

**Terna Engineering College**  
**Computer Engineering Department**

Program: Sem VIII

**Course: Human Machine Interaction(HMI)**

**LAB Manual**

**Experiment No.03**

**A.1 Aim:**

Design GUI for the data entry form for any application of selected domain which you have analyzed.

**A.2 Prerequisite:**

1. Knowledge about various domains.
2. Knowledge of user interface and various user interface (UI) elements.
3. Knowledge of interaction styles.

**A.3 Outcome:**

**After successful completion of this experiment students will be able to**

1. Apply HMI Principles to design a good GUI.
2. Interact with GUI through various interaction styles.
3. Identify the components of graphical and Web interfaces and screens.

**A.4 Theory:**

- **GUI**
- In computing, a **graphical user interface (GUI)**, commonly pronounced *gooey*) is a type of user interface that allows users to interact with electronic devices with images (graphics) rather than text commands.
- A GUI represents the information and actions available to a user through graphical icons and visual indicators such as secondary notation, as opposed to text-based interfaces, typed command labels or text navigation.
- The actions are usually performed through direct manipulation of the graphical elements.

- Designing the visual composition and temporal behavior of GUI is an important part of software application programming in the area of human-computer interaction.
- Its goal is to enhance the efficiency and ease of use for the underlying logical design of a stored program, a design discipline known as usability.

- **The Concept of Direct Manipulation**

The term used to describe this style of interaction for graphical systems was first used by Shneiderman (1982). He called them “direct manipulation” systems, suggesting that they possess the following characteristics:

1. **The system is portrayed as an extension of the real world.** It is assumed that a person is already familiar with the objects and actions in his or her environment of interest. The system simply replicates them and portrays them on a different medium, the screen. A person has the power to access and modify these objects, among which are windows. A person is allowed to work in a familiar environment and in a familiar way, focusing on the data, not the application and tools.
2. **Continuous visibility of objects and actions.** Like one’s desktop, objects are continuously visible. Reminders of actions to be performed are also obvious, labeled buttons replacing complex syntax and command names. Cursor action and motion occurs in physically obvious and intuitively natural ways.
3. **Actions are rapid and incremental with visible display of results.** Since tactile feedback is not yet possible (as would occur with one’s hand when one touches something), the results of actions are immediately displayed visually on the screen in their new and current form. Auditory feedback may also be provided. The impact of a previous action is quickly seen, and the evolution of tasks is continuous and effortless.
4. **Incremental actions are easily reversible.** Finally, actions, if discovered to be in error or not desired, can be easily undone.

## A.5 Procedure:

1. Design a user interface for data entry for any site/application.
2. This form should contain necessary label, text fields, icons, pictures, and buttons.
3. According to requirement validation of the form should be done.

### Example:

The screenshot shows a Windows application window titled "AutoPhone: Response Data Entry Form". The menu bar includes File, Edit, View, Insert, Format, Records, Tools, Window, and Help. The main form contains several sections: "ConsID" (dropdown with value 123123123), "Address Lines" (text area with address details), "Phone Nos" (button), "Name Change" (button), "Employment Information" (button). Below these are sections for "Addressee" (Dr Cuthbert Bede), "Salutation" (Dr Bede), and a large bolded text "Dr Cuthbert Bede". To the right are "Town" (BERWICK-UPON-TWEED), "County" (Northumberland dropdown), "Postcode" (NE71 2RE), and "Country". A "Response" section contains fields for "Call Date" (22/03/00), "Caller" (Adrian Beney dropdown), "Number of Attempts" (2), "Response Code" (SB dropdown), "Amount" (£10.00), "Frequency" (month dropdown), "Years" (4), "Fund" (Support dropdown), "Do Not Remind" (checkbox), "Refusal Reason" (dropdown), "Refusal 'Other'" (dropdown), and "Next Solicitation" (dropdown). On the right side of the response section are checkboxes for "Send Reunion Info", "Prefer to be mailed", and "Reminder Sent". Buttons on the right include "Save Record", "Return to Menu", and "Undo Changes".

The screenshot shows a data entry form for "THE CAR RENTAL COMPANY". The title bar is "THE CAR RENTAL COMPANY". The form is divided into three sections: "RENTER" (Name: [text box], Telephone: [three boxes]), "LOCATION" (Office: [text box], Pick-up Date: [four boxes], Return Date: [four boxes]), and "AUTOMOBILE" (Class: [text box], Rate: [text box with dropdown], Miles Per Day: [text box with dropdown]). At the bottom are four buttons: "OK", "Apply", "Cancel", and "Help".

## PART B

Roll No.: A43	Name: Shruti N. Rathod
Class: BE-A	Batch: A3
Date of Experiment:	Date of Submission:
Grade:	

### B.1 Domain selected by student:

**Domain Selected is a Research Paper Publication Website.**

### B.2. Source Code of GUI :

```
<html>
<head>
<style>

.div{
    margin: auto;
    width: 60%;
    color : white;
    padding: 10px;
    background-color : rgba(0, 0, 0, 0.5);

}
.label
{
    font-size : 20px;
}

.box{
    background-color : transparent;
    color : white;
    border : 1px solid white;
    height : 30px;
    width : 200px;
}
::placeholder {
    color: white;
```

```
    opacity: 1;
}

.head
{
    text-align : center;
    color : white;
}

.submit
{
    margin-left : 400px;
    width : 200px;
    height : 30px;
    color : white;
    border-radius : 10px;
    background-color : rgba(0, 0, 0, 0.8);
    border : 1px;

}

body {
    background-image: url('research.jpg');
    background-repeat: no-repeat;
    background-size: cover;
}

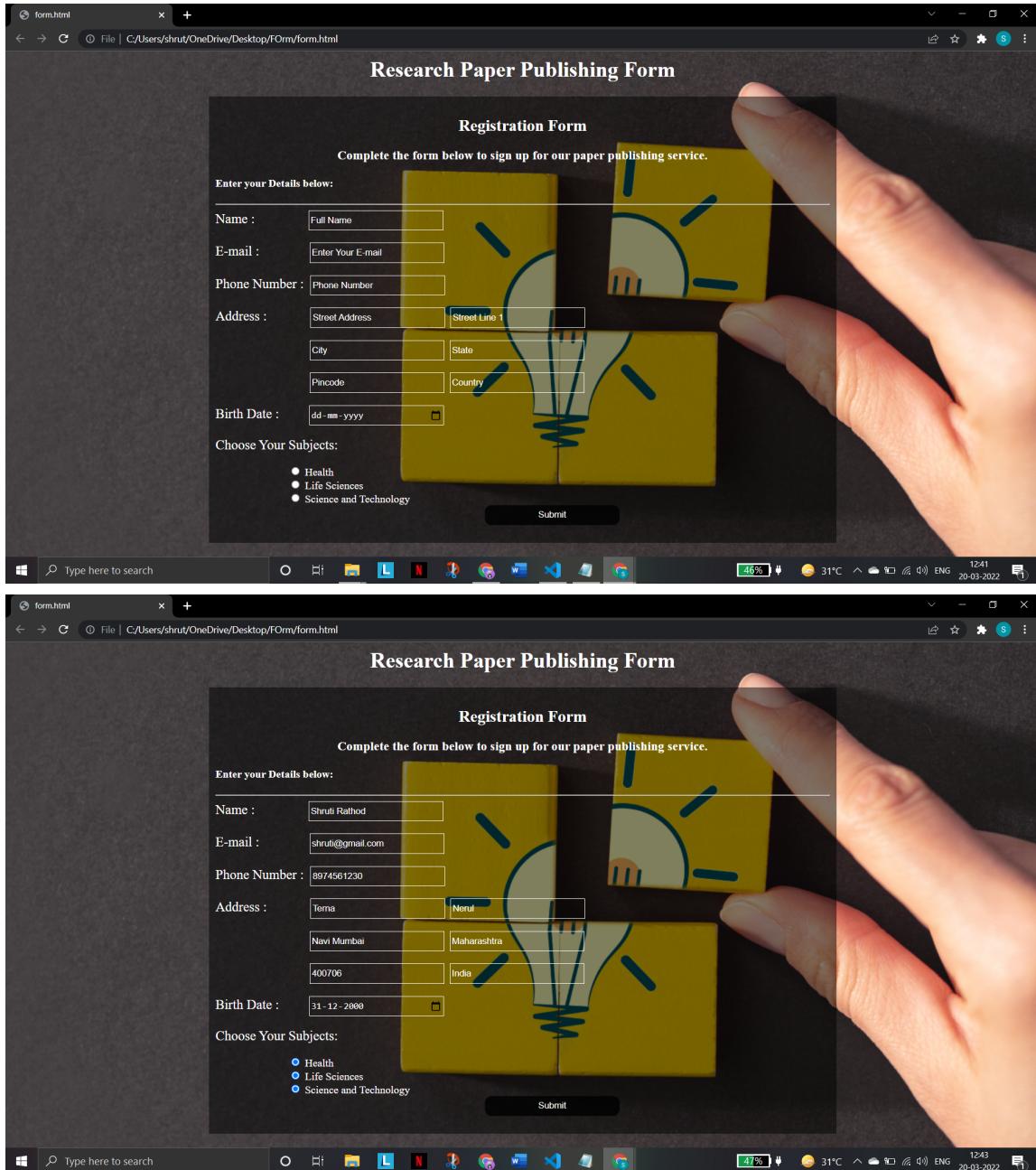
</style>
</head>
<body>

    <h1 class="head">Research Paper Publishing Form</h1>
    <div class="div">
        <h2 class="head">Registration Form</h2>
        <h3 class="head">Complete the form below to sign up for our
paper publishing service.</h3>
        <h4>Enter your Details below:</h4>
        <hr>
        <form>
```

```
        <label class="label">Name :</label><input type="text"
placeholder="Full Name" class="box"><br><br>
        <label class="label">E-mail : </label><input
type="email" placeholder="Enter Your Email" class="box"><br><br>
        <label class="label">Phone Number : &nbsp;</label><input
type="number" placeholder="Phone Number" class="box"><br><br>
        <label class="label">Address : </label><input
type="text" placeholder="Street Address"
class="box">&nbsp;&nbsp;<input type="text" placeholder="Street Line
1" class="box"><br><br>
        <input type="text" placeholder="City"
class="box">&nbsp;&nbsp;<input type="text" placeholder="State"
class="box"><br><br>
        <input type="text" placeholder="Pincode"
class="box">&nbsp;&nbsp;<input type="text" placeholder="Country"
class="box"><br><br>
        <label class="label">Birth Date : </label><input
type="date" placeholder="Enter Your Birth Date" class="box"><br><br>
        <label class="label">Choose Your Subjects:
</label><br><br>
        <input type="radio" name="Health">
<label>Health</label><br>
        <input type="radio" name="Life Sciences">
<label>Life Sciences</label><br>
        <input type="radio" name="Science and Technology">
<label>Science and Technology</label><br>
        <input type ="submit" value="Submit" class="submit">

    </form>
</div>
</body>
</html>
```

### B.3 Screen Snapshot of GUI Design:



### B.4 Direct Manipulation

Direct manipulation has been beneficial in the realm of interface design for the last two decades. The benefits have prompted designers to reduce indirection and change domain objects to first-class interfaces.

Direct manipulation is linked with three major principles. First, there is constant demonstration of the object of interest demonstrated in a permanent visual feedback. Second, it is characterized by physical action rather than intricate

syntax. Third, there is a spiral or layered method to learning, which allows usage with minimum knowledge.

Advantages of Direct Manipulation are:

1. It is easy to learn and remember.
2. It is easy to retain.
3. Present task concept visually.
4. Permits error avoidance.
5. It is a flexible and reversible action.
6. Low typing requirement.
7. Encourages exploration.
8. High subjective satisfaction.
9. Predictable and controllable.
10. Permits high subjective satisfaction.
11. Instant visual feedback.
12. User learning time is relatively small.

#### **B.4 Conclusion:**

Hence I would like to conclude that in this practical, we learned to apply HMI principles to design a good GUI. A GUI represents the information and actions available to a user through graphical icons and visual indicators such as secondary notation, as opposed to text-based interfaces, typed command labels or text navigation. The actions are usually performed through direct manipulation of the graphical elements.

\*\*\*\*\*End\*\*\*\*\*