimize the need for typing

Guidelines for Error Recovery (1)

1. Provide the appropriate type of response.
2. Provide an "**undo**" function.
3. Provide a cancel function for operation in progress.
4. Require confirmation for commands with *drastic, destructive* consequences.
5. Conduct error checking in context, but without interrupting work flow.

Guidelines for Error Recovery (2)

6. Return the cursor to and highlight the error field.

7. allow editing of error fields.

8. Provide intelligent error checking and recovery.

9. Provide quick access to context-sensitive **HELP**.

10. Design effective error messages.

How to design effective error messages

1. Be descriptive but concise.
2. Don't mislead.
3. Be Prescriptive.
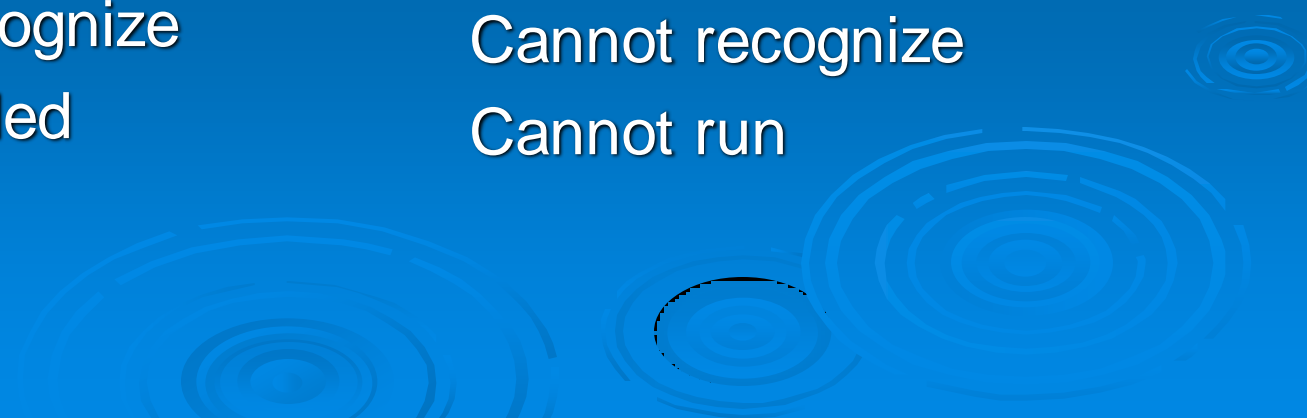4. Design detail according to user knowledge and experience.
5. Take the blame.

6. Avoid exclamation points.

7. Avoid violent and hostile words.

8. Use consistent grammatical style.

9. Place in context: messages are placed where the eye *is likely to* notice them.

10. Don't anthropomorphize.

Poor Vs Improved Example Error Message

1. Filling Error
2. File not found

3. Disk Full

4. Error in dress size field

1. Disk Full
2. Missing File extension
3. Disk Full.

   Use "Save As" to save to another disk
4. Error : Dress Size Range 4 to 6.

   No leading zeros

Poor Vs Improved Example Error Message

5. Bad input
6. Unrecognizable command!!!
7. Fatal illegal

   Bad disastrous

8. Unacceptable

   Cannot recognize

   Run canceled

5. Unrecognizable command
6. Unrecognizable command

7. Cannot accept

   Could not execute

8. Cannot accept

   Cannot recognize

   Cannot run

Poor Vs Improved Example Error Message

9. Position

(bottom of screen)

10. Sorry, I can't accept that command

9. Position

(In window)

(on top of screen)

(next to error field)

10. Cannot accept command