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Development of an Online Directory of CSU Ph. D. Awarded Thesis Portal for Central Sanskrit University Scholars Using Google Apps Script

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ABSTRACT

The Online Directory of CSU Ph. D. Awarded Thesis Portal is developed to address the lack of a centralized mechanism for accessing thesis-related information at Central Sanskrit University (CSU). Prior to this initiative, research scholars faced many challenges in locating thesis topics, supervisors, subjects, year and the availability of physical copies due to the absence of a searchable database. Existing resources, such as non-searchable PDF lists of theses awarded from 2018 onward, were inadequate, leaving earlier data inaccessible to the research scholars.

This research highpoints the implementation of a dynamic web-based search portal designed to provide real-time access to a comprehensive thesis database. The portal integrates HTML and SQL-based technologies to facilitate efficient retrieval of information such as thesis titles, authors, supervisors, and campus locations of physical copies. Key features include user-friendly search functionality, advanced filtering options, and automated database updates to ensure accuracy and accessibility.

The results demonstrate that the portal significantly enhances usability, reduces inefficiencies, and supports scholars in identifying research gaps and opportunities for further study. By bridging the accessibility gap and modernizing thesis data management across CSU's 12 campuses, the portal sets a new standard for resource availability in academic institutions. This initiative underscores the importance of leveraging digital tools to advance research and improve academic support systems.

Introduction:

Since 1987, Central Sanskrit University (CSU), with 12 campuses and headquarters, has awarded over 3,300 theses, serving as a central hub for Sanskrit study and research. However, the growing number of theses presented a significant challenge for new scholars who struggled to find information about the topics covered in past theses, their corresponding supervisors, and the availability of physical copies across campuses. Traditionally, the bibliographic details of these theses were curated in Excel format, but this system lacked real-time searching capabilities. The need for a more efficient, user-friendly method to access and retrieve thesis data became apparent. Digital repositories play a crucial role in improving

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the accessibility of academic resources, and creating a search portal was seen as a necessary step to enhance research capabilities at CSU.

Problem Statement

(i) Absence of a centralized search mechanism: There was no dedicated portal or system for accessing thesis-related information at Central Sanskrit University (CSU).

(ii) Challenges for scholars: Scholars faced difficulty in locating specific thesis topics, supervisors, or the availability of physical copies.

(iii) Limited resource availability: The only available resource was a PDF of the exam viva for PhD-awarded theses, which only included data from 2018 onwards and was not searchable.

(iv) Lack of access to earlier theses: Theses awarded prior to 2018 were completely inaccessible due to the unavailability of a searchable, centralized database.

(v) Inability to explore existing research: The absence of an organized, real-time database hindered new scholars from exploring the existing body of work and identifying research gaps.

(vi) Inefficiencies in identifying theses: The lack of a searchable system made it difficult to identify the number of theses awarded under a particular supervisor or determine the availability of physical copies across the university's campuses and headquarters library.

(vii) Problems with the existing Excel-based system: The Excel files used for storing thesis data lacked real-time data fetching and searching capabilities, leading to inefficiencies in accessing updated and relevant information.

(viii) Hindrance to research progress: The absence of a centralized, searchable database created barriers to effectively exploring and building upon existing research, limiting the advancement of scholarly work.

Literature Review

Tenya, Maina, & Awuor, (2023) Digital resource platforms are crucial for enhancing university education and research by facilitating efficient information access, sharing, and dissemination. However, their usability remains a significant concern due to design complexities and user expectations mismatch, despite their potential to support academic staff and researchers. Front-end frameworks play a pivotal role in web application development by providing robust libraries and tools for building efficient and dynamic user interfaces. According to **Vyas (2022)**, the choice of an appropriate framework is a critical decision in the development process, particularly for Single Page Applications (SPAs) and Multi Page Applications (MPAs). Modern JavaScript frameworks such as Vue.js, React, and Angular offer developers' versatile solutions to address the complexities of web development. **Kous, Pušnik, and Polančič (2018)** conducted a study on the usability of library websites across different user groups, emphasizing the need for a well-designed interface that caters to various user demographics, including pupils, students, the working population, seniors, and researchers. The authors identified usability as a key factor in library website design, defined by three main components: effectiveness, efficiency, and satisfaction. The study aimed to understand how these different groups interact with the library website and how their responses vary in terms of usability. The study by **Airinei and Homocianu (2017)** demonstrates the transformative potential of cloud computing in developing efficient, scalable web applications. By leveraging tools like Google Apps Script, organizations can create tailored solutions that address complex processing needs while promoting flexibility and user-centric design. These insights are particularly applicable to research on digital platforms, such as centralized portals for managing academic resources.

Objectives of the Study

The primary objectives of this research are as follows:

1. To develop a web-based Online Directory of CSU Ph. D. Awarded Thesis Portal using Google Apps Script to provide CSU scholars with a centralized, user-friendly platform for searching academic theses across all campuses and the headquarters library. This portal enables real-time data fetching from Google Sheets, ensuring that information is always up to date.

2. To design and implement a search mechanism that allows users to search for thesis details based on var-

ious criteria, such as thesis topics, supervisors, and the availability of physical copies at different campus libraries. The search tool allows for quick and accurate retrieval of thesis data, overcoming the limitations of the previous PDF-based system.

3. To digitize and organize thesis bibliographic data that was previously stored in Excel sheets, ensuring that all available data, including older theses, is integrated and searchable in the new portal. This objective aims to create a comprehensive and accessible repository for all awarded theses, dating back to 1987.

4. To enhance the research experience for CSU scholars by providing a reliable and efficient tool for exploring the vast collection of thesis topics, helping new researchers identify areas of existing research and potential gaps.

5. To ensure real-time updates and seamless integration between the portal and Google Sheets, allowing for easy addition of new thesis data and automatic synchronization of information across the system. This will eliminate the need for manual updates and ensure data accuracy.

6. To provide an efficient and scalable solution for managing thesis data at CSU, enabling future expansion and easy addition of new data points, such as links to digital copies or additional metadata.

Scope of the study

The scope of the study for the Online Directory of CSU Ph. D. Awarded Thesis Portal at Central Sanskrit University (CSU) includes:

- Geographical Scope: Covers all 12 campuses of CSU and the headquarters library.
- Technological Scope: Focuses on developing a centralized, searchable database for thesis information, improving access through technology.
- Content Scope: Includes data on thesis topics, supervisors, and availability of physical copies, primarily for theses from 2018 onward.
- Data Scope: Transition from an Excel-based system to a dynamic, real-time database for better data access.
- Target User Scope: Aims to serve scholars, researchers, faculty, and supervisors across CSU.
- Operational Scope: Encompasses development, implementation, and maintenance of the portal, along with user training.
- Limitations: Initially focuses on theses awarded post-2018, with future integration of data from earlier years.

Research Methodology

The methodology for developing the Online Directory of CSU Ph. D. Awarded Thesis Portal for Central Sanskrit University (CSU) involved several systematic steps, beginning with data collection and analysis, followed by the design and development of the portal. The process focused on ensuring the accuracy and efficiency of thesis data retrieval while addressing the challenges faced by CSU scholars.

Data Collection

The first step in the methodology was to gather all available metadata related to the awarded theses from CSU's 12 campuses and the headquarters (HQ) library. The data collected included the following:

i. Thesis Number
ii. Name of the Scholar
iii. Title of the Thesis
iv. Supervisor's Name
v. Subject/Discipline
vi. Library Code (where the thesis is located)
vii. Campus Name (where the thesis was awarded)
viii. Year of Award
ix. Availability of Physical Copies (which library holds the thesis)

This data was retrieved from various sources, including campus libraries and the HQ library. The goal was to create a centralized and comprehensive dataset that would allow easy

access to the metadata of all CSU-awarded theses.

Data Analysis and Cleaning

Once the data was collected, a comprehensive analysis and cleaning process was performed to ensure its accuracy, consistency, and usability for the search portal.

i) Removing Duplicates: The collected data was analyzed for duplicates. Theses that had similar or identical metadata (e.g., multiple entries for the same thesis in different campuses) were identified and removed to ensure that each thesis was represented only once.

ii) Reverifying Titles: To eliminate ambiguity and ensure accuracy, the titles of the theses were carefully reviewed. Any discrepancies or inconsistencies in the naming conventions were corrected. This process ensured that the thesis titles were consistent and clear, which is vital for accurate search results in the portal.

iii) Data Structuring: The data was organized into a structured format, with each thesis entry having a unique identifier. This involved creating a detailed, structured Excel sheet containing the thesis metadata for easy integration into the portal.

Data Filtering and Verification

The next step was to further filter and verify the data:

i) Filtering for Ambiguities: Titles and other fields were checked for ambiguous or unclear entries. In cases where titles or other metadata had multiple interpretations or errors, these were corrected or clarified.

ii) Cross-Verification of Information: The filtered data was cross-verified with campus libraries to ensure that the thesis metadata, including the availability of physical copies and campus assignments, were accurate. This step ensured that users would be able to rely on the portal for correct and up-to-date information.

Data Consolidation

After the data cleaning and filtering process, all the verified metadata was consolidated into a central database. Google Sheets was used to store the finalized data in a user-friendly format. This centralized sheet allowed for easy access and real-time updates, which would be automatically fetched by the Google Apps Script-based portal.

Portal Development Using Google Apps Script

Backend Implementation: Google Sheets Integration via Google Apps Script

The backend of the portal relies on a Google Spreadsheet, which stores all the thesis records. Google Apps Script is a server-side scripting language used to retrieve data from Google Sheets, converting it into a JSON format for easy manipulation and front-end display. This enables easy access to the data on the front end, enhancing the user experience and efficiency in data management.

Explanation:

i) The getThesesData() function accesses the active Google Spreadsheet and fetches the data from the "Thesis Data" sheet.

ii) It processes the data into a JSON array where each object contains key-value pairs corresponding to the thesis attributes such as library code, research scholar, title, etc.

iii) This data is returned to the front end for display.

Frontend Implementation: HTML, CSS, and JavaScript for Dynamic Data Display

The portal's front end features a user-friendly interface using HTML, CSS, and JavaScript, displaying structured thesis data and allowing interactive search and filtering of records.

HTML Structure

The HTML structure includes a table to display thesis information and an input field to filter the records dynamically.

i) The HTML layout consists of a table where thesis records are displayed, with columns for attributes such as Library Code, Research Scholar, Title, Supervisor, Keywords, Year, Campus, and URL.

ii) The input field with the ID search enables users to filter the table contents as they type.

iii) The table body (<tbody>) is initially empty and will be populated with thesis data fetched from the backend.

CSS for Styling

The portal is styled using CSS to ensure a clean and responsive design.

i) The CSS ensures that the interface is clean, with a responsive layout and consistent styling.

ii) Table cells and the search input field are styled for better user interaction and readability.

JavaScript for Data Handling

JavaScript is used to fetch the thesis data from the backend and populate the table dynamically. It also handles the search functionality.

Explanation:

- The fetchThesesData() function invokes the back-end Google Apps Script to retrieve thesis data and dynamically populates the HTML table with the data.
- The filterTable() function enables the search functionality, allowing users to filter the records in real-time as they type in the search bar.
- The data is loaded when the page initially loads, ensuring that users can interact with the data immediately.

Testing and Debugging

After developing the portal, thorough testing was conducted to ensure its functionality and reliability:

i) Functional Testing: The search features were tested to ensure that queries returned accurate and relevant results based on user input.

ii) Debugging: Any issues identified during the testing phase, such as errors in the search mechanism or inconsistencies in the displayed data, were resolved through debugging the Google Apps Script code and re-verifying the data.

Deployment

After successful testing, the portal was deployed for use by all CSU scholars. The web application was shared across the university, allowing users to search and access thesis data from any location.

Future Enhancements

Several future enhancements are planned for the portal, including:

i) Advanced Search Options: Adding additional filters such as research area, keywords, or language of thesis.

ii) Digital Thesis Access: Linking directly to digital versions of theses when available, or to institutional repositories where full-text versions can be accessed.

iii) Interactive Features: Including features like downloading bibliographic details or sending query results via email.

Through this structured methodology, the Online Directory of CSU Ph. D. Awarded Thesis Portal has been successfully developed, providing CSU scholars with an efficient and user-friendly tool to search, retrieve, and explore the metadata of awarded theses.

Challenges and Solutions

Handling Large Datasets: One of the key challenges was managing and efficiently displaying a large amount of data from the Google Sheets document. Since the dataset could potentially be extensive, loading all the data at once could lead to performance issues.
Solution: The data was retrieved in chunks, utilizing pagination. The searchThesesAdvanced function allows users to filter data based on multiple parameters, and pagination ensures that only a subset of the data is loaded on the page at any given time. This significantly reduced the load time and improved the overall performance of the portal.
Improving Script Efficiency: The script's performance was initially slowed down by iterating over large datasets for every user input, particularly when applying filters.

Solution: To improve efficiency, the filtering logic was optimized by adding conditions that allowed for quicker comparisons between the filter inputs and the dataset. Additionally, caching techniques were used where applicable to prevent repetitive fetching and processing of data.

Ensuring Cross-Browser Compatibility: Given that users might access the portal from different browsers, ensuring compatibility across all platforms was crucial for consistent user experience.
Solution: Extensive testing was conducted on multiple browsers (e.g., Chrome, Firefox, Safari) to ensure that the portal displayed and functioned correctly. CSS media queries were used to adapt the layout for different screen sizes, ensuring the portal was mobile-friendly.

Responsive Design: Making the portal responsive to different screen sizes posed a challenge in terms of maintaining usability across desktops, tablets, and mobile devices.
Solution: CSS media queries were used to adjust element size and layout based on screen size, ensuring the interface remained accessible and easy to navigate on any device, making the portal adaptable to both large and small screens.

Results and Discussion

The Online Directory of CSU Ph. D. Awarded Thesis Portal has significantly enhanced access to thesis information across 12 campuses and the university's headquarters library, according to key results and discussions:

Results

i) Centralized Database: A new platform has been implemented to provide comprehensive information about thesis topics, supervisors, and physical copies of theses across all campuses.

ii) Improved Searchability thesis bibliographic details: Users can now search for theses by topic, supervisor, and campus location, making it easier to find relevant research.

iii) Real-Time Data Access: The portal offers real-time access to updated thesis data, improving on the previous Excel-based system which lacked this functionality.

iv) Increased Efficiency: Researchers can quickly find thesis information, reducing time spent searching and improving overall research efficiency.

v) User-Friendly Interface: The portal's simple design allows easy navigation, making it accessible to scholars, faculty, and library staff across campuses.

Discussion

i) Addressing Past Challenges: The portal solves the problems of limited, outdated, and non-searchable thesis data from before 2018. It provides a centralized, searchable, and real-time database for comprehensive thesis information.

ii) Future Enhancements: Older thesis data needs to be digitized and added to the portal. The system's scalability will be addressed as CSU grows, ensuring it can handle more data and complex searches.

iii) Impact on Research: The portal fosters collaboration by enabling easy access to thesis data, helping researchers identify gaps in existing research and potential areas for future work.

iv) Positive User Feedback: Early feedback has been positive, with users praising the portal for its ease of use and improved accessibility to thesis information.

Conclusion

The Online Directory of CSU Ph. D. Awarded Thesis Portal at Central Sanskrit University (CSU) has successfully addressed the long-standing challenges of accessing thesis-related information across its multiple campuses. The portal, which centralizes thesis data and offers real-time search functionality, has significantly improved research resource efficiency and accessibility. It provides a comprehensive database for scholars to locate relevant theses, identify research gaps, and foster academic collaboration, making it an invaluable tool for students, faculty, and staff. Future efforts will focus on digitizing older thesis data and ensuring the portal can scale as CSU continues to expand. Overall, the Online Directory of CSU Ph. D. Awarded Thesis Portal has proven to be a crucial step toward advancing research and knowledge-sharing within the university.

References:

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plie

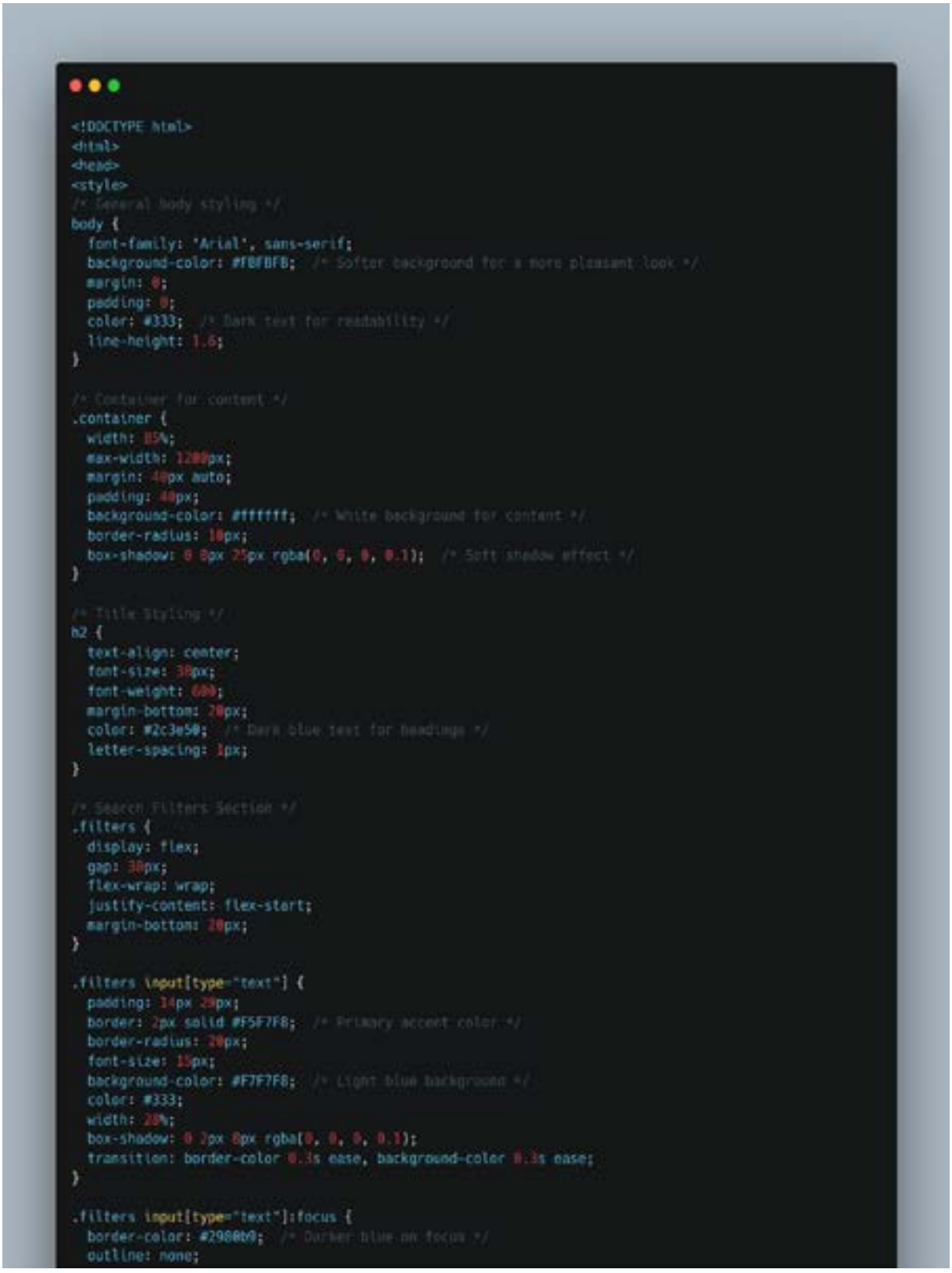
```
function doGet(e) {
  var sheet = SpreadsheetApp.openById("Your Google Sheet ID").getSheetByName("Sheet Number");
  var data = sheet.getDataRange().getValues();
  // Pass data to the HTML page
  return HtmlService.createHtmlOutputFromFile('index')
      .setSandboxMode(HtmlService.SandboxMode.IFRAME)
      .append('<script>var sheetData = ' + JSON.stringify(data) + ';</script>');
}
function searchThesesAdvanced(filters, page, pageSize) {
  var sheet = SpreadsheetApp.openById("19PcVxuZEaTQDEdmUVCf1tMfC1r_DqYzsU-
h7uHL1bHA").getSheetByName("Sheet1");
  var data = sheet.getDataRange().getValues();
  var results = [];
  // Filter rows based on the criteria
  for (var i = 1; i < data.length; i++) {
    var row = data[i];
    var match = true;
    if (filters.libraryCode && !row[6].toString().includes(filters.libraryCode)) match = false; //
Library Code (Column 6)
    if (filters.author && !row[1].toString().toLowerCase().includes(filters.author.toLowerCase()))
match = false; // Author (Column 1)
    if (filters.title && !row[2].toString().toLowerCase().includes(filters.title.toLowerCase())) match
= false; // Title (Column 2)
    if (filters.supervisor &&
!row[3].toString().toLowerCase().includes(filters.supervisor.toLowerCase())) match = false; //
Supervisor (Column 3)
    if (filters.year && !row[4].toString().includes(filters.year)) match = false; // Year (Column 4)
    if (filters.campus && !row[8].toString().toLowerCase().includes(filters.campus.toLowerCase()))
match = false; // Campus (Column 8)
    if (match) {
      results.push(row);
    }
  }

  // Implement pagination
  page = page || 1;
  pageSize = pageSize || 50;
  var startIndex = (page - 1) * pageSize;
```

Appendix A: Code Snippet

JavaScript Code

```
function doGet(e) {
  var sheet = SpreadsheetApp.openById("Your Google Sheet ID").getSheetByName("Sheet Number");
  var data = sheet.getDataRange().getValues();
  // Pass data to the HTML page
  return HtmlService.createHtmlOutputFromFile('index')
      .setSandboxMode(HtmlService.SandboxMode.IFRAME)
      .append('<script>var sheetData = ' + JSON.stringify(data) + ';</script>');
}
function searchThesesAdvanced(filters, page, pageSize) {
  var sheet = SpreadsheetApp.openById("19PcVxuZEaTQ0EdmUVCf1tMfC1r_DqYzsU-
h7wRL1dBA").getSheetByName('Sheet1');
  var data = sheet.getDataRange().getValues();
  var results = [];
  // Filter rows based on the criteria
  for (var i = 1; i < data.length; i++) {
    var row = data[i];
    var match = true;
    if (filters.libraryCode && !row[6].toString().includes(filters.libraryCode)) match = false; //
Library Code (Column G)
    if (filters.author && !row[1].toString().toLowerCase().includes(filters.author.toLowerCase()))
match = false; // Author (Column B)
    if (filters.title && !row[2].toString().toLowerCase().includes(filters.title.toLowerCase())) match
= false; // Title (Column C)
    if (filters.supervisor &&
!row[3].toString().toLowerCase().includes(filters.supervisor.toLowerCase())) match = false; //
Supervisor (Column D)
    if (filters.year && !row[4].toString().includes(filters.year)) match = false; // Year (Column E)
    if (filters.campus && !row[8].toString().toLowerCase().includes(filters.campus.toLowerCase()))
match = false; // Campus (Column H)
    if (match) {
      results.push(row);
    }
  }

  // Implement pagination
  page = page || 1;
  pageSize = pageSize || 50;
  var startIndex = (page - 1) * pageSize;
  var endIndex = startIndex + pageSize;

  return {
    totalResults: results.length,
    pageResults: results.slice(startIndex, endIndex),
    currentPage: page,
    totalPages: Math.ceil(results.length / pageSize)
  };
}
```

Html Code



```
<!DOCTYPE html>
<html>
<head>
<style>
/* General body styling */
body {
  font-family: 'Arial', sans-serif;
  background-color: #F8F8F8;  /* Softer background for a more pleasant look */
  margin: 0;
  padding: 0;
  color: #333;  /* Dark text for readability */
  line-height: 1.6;
}

/* Container for content */
.container {
  width: 85%;
  max-width: 1200px;
  margin: 40px auto;
  padding: 40px;
  background-color: #ffffff;  /* White background for content */
  border-radius: 10px;
  box-shadow: 0 0px 25px rgba(0, 0, 0, 0.1);  /* Soft shadow effect */
}

/* Title Styling */
h2 {
  text-align: center;
  font-size: 30px;
  font-weight: 600;
  margin-bottom: 20px;
  color: #2c3e50;  /* Dark blue text for headings */
  letter-spacing: 1px;
}

/* Search Filters Section */
.filters {
  display: flex;
  gap: 30px;
  flex-wrap: wrap;
  justify-content: flex-start;
  margin-bottom: 20px;
}

.filters input[type="text"] {
  padding: 14px 20px;
  border: 2px solid #F5F7F8;  /* Primary accent color */
  border-radius: 20px;
  font-size: 15px;
  background-color: #F7F7F8;  /* Light blue background */
  color: #333;
  width: 28%;
  box-shadow: 0 2px 8px rgba(0, 0, 0, 0.1);
  transition: border-color 0.3s ease, background-color 0.3s ease;
}

.filters input[type="text"]:focus {
  border-color: #2980b9;  /* Darker blue on focus */
  outline: none;
```

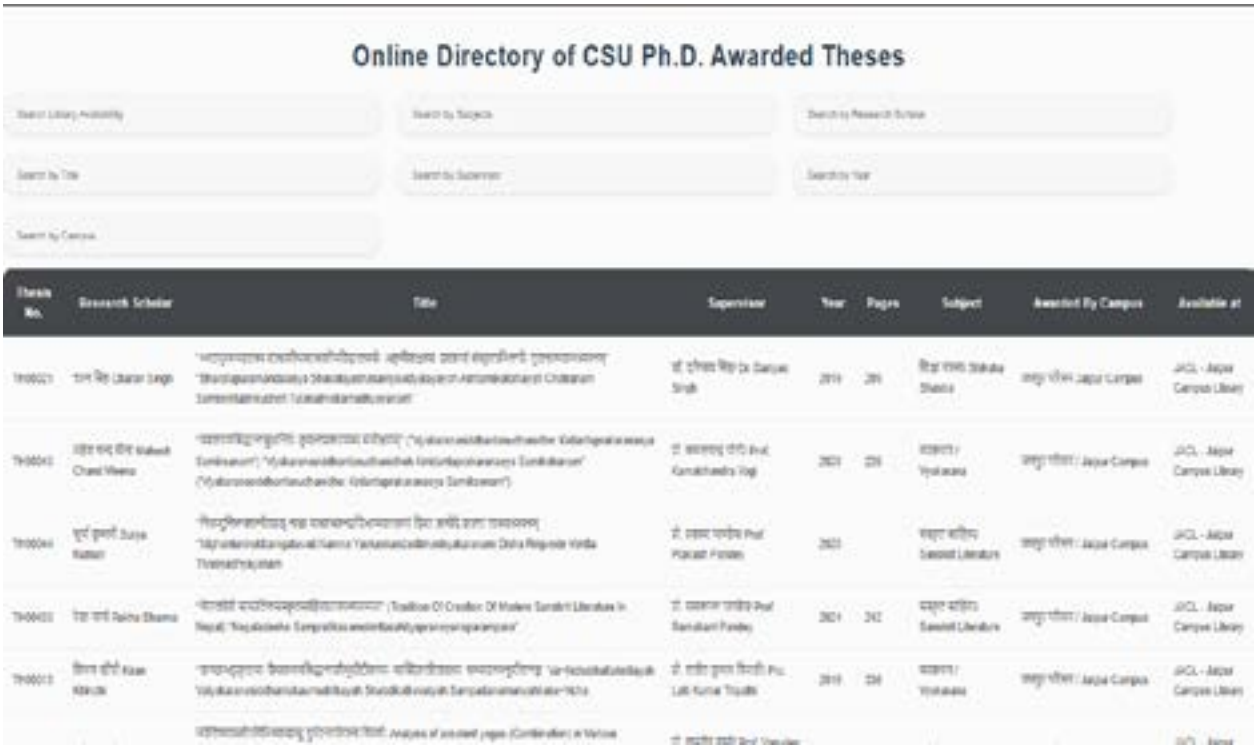
```
  background-color: #ffffff;  /* White background on focus */
}

/* Table Styling */
table {
  width: 100%;
  border-collapse: collapse;
  margin-top: 20px;
  border-radius: 12px;
  overflow: hidden;
}

th {
  padding: 18px;
  background-color: #454748;  /* Primary accent color for headers */
  color: #ffffff;
  text-align: center;
  font-size: 16px;
  font-weight: 600;
  letter-spacing: 1px;
}

td {
  padding: 14px;
  border-bottom: 1px solid #ecf0f1;  /* Light grey border for separation */
  text-align: left;
  font-size: 16px;
  color: #555;  /* Dark grey text */
}

tr:hover {
  background-color: #ecf0f1;  /* Light grey hover effect */
}

/* Pagination Controls */
.pagination {
  text-align: center;
  margin: 40px 0;
}

.pagination button {
  padding: 12px 20px;
  margin: 4px 18px;
  border: none;
  border-radius: 30px;
  background-color: #604CC3;  /* Primary accent color for buttons */
  color: white;
  cursor: pointer;
  font-size: 16px;
  transition: background-color 0.3s ease;
}

.pagination button:hover {
  background-color: #2980b9;  /* Darker blue on hover */
}

.pagination button.disabled {
  background-color: #bdc3c7;  /* Disabled button with grey background */
  cursor: not-allowed;
}

/* Responsive Design */
@media (max-width: 768px) {
  .filters input[type="text"] {
    width: 48%;  /* Adjust filter input width on smaller screens */
```

```
  }
}

@media (max-width: 480px) {
  .filters input[type="text"] {
    width: 100%;  /* Full width for smaller screens */
  }

  .container {
    width: 90%;  /* Make container full width on mobile */
    padding: 20px;
  }

  h2 {
    font-size: 20px;  /* Adjust title size on mobile */
  }
}
</style>

<script>
  const rowsPerPage = 50;
  let currentPage = 1;

  function displayData(data) {
    const tableBody = document.getElementById('tableBody');
    tableBody.innerHTML = ""; // Clear existing data

    const start = (currentPage - 1) * rowsPerPage;
    const end = start + rowsPerPage;

    data.slice(start, end).forEach(row => {
      const tr = document.createElement('tr');
      row.forEach(cell => {
        const td = document.createElement('td');
        td.textContent = cell;
        tr.appendChild(td);
      });
      tableBody.appendChild(tr);
    });

    updatePagination(data.length);
  }

  function updatePagination(totalRows) {
    const pagination = document.getElementById('pagination');
    pagination.innerHTML = ""; // Clear existing buttons

    const totalPages = Math.ceil(totalRows / rowsPerPage);

    for (let i = 1; i <= totalPages; i++) {
      const button = document.createElement('button');
      button.textContent = i;
      button.className = i === currentPage ? "active" : "";
      button.onclick = () => {
        currentPage = i;
        filterData(); // Reapply filter for current page
      };
      pagination.appendChild(button);
    }
  }
```

```
    const supervisor = document.getElementById('supervisor').value.toLowerCase();
    const year = document.getElementById('year').value.toLowerCase();
    const campus = document.getElementById('campus').value.toLowerCase();

    const filteredData = sheetData.filter(row => {
      return (
        row[0].toString().toLowerCase().includes(libraryCode) &&
        row[2].toString().toLowerCase().includes(author) &&
        row[3].toString().toLowerCase().includes(title) &&
        row[4].toString().toLowerCase().includes(supervisor) &&
        row[5].toString().toLowerCase().includes(year) &&
        row[7].toString().toLowerCase().includes(campus)
      );
    });

    displayData(filteredData);
  }

  window.onload = function () {
    displayData(sheetData); // Display full data initially
  };
</script>
</head>
<body>
  <h2>Online Directory of CSU Ph.D. Awarded Thesis</h2>

  <div class="filters">
    <input type="text" id="libraryCode" placeholder="Search by Library Code" oninput="filterData()">
    <input type="text" id="author" placeholder="Search by Research Scholar" oninput="filterData()">
    <input type="text" id="title" placeholder="Search by Title" oninput="filterData()">
    <input type="text" id="supervisor" placeholder="Search by Supervisor" oninput="filterData()">
    <input type="text" id="year" placeholder="Search by Year" oninput="filterData()">
    <input type="text" id="campus" placeholder="Search by Campus" oninput="filterData()">
  </div>

  <table>
    <thead>
      <tr>
        <th>Library Code</th>
        <th>Thesis No.</th>
        <th>Research Scholar</th>
        <th>Title</th>
        <th>Supervisor</th>
        <th>Year</th>
        <th>Pages</th>
        <th>Campus Name</th>
        <th>Subject</th>
        <th>Section</th>
      </tr>
    </thead>
    <tbody id="tableBody">
      <!-- Data rows will be inserted here -->
    </tbody>
  </table>

  <div class="pagination" id="pagination">
    <!-- Pagination buttons will be inserted here -->
  </div>
</body>
</html>
```

Appendix B

Online Directory of CSU Ph.D. Awarded Thesis



Appendix C

Link of the Online Directory of CSU Ph. D. Awarded Thesis Portal

Link: https://script.google.com/a/macros/csu.co.in/s/AKfycbxs-Akvo0lw1x8Os7Mn8v5eu6Ya7iNH-LHYb-VwQTP8/dev