

Final Exam Correction – Human–Machine Interface

Multiple-choice questions. Circle the correct answer(s)(One or more answers may be correct):(10 pts)

- 1- A, C (1pts)
- 2- A, B, C (1pts)
- 3- A, B, D (1pts)
- 4- A, C, D (1pts)
- 5- A, C, D (1pts)
- 6- A, C (1pts)
- 7- A, C, D (1pts)
- 8- A, C (1pts)
- 9- A, C (1pts)
- 10- A, C (1pts)

Exercise 01 :

Question 1: Nielsen’s Heuristics (2 points)

Violated heuristics:

1. Visibility of system status (0,5 pts)

The application does not inform the user whether the reservation is being processed. Users are left without feedback, which creates uncertainty about the system’s state (0,5 pts).

2. User control and freedom (0,5 pts)

Once an appointment is confirmed, the user cannot go back or cancel the action. This violates the principle that users should be able to undo or redo actions easily (0,5 pts).

Question 2: Bastien and Scapin’s Ergonomic Criteria (2 points)

Violated criteria and improvements:

1. Explicit Control (0,5 pts)

Problem: Once an appointment is confirmed, the user cannot cancel or go back, which means the user does not have explicit control over critical actions.

Improvement: Introduce confirmation dialogs before final validation and provide clearly visible options to cancel or undo the appointment confirmation. (0,5 pts)

2. Error management (0,5 pts)

Problem: The error message “Error 402” is not understandable by the user.

Improvement: Replace it with a clear and explicit message, for example: “Invalid input. Please check the date and try again.” (0,5 pts)

Question 3: Coutaz’s Golden Rule (1 point)

Golden rule: “Provide informative feedback”

This rule emphasizes that the system should continuously inform the user about ongoing actions and results. Applying this rule would reduce user confusion by clearly indicating processing states, confirmation messages, and understandable error notifications.

Exercise 02 :

Question 1: Identify all UI specification types that are NOT respected (3 points)

Based on the reported problems, the following UI specification types are not respected:

1. Functional Specification

The “Confirm Appointment” button behaves inconsistently: sometimes it confirms the appointment and sometimes it only sends a notification email. This indicates that the function and behavior of this interface component are not clearly defined.

2. Lexical Specification

Error messages are inconsistent: some use medical abbreviations while others use general language, and different icons are used for the same function. This violates consistency in terminology, icons, and visual codes.

3. Syntactic Specification

The order of interaction steps is not respected, since some users can access patient records before authentication. This shows that interaction sequences and navigation flow are incorrectly specified.

4. Needs Analysis (User and Context of Use)

The interface was designed mainly for desktop use, while many nurses use tablets during rounds. This means the usage context (devices and environment) was not properly analyzed.

5. Conceptual Specification

The system includes complex analytics dashboards that do not align with nurses’ goals, while basic scheduling tasks require many steps. This shows poor alignment between interface objects and user tasks.

Question 2: Proposed corrections for each violated specification (2 points)

1. Functional Specification – Correction

Clearly define the behavior of the “Confirm Appointment” button so that it always confirms the appointment and then optionally sends a notification email, followed by a confirmation message.

2. Lexical Specification – Correction

Standardize icons and terminology across all screens, and replace medical abbreviations in error messages with clear, user-friendly language.

3. Syntactic Specification – Correction

Define and enforce a strict interaction sequence where authentication is mandatory before accessing patient records.

4. Needs Analysis – Correction

Update the needs analysis to include tablet usage during medical rounds and redesign the interface using responsive and touch-friendly components.

5. Conceptual Specification – Correction

Simplify and prioritize interface objects related to frequent tasks (appointment scheduling) and make advanced analytics dashboards optional or role-based.