TASK:12

Implementation of Human–Computer Interaction (HCI) System

CO4, CO5

S3

PROBLEM STATEMENT

In traditional computer systems, interaction between humans and machines is often complex and unintuitive. Users without technical knowledge face difficulty while operating systems that require commands or manual configurations. Therefore, there is a need for a more **user-friendly and interactive system** that allows humans to communicate naturally with computers using simple inputs like mouse clicks, voice, or gestures.

AIM

To design and develop an interactive system that allows users to communicate effectively with a computer through a **simple and intuitive graphical interface**.

OBJECTIVE

- To create a user-friendly interface that improves the ease of interaction.

- To implement event-driven interaction between user actions and computer responses.

- To enhance usability and accessibility for non-technical users.

- To demonstrate core HCI principles such as feedback, consistency, and error tolerance.

- To evaluate the effectiveness of the interface based on user experience.

DESCRIPTION

Human–Computer Interaction (HCI) focuses on designing computer systems that are **easy to use and understand**.

It involves the study and implementation of interfaces that make interaction between humans and computers smooth.

This project uses a simple **Graphical User Interface (GUI)** where the user interacts through buttons and text input. When the user clicks a button or types text, the system responds accordingly — demonstrating the **feedback mechanism** in HCI.

ALGORITHM

1. **Start**

2. Import the necessary GUI module (`tkinter`).

3. Create the main window for the application.

4. Add input elements such as labels, buttons, and text fields.

5. Define functions to handle user actions (e.g., button clicks).

6. Display feedback messages based on user input.

7. Keep the window running until the user exits the program.

8. **End**

PROGRAM

from tkinter import *

Create main window

window = Tk()

window.title("Human-Computer Interaction Demo")

window.geometry("350x250")

Function to display user interaction

def greet_user():

   name = entry_name.get()

   if name.strip() == "":

```python
        label_result.config(text="Please enter your name!")
    else:
        label_result.config(text=f"Hello {name}! Welcome to HCI System 😊")


# Create labels and entry widgets
label_title = Label(window, text="Human-Computer Interaction Example", font=("Arial", 12, "bold"))
label_title.pack(pady=10)


label_name = Label(window, text="Enter your name:")
label_name.pack()


entry_name = Entry(window, width=25)
entry_name.pack(pady=5)


# Button to trigger interaction
button_greet = Button(window, text="Interact", command=greet_user, bg="lightblue")
button_greet.pack(pady=10)


# Label to display output
label_result = Label(window, text="", font=("Arial", 10))
label_result.pack(pady=10)


# Run GUI loop
window.mainloop()
```

OUTPUT

CONCLUSION

The Human–Computer Interaction system successfully demonstrates how users can communicate with computers through an intuitive and responsive interface. It highlights key HCI principles such as **feedback, usability, and interaction design**. This simple model can be extended to more advanced interactions like **speech recognition, gesture control, or AI-based chat interfaces** for a more natural human-machine experience.