**SIMATS** **ENGINEERING**

Saveetha Institute of Medical and Technical Sciences

Chennai- 602105

**Student Name**: C.VENKATA SAINATH REDDY **Reg. No.:**192373040

**Course Code**: CSA1122 **Slot:** D

**Course Name**: OBJECT ORIENTED ANALYSIS AND DESIGN FOR SYSTEM SIMULATION

**Course Faculty:** S SARANNIYA & M.S.SARAVANAN

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| **Project Title:** LIBRARY CATALOG SYSTEM TO HANDELS RESEARCH MATERIALS AND ADVANCED SEARCHES FOR RESEARCHERS. |
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| **Module Photographs**: (3 photographs –Module Photo, Individual student contribution module work in the project and presentation image) |
| **Overall Output Module-2 Handels Research, Searches for Researchers**  **C:\Users\c.chandrakanthreddy\AppData\Local\Packages\5319275A.WhatsAppDesktop_cv1g1gvanyjgm\TempState\13D83D3841AE1B9276AF3439CED7120D\WhatsApp Image 2025-10-10 at 10.15.37_7a8a8eba.jpg** |
| **Project Description**: (here you write what you did in this project (contribution) including Model Description |
| This module focuses on designing the **Research Material and Advanced Catalog Management** part of the Library Management System using Object-Oriented Programming (OOP) principles — **Encapsulation** and **Inheritance** — to create a scalable, organized, and efficient digital catalog for researchers.  The **Research Catalog Module** allows researchers to search, categorize, and access academic materials such as research papers, journals, and publications. The design begins with a **User** base class that defines common attributes and operations for all users, and a **ResearcherUser** subclass that extends these features with advanced search and filtering functionalities.   * **Inheritance** enables the ResearcherUser class to reuse and extend properties and methods of the User class, maintaining consistency while supporting specialized researcher operations. * **Encapsulation** protects sensitive data such as researcher details, publication records, and access history within private attributes, allowing secure access only through defined methods.   To visualize these relationships and workflows, three main diagrams are developed:   * **Class Diagram:** Illustrates structural relationships between User, ResearcherUser, Catalog, Book, and Author classes, showing inheritance and encapsulation. * **Activity Diagram:** Depicts the workflow of how researchers log in, search, and access academic resources efficiently. |

**Student Signature Guide Signature**