# WEB DEVELOPMENT - FRONTEND AND BACKEND

With HTML, CSS, PHP and MySQL

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# OBJECTIVE

To make a replica of our department website with improved functionalities.

# Content

- **HTML and CSS**
- **Initial Design of the Website**
- **New Technologies used to improve the website**
  - **Bootstrap**
  - PHP
  - MySQL
- **New Website - Design of Home Page**
  - Screenshot
  - Some important Codes
- **New Website - Design of BKS sir's homepage**
  - Screenshot
  - Features and Functionalities
  - Important code and backend database
- **New Website - Design of BKS sir's mentorship page**
  - User Interface Overview
  - Features and Functionalities
  - Backend Oveview
- **Conclusion**

## HTML and CSS

- HTML stands for HyperText Markup Language
- HTML elements form the **building blocks** of any websites
  - like **headings, paragraphs, links, images**, and more
- It provides the **skeleton** of a website
- It uses **tags** to structure content
  - Eg: <html>,<head>,<body>,etc
- It provides foundation for **CSS and JavaScript**
- It is case **insensitive**

- **CSS** stands for Cascade Style sheet
- It controls look and feel of website
- It styles the HTML
  - With colour, fonts, spacings, etc.
- Enables responsive design

```
<!DOCTYPE html>
<html>

<head>
    <title>Page Title</title>
</head>

<body>
    <h2>Heading Content</h2>
    <p>Paragraph Content</p>
</body>

</html>
```

Standard Structure of HTML code

| Header |
| Navigation Menu |
| Content |
| Footer |

Skeleton of a website
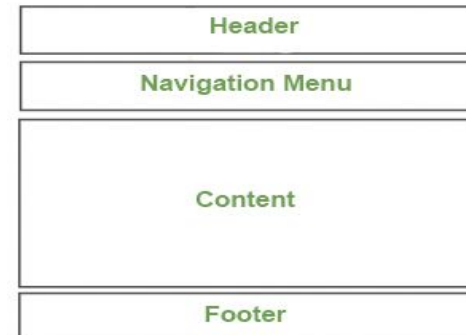
# Initial Design of the website
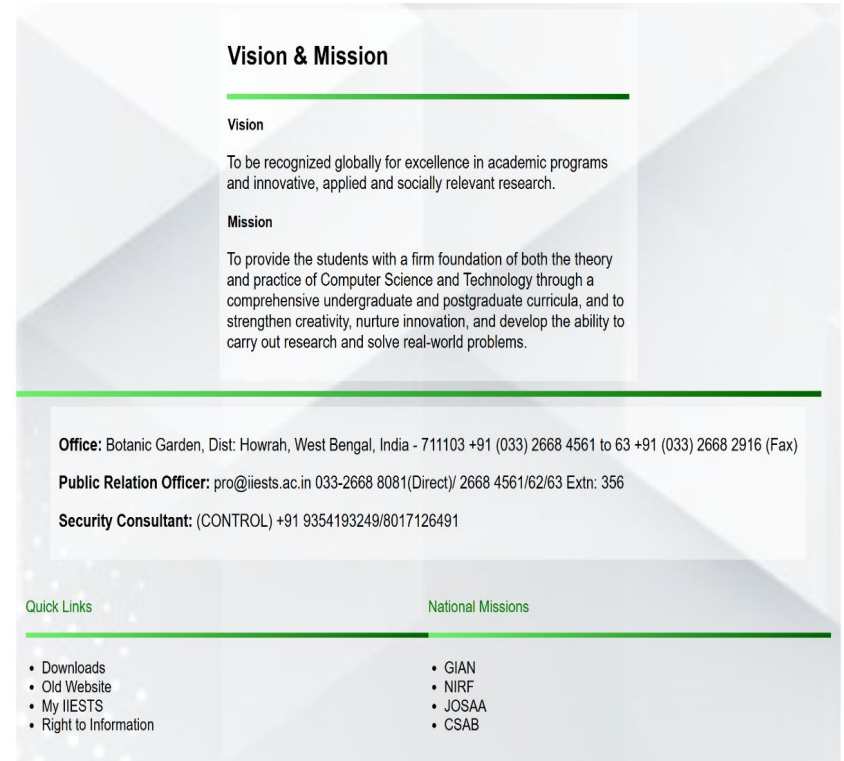


Screenshot of the website made by us

# Initial Design contd…



Header

Menu
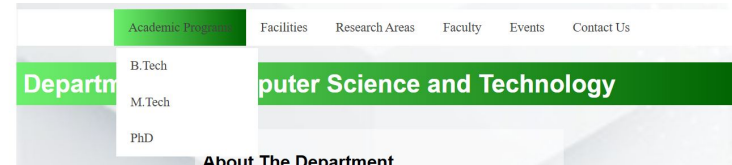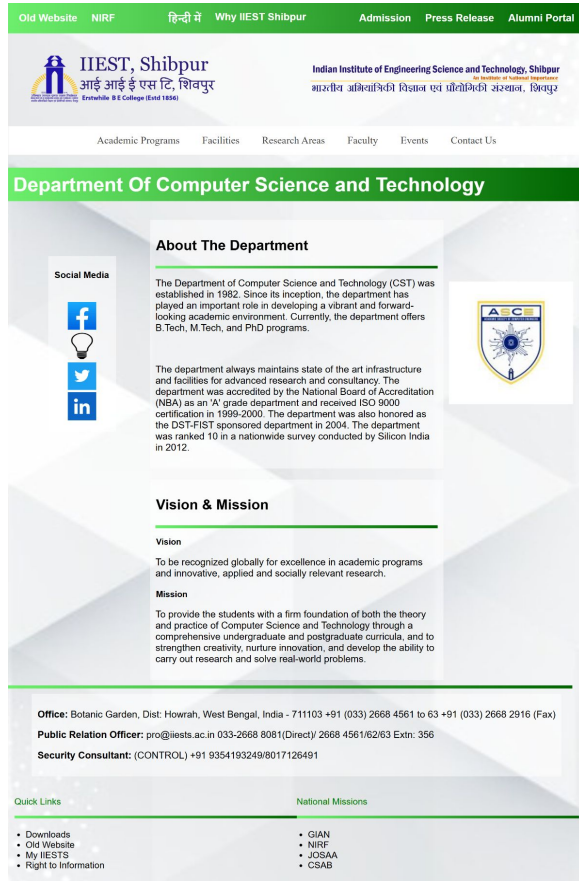
Main Div

Footer

The menu has submenus

## Advantages and Disadvantages

- Made from scratch has full control over the design
- The website is properly organised
  - Header, Menu, Main Div, Footer
    - Main Div was further divided into 3 parts
- Hyperlinks are provided
  - Social media, External Websites, etc
- However the website is not responsive in nature and has limited functionalities

# New technologies used to improve the website

## Bootstrap (frontend)

- The problem of unresponsive web page is solved using bootstrap
- It is a popular open source CSS framework
- It comes with predefined classes
  - Layouts, buttons, forms, etc
- Uses 12 - column grid system
- Saves time

## MySQL (backend)

- Relational database management system
  - Manage, store and retrieve data
- Works with PHP to create data-driven web pages
- Uses Structured Query language to interact

## PHP (backend)

- PHP - Hypertext Preprocessor is a server-side scripting language
- Used to create interactive web page
  - read/write data, handle forms, etc
- Works with HTML to display content based on
  - logic , user input
- Executed on the server - result sent to the browser



Web Browser → HTML page with PHP code → Request → Server ← Query ← | MySQL
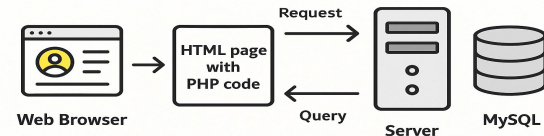
# New Website - Design of Home Page

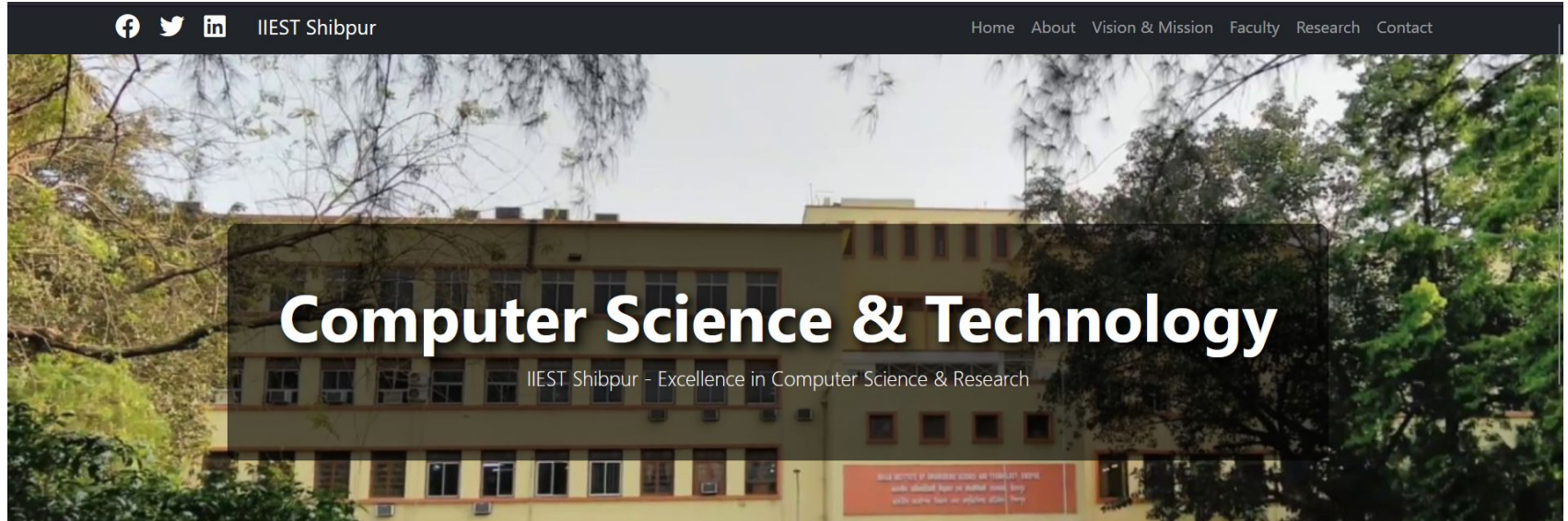Screenshot :-

# Design of Home Page contd..

## ABOUT THE DEPARTMENT

The Department of Computer Science and Technology (CST) was established in 1982. Since its inception, the department has played an important role in developing a vibrant and forward-looking academic environment. Currently, the department offers B.Tech, M.Tech, and PhD programs. The department always maintains state of the art infrastructure and facilities for advanced research and consultancy. The department was accredited by the National Board of Accreditation (NBA) as an 'A' grade department and received ISO 9000 certification in 1999-2000. The department was also honored as the DST-FIST sponsored department in 2004. The department was ranked 10 in a nationwide survey conducted by Silicon India in 2012.

## VISION & MISSION

### Vision

To be recognized globally for excellence in academic programs and innovative, applied and socially relevant research.

### Mission

- To provide the students with a firm foundation of both the theory and practice of Computer Science and Technology through a comprehensive undergraduate and postgraduate curricula.
- To strengthen creativity, nurture innovation, and develop the ability to carry out research and solve real-world problems.

# Design of Home Page contd..

## Some important codes :-

1. **Header & Metadata**

```
        <head>
   <meta charset="UTF-8">
   <meta name="viewport" content="width=device-width, initial-scale=1">
   <title>Department of Computer Science & Technology - IIEST Shibpur</title>
```

**Purpose:** Sets up proper encoding, responsive behavior, and the page title for SEO/browser tabs.

## 2. CSS and Icons (Styling & Fonts)

```
<link rel="stylesheet"
href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/css/bootstr
ap.min.css">
<link rel="stylesheet"
href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/6.4.0/css
/all.min.css">
```

**Purpose**: Adds **Bootstrap** (for responsive layout) and **Font Awesome** (for social media icons).

## 3.Bootstrap JS Bundle

```
<script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/js/b
ootstrap.bundle.min.js"></script>
```

**Purpose**: Enables **interactive components** like collapsible navigation.

# New Website - Design of BKS sir's home page

## Screenshot :-

# Design of BKS sir's home page contd...

## Features and functionalities :-



Every record is fetched from database and is live updated
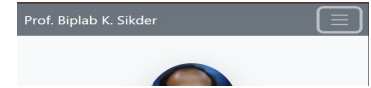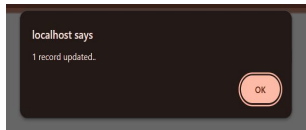
Delete record from database

Update record from database

Add new record to database

Responsive Behaviour of the Webpage

# Design of BKS sir's home page contd...

## Important code and backend Database



The Structure of Database which is being used for the BKS sir's home page

## The structure of PHP files
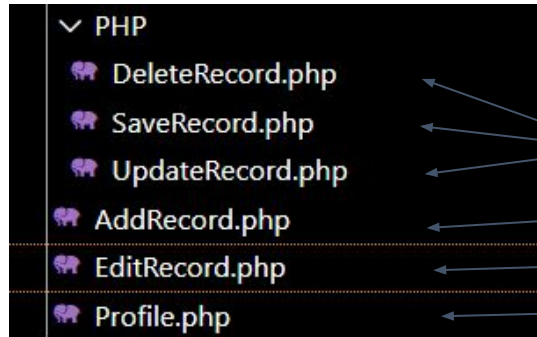


The three php files contains code to connect to database and contains SQL query to perform respective operations in the database

Form to add new record

Form to edit record (database connection used)

Main profile Page



Code to connect to the database
In this case the connection has been used to fetch data with a given ID (Edit Record)



The particular record which the user wants to edit is known using the unique ID
In profile.php whenever the user clicks on edit of a particular record its ID is transferred to EditRecord.php

# Design of BKS sir's home page contd…

## Important code and backend Database

```php
<?php
    $con=mysqli_connect("localhost","Jyotirmoy","12345","iiests");
    $query="delete from research where ID='".$_GET['id']."'";
    $result=mysqli_query($con,$query);

    echo '<script>
    alert("1 record deleted..");
    window.location="../Profile.php";
</script>';
?>
```

The code in deleteRecord.php

```php
<?php
    $con=mysqli_connect("localhost","Jyotirmoy","12345","iiests");
    $ID = $_GET['id'];
    $Name = $_GET['name'];
    $Auth = $_GET['author'];
    $Desc = $_GET['desc'];
    $query="UPDATE `research` SET `Title` = '$Name', `Author` = '$Auth', `Description` = '$Desc' WHERE `research`.`ID` = '$ID';";
    $result=mysqli_query($con,$query);
```

The code in UpdateRecord.php

# New Website - Design of BKS sir's Mentorship page

## User Interface Overview:

**Design of BKS sir's home page contd...**

# Features and functionalities :-

*Dynamic filtering of mentees using year, topic, or name*

**Year wise and topic wise grouping odf students for clean display**

| 1st Year ▾ | Search By Name | Search By Topic | 🔍 Search |

**1st Year Year**

**Topic: Topic Name** ⌄

Topic Description



Student1
Edit  Delete

Student2
Edit  Delete

Student3
Edit  Delete

*Records can be updated or deleted directly from the interface.*

**2nd Year**

**Topic: Web Dev** ⌄

Shahrin Fatima
Edit  Delete

Anamika Singh
Edit  Delete

Jyotirmoy Dutta
Edit  Delete

Diptanil Guha
Edit  Delete

**Topic: Computer Architecture** ⌄

Student1
Edit  Delete

Student2
Edit  Delete

Student3
Edit  Delete

**1st Year**

**Topic: Topic Name** ⌄

Topic Description

# Backend Overview:

Data managed through a MySQL database with PHP handling server-side logic

| # | Name | Type | Collation | Attributes | Null | Default | Comments | Extra | Action | | |
|---|------|------|-----------|------------|------|---------|----------|-------|--------|---|---|
| 1 | id 🔑 | int(100) | | | No | None | | | 🖉 Change | ⊖ Drop | More |
| 2 | Name 🔑 | text | utf8mb4_general_ci | | Yes | NULL | | | 🖉 Change | ⊖ Drop | More |
| 3 | year | varchar(10) | utf8mb4_general_ci | | Yes | NULL | | | 🖉 Change | ⊖ Drop | More |
| 4 | topic | text | utf8mb4_general_ci | | Yes | NULL | | | 🖉 Change | ⊖ Drop | More |
| 5 | Description | text | utf8mb4_general_ci | | Yes | NULL | | | 🖉 Change | ⊖ Drop | More |

**search and filter form** on the frontend of the web portal.

```
<div class="container text-center mt-4">
    <form method="get" action="">
        <div class="row mb-3">
            <div class="col-md-3">
                <select class="form-select border-success" name="year">
                    <option value="">---Academic Year---</option>
                    <option value="1st Year">1st Year</option>
                    <option value="2nd Year">2nd Year</option>
                    <option value="3rd Year">3rd Year</option>
                    <option value="4th Year">4th Year</option>
                </select>
            </div>
            <div class="col-md-3">
                <input type="text" class="form-control border-success" placeholder="Search By Name" name="name">
            </div>
            <div class="col-md-3">
                <input type="text" class="form-control border-success" placeholder="Search By Topic" name="topic">
            </div>
            <div class="col-md-3 text-start">
                <button type="submit" class="btn btn-success">
                    <i class="bi bi-search"> Search</i>
                </button>
            </div>
        </div>
    </form>
</div>
```
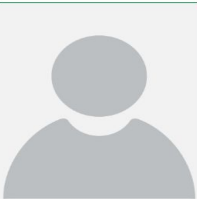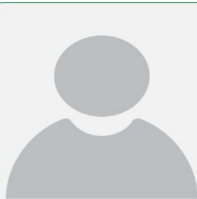
**Data Fetching and Filtering (PHP + MySQL)**

```php
<?php
error_reporting(E_ALL);
ini_set('display_errors', 1);

// Creating DB connection
$connect = mysqli_connect("localhost", "shahrin04", "12345", "mentee");
if (!$connect) {
    die("Connection failed: " . mysqli_connect_error());
}

// Getting filter values
$year = $_GET['year'] ?? '';
$name = $_GET['name'] ?? '';
$topic = $_GET['topic'] ?? '';

// Build query based on filters
$query = "SELECT * FROM students_info WHERE 1=1";
if (!empty($year)) {
    $query .= " AND Year = '" . mysqli_real_escape_string($connect, $year) . "'";
}
if (!empty($name)) {
    $query .= " AND Name LIKE '%" . mysqli_real_escape_string($connect, $name) . "%'";
}
if (!empty($topic)) {
    $query .= " AND Topic LIKE '%" . mysqli_real_escape_string($connect, $topic) . "%'";
}

$result = mysqli_query($connect, $query);
```

# Conclusion

- **Studied Web development Fundamentals:** We gained a decent understanding of the core concepts of Web development including HTML, CSS.

- **Made an initial prototype of CST website :** Initially after studying about the basics of HTML and CSS we made a prototype of CST website from scratch. However it had limited functionality and had large scope of improvements. Hence we studied about Bootstrap, PHP, MySQL and improved our website.

- **Made a new website with four web pages :**
  - The Home Page :- Responsive in nature
  - BKS Sir's Home Page :- Responsive, has Database Support, Can edit, add, delete records.
  - Mini Project Student Directory :- Responsive, has Database Support, Can edit, add, delete records

- **Areas for Improvement:**
  - Combine the four webpages and deploy the website
  - Further expand the Scope of the Website
  - Add data type checks and authentication when adding and editing data for more security