

# **JUIT SELF-APPRAISAL DIGITALIZATION KIT**

A major project report submitted in partial fulfillment of the  
requirement for the award of degree of

**Bachelor of Technology**

in

**Computer Science & Engineering / Information Technology**

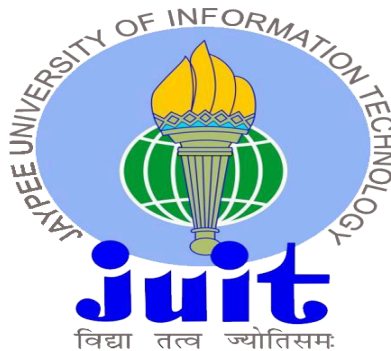
*Submitted by*

**VAIBHAV SHARMA (201334)**

**ADITYA PANDEY (201397)**

*Under the guidance & supervision of*

**Dr. Anita**



**Department of Computer Science & Engineering and**

**Information Technology**

**Jaypee University of Information Technology,**

**Waknaghat, Solan - 173234 (India)**

# CERTIFICATE

This is to certify that the work which is being presented in the project report titled “**JUIT SDK**” in partial fulfillment of the requirements for the award of the degree of B.Tech in Computer Science And Engineering and submitted to the Department of Computer Science And Engineering, Jaypee University of Information Technology, Waknaghat is an authentic record of work carried out by Aditya Pandey & Vaibhav Sharma with Roll Number 201397 & 201334 respectively during the period from August 2023 to May 2024 under the supervision **Dr. Anita** (Assistant Professor).

Student Name: Aditya Pandey

Roll No.: 201397

Student Name: Vaibhav Sharma

Roll No.: 201334

The above statement made is correct to the best of my knowledge.

Supervisor Name: Dr. Anita

Designation: Assistant Professor (SG)

Department: Computer Science and Engineering and Information Technology

# DECLARATION

I hereby declare that the work presented in this report entitled '**JUIT Self-Appraisal Digitization Kit**' in partial fulfillment of the requirements for the award of the degree of **Bachelor of Technology in Computer Science & Engineering / Information Technology** submitted in the Department of Computer Science & Engineering and Information Technology, Jaypee University of Information Technology, Wagnaghat is an authentic record of my own work carried out over a period from August 2023 to May 2024 under the supervision of **Dr. Anita** (Assistant Professor (SG), Department of Computer Science & Engineering and Information Technology).

The matter embodied in the report has not been submitted for the award of any other degree or diploma.

Student Name: Aditya Pandey  
Roll No.: 201397

Student Name: Vaibhav Sharma  
Roll No.: 201334

This is to certify that the above statement made by the candidate is true to the best of my knowledge.

Supervisor Name: Dr. Anita  
Designation: Assistant Professor (SG)  
Department: CSE & IT  
Dated: 15-05-2024

# ACKNOWLEDGEMENT

Firstly, we express our heartiest thanks and gratefulness to almighty God for His divine blessing makes it possible for us to complete the project work successfully.

We are really grateful and wish my profound indebtedness to Supervisor **Dr. Anita, Assistant Professor**, Department of CSE Jaypee University of Information Technology, Wakhnaghat. Deep Knowledge & keen interest of my supervisor to carry out this project. Her endless patience, scholarly guidance, continual encouragement, constant and energetic supervision, constructive criticism, valuable advice, reading many inferior drafts and correcting them at all stages have made it possible to complete this project.

We would like to express our heartiest gratitude to **Dr. Anita**, Associate Professor, Department of CSE, for his kind help to finish this project.

We would also generously welcome each one of those individuals who have helped us straightforwardly or in a roundabout way in making this project a win. In this unique situation, we might want to thank the various staff individuals, both educating and non-instructing, which have developed their convenient help and facilitated our undertaking.

Finally, we must acknowledge with due respect the constant support of our parents.

Aditya Pandey, 201397

Vaibhav Sharma, 201334

# TABLE OF CONTENTS

<b>CERTIFICATE.....</b>	<b>(i)</b>
<b>ACKNOWLEDGEMENT.....</b>	<b>(ii)</b>
<b>TABLE OF CONTENTS.....</b>	<b>(iii)</b>
<b>LIST OF FIGURES.....</b>	<b>(v)</b>
<b>ABSTRACT.....</b>	<b>(vi)</b>
<b>CHAPTER 1.....</b>	<b>1</b>
<b>INTRODUCTION.....</b>	
1.1 Introduction.....	1
1.2 Problem Statement.....	3
1.3 Objectives.....	4
1.4 Significance And Motivate Of The Project Work.....	7
1.5 Organization Of Project Report.....	8
<b>CHAPTER 2.....</b>	<b>9</b>
<b>LITERATURE SURVEY.....</b>	
2.1 Overview of Relevant Literature.....	9
2.2 Key Gaps in the Literature.....	18
<b>CHAPTER 3.....</b>	<b>23</b>
<b>SYSTEM DEVELOPMENT.....</b>	
3.1 Analysis.....	23
3.2 Project Design and Architecture.....	31
3.3 Data Warehousing.....	38
3.4 Implementation.....	39
3.5 Key Challenges.....	44

<b>CHAPTER 4.....</b>	<b>46</b>
<b>TESTING.....</b>	
4.1 Testing Strategy.....	46
<b>CHAPTER 5.....</b>	<b>48</b>
<b>RESULTS AND EVALUATION.....</b>	
5.1 Results.....	48
<b>CHAPTER 6.....</b>	<b>52</b>
<b>CONCLUSIONS AND FUTURE SCOPE.....</b>	
6.1 Conclusion.....	52
<b>REFERENCES.....</b>	

# LIST OF TABLES

<b>S.no</b>	<b>Title</b>	<b>Page No.</b>
1.	<i>Review of Big Data Security</i>	9
2.	<i>Scalability of cloud infra</i>	10
3.	<i>Django Web Framework Review</i>	11
4.	<i>Overview of Digitization in Education Sector</i>	12
5.	<i>Overview of appraisals systems</i>	14
6.	<i>Data Warehouses Techniques</i>	15
7.	<i>CSRF Review Security</i>	16

## LIST OF FIGURES

<b>S.no</b>	<b>Name of Figure</b>	<b>Page No.</b>
Fig 1.1.1	Page 1 of Existing Self Appraisal Form	2
Fig 3.1.2	Simple Fields are directly included in the Form Model, Because of less complexity.	25
Fig 3.1.2.2	Complex Fields have there own table	26
Fig 3.1.2.3	Simple and Complex Fields in JUIT-SDK (FRONTEND)	26
Fig 3.1.2.4	HIERARCHY	27
Fig 3.1.2.5	JUIT-LRC Website Screenshot	30
Fig 3.1.2.6	JUIT-SDK Add Research Project Screenshot	30
Fig 3.2.1.1	Data Flow Diagram	32
Fig 3.2.1.2	ERD DIAGRAM	35-37
Fig 3.4.1	The user can enter their username and password in the respective fields. The "Login" button	39
Fig 3.4.2	A dashboard that provides a high-level view of all the drafts forms	39
Fig 3.4.3	Draft Screen	40
Fig 3.4.4	Form Review	40
Fig 3.4.5	Form Filling	40
Fig 3.4.6	Form (Filling Evaluation)	41
Fig 3.4.7	Form (Submitting Form)	41
Fig 3.4.8	Form (All Forms for Review)	42
Fig 3.4.9	Form (Adding Remarks)	42
Fig 3.4.10	Folder Structure	43
Fig 3.5.1	EVALUATION DUTIES	44
Fig 3.5.2	Model	45
Fig 4.2.1	Github Workflow	47



# ABSTRACT

This project report describes the development of **JUIT SDK**, Faculty self-appraisal at Jaypee University of Information Technology has long been a manual, time-consuming task. Recognizing the need for change, we present the JUIT Self-Appraisal Digitization Kit (JUIT SDK), a digital solution set to transform this process.

The JUIT SDK streamlines everything, allowing faculty to submit appraisals effortlessly and administrators to review them efficiently. Our focus is on efficiency, accuracy, and simplicity. The JUIT SDK ensures that faculty achievements are accurately recorded and securely stored. The interface is designed to be user-friendly, making the entire process a breeze for both faculty and administrators.

The system is built using **Django** on the backend. Since we handle sensitive information, we prioritize security practices. **Postgres** is used for the database, and **AWS** is used for hosting.

Through workflow automation, we eliminate delays, providing a transparent system for all stakeholders to track the status of appraisals. Security measures are robust, safeguarding sensitive faculty data.

# CHAPTER 1: INTRODUCTION

## 1.1 INTRODUCTION

### 1.1.1 CURRENT SELF-APPRAISAL PROCESS

The current way of rating takes a lot. Faculty members are required to complete long forms providing details of their academic successes and objectives. They usually can be challenging to fill as well as even the tougher part of comprehension them. Therefore, the self-evaluation process can be quite overwhelming and discouraging for both academics and administration.

In addition, the current method of self-evaluation is not practical. It can take faculty members' self-appraisals weeks-months and for administrators' reviews and input on the self-appraisals, it takes even longer. This ineffectiveness may result in significant delays in the promotion of faculty, tenure processes and make tracking progress by administrators cumbersome.

### 1.1.2 JUIT SDK

- Intended acceleration of the self-assessment procedure is JUIT SDK. It will comprise of an internet based system where every member of faculty will make his own submission electronically. In addition, the system will have other features to enhance reliability and internal consistency of the self-evaluation reports, such as an embedded rubric guiding academicians' self-evaluation.
- Tracking self-assessment process with a work flow system.
- The same benefits will be accrued to the HOD, Dean and VC of the University with regards to JUIT SDK. These advantages include:
- The ability to quickly and easily evaluate and comment on self-assessment.
- The capacity to monitor faculty progression through time.

### 1.1.3 BENEFITS OF THE JUIT SDK

The JUIT SDK is a significant step forward in the evolution of the faculty self-appraisal process. The system will make the process more efficient, more accurate, and more beneficial for both faculty members and administrators.

For faculty members, the JUIT SDK will:

- Reduce the time and effort required to complete self-appraisals.
- Improve the accuracy and completeness of self-appraisals.
- Provide a platform for faculty members to reflect on their professional accomplishments and goals.

For administrators, the JUIT SDK will:

- Improve the efficiency of the self-appraisal process.
- Provide a more accurate and comprehensive view of faculty performance.
- Make it easier to identify and reward outstanding faculty members.

The JUIT SDK is a valuable tool that will help to improve the self-appraisal process for faculty members and administrators alike. The system will make the process more efficient, more accurate, and more beneficial for everyone involved.

**JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT**  
**Annual Self Assessment - Faculty**  
**For Academic Year 20 - 20**

1. Name \_\_\_\_\_ 2. Department \_\_\_\_\_

3. Qualifications \_\_\_\_\_ 4. Present Designation \_\_\_\_\_

5. University Joining Date \_\_\_\_\_ 6. First Designation \_\_\_\_\_

7. Present Pay Scale & Pay \_\_\_\_\_

8. Areas of Specialization and Current Interest \_\_\_\_\_

9. Additional Qualification acquired during the year (Give full details) \_\_\_\_\_

10. Pursuing Higher Studies (Give full details) \_\_\_\_\_

11. Orientation/Refresher Courses, Summer/Winter Schools, Faculty Development Programmes, Seminars/Conferences/Workshops Attended/ Organized:

S. No.	Title	Dates/ Duration	Sponsoring Agency and Organisation & Place held	Attended/ Organized	Remarks by the HoD
1					
2					
3					

**12. Teaching, Learning and Evaluation Activities:**

12.1 Lectures/Tutorials/Practical's/Projects/Seminars Conducted:

**( A ) ODD SEMESTER July 20\_\_ To Dec. 20\_\_**

S. No.	Course Code	Course Title	Contact Hours/ Week	Total No. of Hours Classes in Semester		Self Assessed API Score	Remarks by the HoD
				Scheduled	Engaged		
1							
2							
3							
<b>TOTAL</b>							
Classes Allotted/ Scheduled and Engaged in excess of norms							

*Fig 1.1.1 Page 1 of Existing Self Appraisal Form*

## 1.2 PROBLEM STATEMENT

JUIT's current manual self-appraisal system is obsolete yet time consuming which causes delay, possible erroneous data and no transparency.

- **Delays:** The manual process is slow and inefficient. It may take between two to four months for the Vice – Chancellor to review and approve a faculty member's self appraisal.
- **Potential errors:** Errors are likely in manual process. This may lead to data loss or corruption as well as misfile appraisals or forgetting them altogether.
- **Lack of transparency:** The manual process is not transparent. Faculty members do not have a clear understanding of how their self-appraisals are being reviewed.

As such, JUIT SDK has been designed as a digitized tool that simplifies the process of JUIT self-evaluation for all faculty members. Automated information flow between levels, e.g. from HoD-> Dean -> VC, and effective online appraisal requesting/reviewing mechanism are among the advantages proposed in this system.

The JUIT SDK must address the following key challenges:

- **Efficiency:** This means that the system should make it easy for the faculty members and other administrators to conduct self-assessments, saving their time and energy. This may be addressed by using automatic data entry and review or constructing a user-friendly interface.
- **Accuracy:** It is vital that the system records accurate data and stores them in a safe way to avoid errors and guarantee correct information. These include securing the database and setting checks on valid data.
- **User-friendliness:** The system should be user-friendly for faculty users as well as reviewable by administrators. It could be achieved by employing a user centered design approach and offering easily comprehensible directions.
- **Workflow automation:** Automation of the appraisal request flow is integral to accelerating and minimizing unnecessary delays in the reviews. This is possible through a workflow engine that manages the process and automates notifying as well as sending reminders.
- **Transparency:** Automation of the appraisal request flow is of critical importance for reducing redundancies and expediting reviews. Workflow Engine for this is possible by managing the process and automating notifications and reminding too.
- **Security:** Therefore, strong security measures should be implemented to safeguard faculty information as well as comply with privacy standards. This can be achieved through encryption, access control, and auditing.

## 1.3 OBJECTIVES

### 1. ENHANCE EFFICIENCY:

- Help faculty members easily and quickly submit their appraisals.
- Develop an online self evaluation system.
- Simplify the appraisal form.
- Give faculty members templates and samples.
- Cut down the efforts of administrators in analyzing and authorizing appraisals.

- Automate the review process.
- Prepare the administrators for the usage of the online self-appraisal system.
- Set up specific due dates for delivering and commenting on appraisals.

## **2. ENSURE ACCURACY:**

- Ensure the accurate recording and secure storage of faculty self-appraisal data.
- Minimize errors and enhance data integrity.
- Implement data validation checks and procedures to ensure the accuracy of faculty self-appraisal data.
- Use secure storage methods to protect the confidentiality of faculty self-appraisal data.
- Monitor the accuracy and integrity of faculty self-appraisal data on an ongoing basis.

## **3. USER-FRIENDLY INTERFACE:**

- Intuitive and user-friendly web-based interface: It should be easy to use and understand. It should describe the essence of making self-appraisal submission and an option of providing comments and feedback.
- Easy for faculty members to submit self-appraisals: The faculty members should easily record self-appraisals in different formats and even attach evidence.
- Efficient for administrators to review and provide feedback: It should not take administrators too long to go through all the self-appraisals and give feedback in various ways.

This interface would have to be user-friendly not only for the faculty members but also for the administrators, and it should also be flexible enough to allow many kinds of appraisal formats. The interface should also be secured for authorised users only.

## **4. WORKFLOW AUTOMATION:**

Automation in the streamlining of the review process and minimizing delays of appraisal requisition through the hierarchy. This will involve automating the following tasks.

Creation of appraisal requests: The employees will also be able to generate appraisal request online, which can then go to the supervisor who will check them.

Review of appraisal requests: The appraisal requests can also be reviewed online by supervisors who may give feedback as well.

Approval of appraisal requests: After the supervisor has provided feedback, the appraisal request will be automatically approved and sent to the employee.

Such automation will highly reduce the duration of the appraisal process that will be beneficial to both employees and managers. Managers will respond to employees much faster and will concentrate on other issues.

## 5. PROMOTE TRANSPARENCY:

Here are some specific ways to promote transparency in the appraisal process:

- **Make the appraisal criteria clear and objective.** Make appraisal criteria clear and objective. It is imperative that all stakeholders comprehend the evaluation of faculty performance criteria that would be applied. Consideration for these criteria should be informed by job-related duties and free from bias.
- **Provide regular feedback to faculty.** Faculty should receive regular feedback on their performance, so that they can have an opportunity to address any concerns or areas for improvement. This feedback should be specific and actionable, and it should be based on the criteria that will be used in the appraisal process.
- **Allow faculty to appeal appraisal decisions.** Faculty should also have a chance to appeal an appraisal decision if they feel it was not fair or correct. The appeal process should be impartial, and it should give faculty members a chance to make their case.
- **Track appraisal data and trends.** Appraisal information will include requests, findings, appeals, among other information, for the appraisals. The system can use this information to pinpoint any issues in the system that need addressing and also help make improvements in the future.

Transparency in the appraisal system is important because it will allow for fairness, equity, and trust. Institutions should follow the steps articulated above in order to establish an open appraisal process and give justice to all parties.

## 6. ENSURE SECURITY:

- a. Implement robust security measures to safeguard sensitive faculty data and maintain compliance with privacy regulations.
- b. Use strong passwords and security protocols to protect faculty data from unauthorized access.
- c. Regularly monitor faculty data for suspicious activity and take immediate action to address any threats.
- d. Educate faculty on the importance of data security and encourage them to practice safe computing habits.
- e. Work with IT and legal teams to develop and implement a comprehensive data security plan.

## **7. PILOT DEPLOYMENT**

A new software development kit, known as the JUIT SDK, includes a variety of tools and APIs to implement applications compatible with the JUIT platform. We will carry out a pilot deployment targeting one department or group of faculty members to confirm that our SDK is meeting the demands of the users. In doing so, we will evaluate whether the SDK is fit for purpose and obtain user comments.

It will take a period of two months to undertake the pilot deployment. This is when the chosen users will build applications using the SDK and integrate them with the JUIT platform. We will then collect feedback from the users on the following:

- The ease of use of the SDK
- The functionality of the SDK
- The overall value of the SDK

We will use this feedback to modify our SDK and make it simpler for users. Further, we will incorporate the feedback in order to determine which component of the SDK requires an improvement so that it might address specific demands of the users.

After the pilot deployment, all users can access the SDK. Our confidence is well grounded on the fact that the JUIT SDK is definitely going to be beneficial to our clients and we anticipate how innovative will be their creations.

## **8. USER TRAINING:**

Provide guidance for effective use, including:

- a. This is how a customer can use a product or service.
- b. The product or service should be well defined.
- c. How to troubleshoot common problems

## **9. FEEDBACK INTEGRATION:**

Continuously improve based on user input, including:

- a. Gathering feedback from users
- b. How one can use feedback to identify improvement points.
- c. Improvements stemming from user feedback.

## **10. SCALABILITY PLANNING:**

Prepare for potential expansion, including:

- a. Making its scalability possible.

- b. Making sure the product or service is capable of handling growing loads through testing.
- c. Creating a suitable plan for growth of the product or service.

## **11. DOCUMENTATION**

Create comprehensive user guides, including: How-to guides, Reference guides FAQs

### **1.4 SIGNIFICANCE AND MOTIVATION OF THE PROJECT WORK**

The whole country is moving from paperwork to going digital with the Digital India initiative. An example includes digitizing Self-Appraisal Forms. Faculty face the problems of passing the complicated hierarchy and the latency that is caused by manual assessment flow. The JUIT SDK is aimed at enhancing the simplicity of this undertaking.

However, there is another key piece that is missing from this equation: data.

The Self-Appraisal Forms contain private information, which for the university and the faculty, is important. We shall digitize these forms in order to get and analyze this data that will help us evaluate the performance of faculty as well as the general effectiveness of the university. Such data is very useful and may aid in the decision-making process of allocating resources in a more efficient manner or designing new programs for the purpose of improving student performance.

Digitization of the form will not only enable a better and faster appraisal but will also help in protecting the security of the data. It is easier to secure the data from unauthorized access and tampering because the data is stored digitally. This is more important due to the recent incidents of cyber-attacks.

Essentially, this move is advantageous to the university as well as the faculty. It can aid in the appraisal process, it can offer useful information and ensure better protection for confidential information.

Essentially, digitization of Self-Appraisal forms comes as a win-win situation to the university and its staff members. Besides, it streamlines appraisal, providing a direct pathway to actionable insights while enhancing data privacy in an increasingly digital environment.



## **1.5 ORGANIZATION OF PROJECT REPORT**

### **1.5.1 CHAPTER 1: INTRODUCTION**

In this chapter, I introduce the project – main idea and purpose. The project description and summary of scope and duration are also included in the first page.

### **1.5.2 CHAPTER 2: LITERATURE SURVEY**

Papers and journals are from reputable sources Data Security, Mining, and Warehouse as well as Cloud Infrastructure. The literature review presents a critical analysis of the existing literature, pointing out the gaps in the current studies on the topic.

### **1.5.3 CHAPTER 3: SYSTEM DEVELOPMENT**

This part of the book describes the principal information about the system's structure, comprising hardware, software, and networks. Also, it includes the pseudo code of the main functions of the system and the diagram of the structure of the database.

### **1.5.4 CHAPTER 4: TESTING**

This chapter entails test details of the system, methodology applied and the result of the test.

### **1.5.5 CHAPTER 5: RESULTS AND EVALUATION**

This chapter reports the initial results of the system, as well as users' feedback. It also talks about the challenges encountered while creating the system and the lessons picked up.

### **1.5.6 CHAPTER 6: CONCLUSIONS AND FUTURE SCOPE**

The chapter sums up the project while outlining the future scope for the project. It also mentions the development committee that will continue developing the system.

# CHAPTER 2: LITERATURE SURVEY

## 2.1 OVERVIEW OF RELEVANT LITERATURE

A.

<b>Title</b>	<b>Research on Big Data Security and Privacy Risk Governance [1]</b>
<b>Date of Conference</b>	<b>05-07 November 2021, Published in: 2021 International Conference on Big Data, Artificial Intelligence and Risk Management (ICBAR)</b>
<b>Authors</b>	<b>X. Wang, W. Luo, X. Bai</b>
<b>Summary</b>	<p>The study explores how organizations across the world engage in performance appraisal. Literature review is like tour guide why this study stars the show of academic performance evaluation.</p> <p>Now, they have a secret weapon: the Performance Appraisal Diagnostic Model by Wolf (2003). The literature discusses the importance of understanding the ins and outs of academic performance evaluation when universities are looking to improve their academic performance. By selecting a global group of 19 universities from five continents, giving us a front-row seat to see how the whole world thinks about performance evaluation.</p> <p>And here's the grand finale: this comparative study is a mic drop in the academic achievement ranking debate. Using Wolf's diagnostic model as a guide, it reveals what makes universities tick in their evaluation systems. The findings are not just for show; they are the golden ticket to refining current models and developing stunning new performance grading systems that are tailored to schools all over the world.</p>

*Table:2.1 Review of Big Data Security*

**B.**

<b>Title</b>	<b>Developing with Django Web Framework [2]</b>
<b>Authors</b>	<b>Hsiu-Chuan Huang; Zhi-Kai Zhang</b>
<b>Summary</b>	<p>This paper delves into Django, a Python-powered web framework, and the intricacies of selecting the ideal tool for developing a great website.</p> <p>The paper emphasizes the need for integrity rules in the online world. Websites handle sensitive information and transmit data constantly. Strong security measures are required.</p> <p>Injection attacks are a problem in the digital world, as they can wreak havoc on databases via application flaws. Django, on the other hand, has a few tricks. It employs the Model View Template (MVT) framework, which the paper explains. Django's superhero cape against these unpleasant assaults may be thought of as this.</p> <p>Django is a standout web framework, not just a web framework. The paper is your tour guide to Django heaven, and it discusses what makes it so great. It's not just fluff; it also contains useful information.</p> <p>Lastly, it is important to stress on the significance of integrity rules, Django's features and choosing the right framework. For developers you will get handy toolbox, which will help to make Django sparkle in your apps.</p>

*Table 2.2 Django Web Framework Review*

C.

<b>Title</b>	<b>Scalability Analysis Comparisons of Cloud-Based Software Services [3]</b>
<b>Date of Conference</b>	<b>23 July 2019, Journal of Cloud Computing Advances, Systems and Applications</b>
<b>Authors</b>	<b>Amro Al-Said Ahmad &amp; Peter Andras</b>
<b>Summary</b>	<p>A study on scalability and performance of cloud-hosted software in this research paper. First of all, the paper involves a literature review on scalability, elasticity and efficiency in cloud computing. The authors subsequently describe a framework for gauging scalability, elasticity, and efficiency. The adopted approach is based on flexible measurement system, which is analogous. Later, the authors apply this technique to assess Amazon EC2 against that of microsoft azure. Finally, the conclusion will discuss the significance of this result to cloud computing.</p> <p>Scalability in cloud is first discussed with respect to its importance. Scalability is defined as the ability of a unit or system to increase its ability to take up new loads while maintaining its function and output.</p> <p>Subsequently, the measure of scalability, elasticity and efficiency is presented by the authors. Elasticity-based flexible metrics formulate the applied methodology. The metrics include:</p> <p>Throughput: It is also a measure of how fast a system can process all the incoming requests.d</p> <p>Response time: How long does a system take to respond to a request?</p> <p>Resource utilization: System’s utilization of its resources in terms of percentage.They employ the approach to compare the performance of Amazon EC2 and Microsoft Azure. It can be concluded that Amazon EC2 is much more scalable than Microsoft Azure. However, Microsoft azure is better than amazon ec2.</p> <p>Finally, the paper concludes with a discussion on the implications of the findings in reference to cloud computing. As an argument in this paper, the authors recommend scalability, elasticity, and efficiency as key parameters for selection of suitable cloud computing platform.</p>

*Table 2.3 Scalability of cloud infra*

**D.**

<b>Title</b>	<b>Staying afloat amidst extreme uncertainty: A case study of digital transformation in Higher Education [4]</b>
<b>Date of Conference</b>	<b>19 April 2023</b>
<b>Authors</b>	<b>Katerina Antonopoulou, Christos Begkos b, Zichen Zhu.</b>
<b>Summary</b>	<p>The research paper “Staying Afloat Amidst Extreme Uncertainty: A Case Study of Digital Transformation in Higher Education” addresses the gap in existing research on the profound impact of digital technologies on organizational change, particularly within the context of Higher Education Institutions (HEIs). This literature review aims to situate the study within the broader discourse on digital transformation, organizational change, and the specific challenges faced by HEIs.</p> <p>Digital transformation is often discussed in terms of the implications of individual technologies on specific organizational dimensions. However, this study reconceptualized digital transformation as a comprehensive organizational change facilitated by digital technologies. This reconceptualization is particularly relevant for HEIs, given the unique challenges and opportunities they face in adapting to the digital age.</p> <p>The study is a comparative case study of one university in the UK facing with digital shift in an extraordinary situation created by the COVID-19 pandemic.</p> <p>This study draws three major processes that provided insight into how the HEI transformed digitally while dealing with very high uncertainties To start with, the establishment leveraged on digital technologies to keep itself floating placing emphasis on the importance of technology in the continuation period. Finally, the report emphasizes that the scalability of function enables creation of new values that can be used as new products and help business to gain innovation through the use of emerging digital technology. Lastly, the paper stresses on the need to justify values for changes in design, highlighting the decision making strategies during the digital transformations’ process.</p> <p>The study contributes to the literature on digital transformation in several ways. First, it provides a nuanced understanding of the interplay between digital technologies and transformative change in the higher education sector. Second, it highlights the importance of three key mechanisms—utilizing digital technologies to stay afloat, scaling of functionalities to create new value, and justifying value to design change—in managing digital transformation amidst extreme uncertainty. Third, the study</p>

	<p>provides valuable insights for HEIs that are considering or are in the midst of digital transformation.</p> <p>The study has several limitations. First, it is based on a single case study, which limits the generalizability of the findings. Second, the study was conducted during the COVID-19 pandemic, which may have influenced the findings. Third, the study focuses on one HEI, which may not be representative of all HEIs.</p> <p>Despite these limitations, the study provides valuable insights into the challenges and opportunities of digital transformation in HEIs. The findings can be used by HEIs to develop and implement effective digital transformation strategies.</p>
--	---

*Table 2.4 Overview of Digitization in Education Sector*

E.

<b>Title</b>	<b>Comparative Study of the Performance Appraisal Systems for Academic Members' Performance Appraisal Systems in the Various Universities in around the World According to the Diagnostic Model: A Qualitative Research [5]</b>
<b>Date of Conference</b>	<b>January 2014</b>
<b>Authors</b>	<b>Soleiman Ahmady</b>
<b>Summary</b>	<p>The article dives into how institutions throughout the world give performance ratings. The literature review acts as a tour guide, explaining why this study is the star of the academic performance evaluation show. These performance evaluation systems are the real MVPs in the academic world.</p> <p>The article is like a detective, sniffing around the world to solve the mysteries of how institutions assess their students' performance.</p> <p>They now have a secret weapon in the form of Wolf's (2003) Performance Appraisal Diagnostic Model. It's like their North Star, guiding them through this labyrinth using a qualitative content analysis technique.</p> <p>What are the rumors surrounding the findings? They're all about the warm fuzzies of recognizing outstanding work, keeping the progress train humming, and ensuring that everyone's needs are met. But wait, it's not just a pat on the back; it's a dance with the big guns in the organizational playground - money talks with salary and compensation, and there's also a recruiting and development party going on. Faculty effectiveness?</p> <p>And now for the grand finale: this comparative study is like a mic drop in the academic achievement ranking conversation. Using Wolf's diagnostic model as a guide, it reveals what makes colleges tick in their evaluation processes. The findings aren't just for show; they're the golden ticket for fine-tuning current models and designing gleaming new performance grading systems tailored to schools all over the world. It's the equivalent of saying, "Let's take what we know, stir in some wisdom, and make academic performance assessment a real superstar."</p>

*Table 2.5 Overview of appraisals systems*

F.

<p><b>Title</b></p>	<p><b>Research in data warehouse modeling and design: Dead or alive? [6]</b></p>
<p><b>Date of Conference</b></p>	<p><b>November 2006</b></p>
<p><b>Authors</b></p>	<p><b>Stefano Rizzi, Alberto Abell, Jens Lechtenborger</b></p>
<p><b>Summary</b></p>	<p>Multidimensional modeling is a powerful technique for representing and querying data. There are a number of unresolved challenges in the modeling and design of data warehouses, including:</p> <ul style="list-style-type: none"> <li>● <b>Conceptual models:</b> There is no single agreed-upon conceptual model for data warehouses.</li> <li>● <b>Logical models:</b> The logical model of a data warehouse is the implementation of the conceptual model.</li> <li>● <b>Design techniques:</b> There are a variety of different techniques that can be used to design a data warehouse. The choice of technique will depend on the specific requirements of the data warehouse.</li> <li>● <b>Interoperability:</b> Usually, data warehouses must have a strong system capacity to interact. It is not easy as different multidimensional models and logical models are used in different systems.</li> <li>● <b>Design for novel architectures and applications:</b> Design for novel architectures and applications: Novel architectures and applications such as cloud computing and big data are now employing more data warehouses today than ever before.</li> </ul> <p>These are just some of the unresolved challenges in the modeling and design of data warehouses. As the field of data warehousing continues to evolve, it is important to address these challenges in order to ensure that data warehouses can continue to meet the needs of businesses.</p>

*Table 2.6 Data Warehouses Techniques*



**G.**

<b>Title</b>	<b>Survey on Cross Site Request Forgery (An Overview of CSRF) [7]</b>
<b>Date of Conference</b>	<b>March 2013</b>
<b>Authors</b>	<b>Senthamilselvan K</b>
<b>Summary</b>	<p>A CSRF takes place whereby an individual intentionally makes an end victim execute commands on a valid website after he/she has been sent to malicious web pages or application.</p> <p>Attacks based on CSRF are typically employed in obtaining user passwords, making fraudulent transactions, as well as modification of account configurations. For a CSRF attack, the attacker should be in a position to make the user visit a malicious site or app. For example, this is achieved through social engineering, phishing and many other techniques. After the user goes to that malicious site, the attacker will send an illegitimate request to that trusted site.</p> <p>A malicious_request usually carries along the user's session cookie, a string which identifies the user to the trusted website.</p> <p>However, there are several approaches to shielding against CSRF. For example, a CSRF token can be adopted as one way of tackling this issue. A CSRF token is a string of unique characters generated per user sessions. On this, the CSRF token will be included on all subsequent requests that a user makes. Thereafter, the trusted website determines the same token in each of the requests and denies any incoming request without a valid CSFFR token.</p> <p>Alternatively, one can protect oneself from CSRF by employing a mitigation technique that focuses on the browser. This is done by ensuring that the user's browser does not send the session cookies about the user's information to any website except the trustworthy one.E Setting a session cookie's SameSite attribute as "strict" or "lax."</p> <p>CSRF attacks are very serious threats, which can be reduced with different kinds of security measures. With the adoption of these measures, organizations can be able to safeguard their users against such attacks.</p> <p>In addition to the above, there are a number of other things that organizations can do to protect themselves from CSRF</p>

	<p>attacks, including:</p> <ul style="list-style-type: none"><li>● Using a security framework that includes CSRF protection</li><li>● Educating users about CSRF attacks and how to protect themselves</li><li>● Monitoring for CSRF attacks and responding to them quickly</li></ul> <p>By taking these steps, organizations can help to reduce the risk of CSRF attacks and protect their users data.</p>
--	---

*Table 2.7 CSRF Review Security*

## 2.2 KEY GAPS IN THE LITERATURE

### A. Research on Big Data Security and Privacy Risk Governance

This research is emphasizing on the need for international big data security and privacy risk governance. Nevertheless, there is need for more detailed studies of particular issues as well as variations in implementation of those standards in different jurisdictions. This may further be addressed by a study that makes an appraisal of how various countries or geographical areas handle and police big data security standards.

Big data security and privacy risk governance are often viewed as being unclear in terms of their definitional criteria. It may be a challenge creating viable and executable benchmarks. This means that different countries may decide to prioritise certain security measures over others e.g. technical versus data privacy protection issues. The other factor is the fact that there should be consideration for the varied cultural and legal frameworks present in various jurisdictions.

Some organizations do not have enough resources available for big data security and privacy risk management. It is also applicable to small and medium size enterprises.

Lastly, it is necessary to tackle the dynamic big data security and privacy risk governance. With emerging new technologies, new risks and dangers shall follow. The organizations should remain in the lead while introducing new standards and practices that can manage ever changing threats.

Such a comparative study of various approaches taken by different countries or regions on enforcement of international norms with respect to big data security may throw more light on the ways through which these issues can be handled. This investigation would expose successful methods that other parts of this world can take up. The assessment could also highlight loopholes in the existing global codes thus pointing out spots that are in need of additional undertakings.

### B. Developing with Django Web Framework

- As for a free python based web framework, this one complies with the MVC architecture. It is intended to be swift, robust and expandable. Popular worldwide websites, such as Pinterest, Instagram and spotify employ django.
- The built-in user authentication system of Django is one of its main aspects of security. The system enables developers simply develop and manage their user accounts. Django also includes a number of other security features, such as:
- Cross-site scripting (XSS) protection
- SQL injection protection
- File upload validation
- These are some of the security features meant to shield Django websites against a number of common security vulnerabilities.

- Apart from a number of built-in\_security features, Django also offers several best principles a developer should have in mind for the sake of website's safety. These best practices include:
  - 
  - Using strong passwords
  - Encrypting sensitive data
  - Keeping software up to date
  - Use of the web application firewall.

### **Specific Security Concerns and How Django Tackles Them**

Apart from the general security\_features mentioned above, Django also has specialized security\_features tailored to deal with particular security challenges. These include:

CSRF protection: CSRF is a kind of attack whereby an attacker convinces a user into doing something on a webpage that he/she had no intent to do. CSRF is prevented through Django's CSRF protection\_mechanism.

Session hijacking: A session\_hijack\_attack involves an intruder hijacking a users' session's cookie in order to act on behalf of that user. The use of secure cookies and expired sessions after some time of inactivity helps to prevent Django's session management system from session\_hijacking.

SQL injection: In this attack, the attacker introduces some sort of harmful inputs into a specific SQL command. Django's database abstraction layer safeguards against SQL injection attacks as it scrutinizes every input that one submits before utilizing in a query.

With these detailed security features, Django shields websites against several common security risks.

### **C. Staying Afloat Amidst Extreme Uncertainty: A Case Study of Digital Transformation in Higher Education**

The research effectively covers the digital revolution in higher education during the Covid-19 epidemic. However, it could delve into the long-term implications and durability of the established improvements. A longitudinal study or analysis of post-pandemic settings would provide a more thorough understanding.

For example, the study could examine how the changes made during the pandemic have impacted student learning and retention. It could also explore how institutions have sustained the digital learning infrastructure they put in place during the pandemic. Additionally, the study could compare the experiences of institutions that were well-prepared for the digital shift with those that were not.

The findings of such a study would be valuable for institutions as they plan for the future of higher education. They would also provide insights for policymakers and other stakeholders.

#### **D. Scalability Analysis Comparisons of Cloud-Based Software Services:**

This study does an analysis of the scalability indices as well as a comparison of various cloud platforms. Nevertheless, it can delve more into the specific challenges associated with scaling different categories of software-based systems. These insights may be more detailed for addressing scalability in data-intensive applications than in compute-intensive applications.

These kinds of apps need much information for proper functionality. Data-intensive apps are for instance data centers, data lakes, and machine learning applications. Apps that are compute-intensive are apps that require so much computing power to perform their functions efficiently. In this case, an example of such apps is the HPC application, video game system, or any drawing software.

Scaling of data intensive applications is distinct from scaling issues of compute intensive software. This kind of application must accommodate large amounts of data, should support rapid responses also. For compute-intensive applications, it is important for them to process huge volumes of data, yet remain accurate to minimize any losses due to inaccuracies.

Cloud companies will be in a position to know what to do because they understand the growth concerns peculiar for different application software and adapt them as needed.

#### **E. Comparative Study of the Performance Appraisal Systems for Academic Members' Performance Appraisal Systems in Various Universities.**

The research provides a valuable comparative analysis of performance assessment methods. However, it would be beneficial to also examine faculty members' viewpoints and experiences with different systems. Incorporating qualitative data from faculty members could provide insights into the success and limitations of these systems from their perspective.

For example, the research could explore the following questions:

- How do faculty members perceive the different performance appraisal systems?
- What are the perceived strengths and weaknesses of each system?
- How do faculty members feel about the process of being evaluated?
- How do the different systems impact faculty motivation and productivity?

By understanding faculty members perspectives on performance appraisal, the research could provide valuable insights into the design and implementation of more effective systems.

In addition to the questions above, the research could also explore the following:

- How do faculty members perceptions of performance appraisal vary by discipline, rank, or other factors?
- How do faculty members experiences with performance appraisal change over time?

- How do faculty members perceptions of performance appraisal affect their teaching and research practices?

## **F. Research in data warehouse modeling and design: Dead or alive?**

The paper provides a comprehensive overview of the research landscape in data warehouse modeling and design. The authors identify a number of contemporary challenges and emerging trends.

The paper could delve deeper into some of these challenges and trends. For example, the authors could discuss the specific challenges of modeling data from social media or mobile devices. They could also provide more detail on the emerging trends in data quality and governance.

Another potential gap in the paper is the examination of real-world case studies or practical implementations. This would help to validate the relevance and effectiveness of the proposed data warehouse modeling approaches.

Finally, the paper could benefit from a more explicit exploration of the integration of emerging technologies, such as machine learning or cloud computing. These technologies have the potential to significantly impact the vitality and effectiveness of data warehouse modeling and design methodologies.

In conclusion, the paper provides a valuable overview of the research landscape in data warehouse modeling and design. However, it could be strengthened by delving deeper into some of the challenges and trends, examining real-world case studies, and exploring the integration of emerging technologies.

## **G. Survey on Cross Site Request Forgery (An Overview of CSRF)**

This paper offers a general view of CSRF attacks, risks associated with them, and mitigations strategies for curbing them. Nonetheless, deeper discussion about countermeasures and new approaches to tackle CSRF vulnerabilities should be included in the paper. As illustrated, the paper could explore use of CSRF tokens that are common measures against CSRF attacks. Other browser-based mitigations like same site cookies could prevent a cross site request forgery attack could be discussed in this paper.

Secondly, the paper can be expanded to examine modern web frameworks and techniques that pose unique challenges and ways of prevention. The paper can also demonstrate how CSRF is applied in some frameworks like Angular or React. The paper may further describe how \_CSRF protection works in technologies like \_JWTs and OAuth.

Lastly, some extensive studies on the consequences of CSRF attacks for various e-businesses and web apps would be beneficial to the study. The study can focus on

how such CSRF attacks affect e-commerce websites, banks websites and government sites. The scope of the study may also focus on the impact of CSRF threats in different companies like health care, banking and industry.

This would give the paper a comprehensive and timely outlook into the CSRF risks and prevention techniques in this field.

# CHAPTER 3: SYSTEM DEVELOPMENT

To us, it was quite an intriguing undertaking that brought about the evolution of self-appraisal system. Faculty has been filling in self appraisal forms by hand for several years now. To put it in simple words, it will imply designing an adaptable system that will be customized in future for specific requirements.

## 3.1 REQUIREMENTS AND ANALYSIS

### 3.1.1 MANDATORY REQUIREMENTS

This requirement meant coming up with a digital copy of the faculty performance appraisal form that resembled the original one. This, therefore, entailed digitization of six paged document in PDF format. Firstly, the digital version had to be simple to access and user friendly while at the same time supporting all mainstream operation systems.

Secondly, they developed an API score for every action made by the faculty members. Therefore, to every event like attendance of event, grading assignment or advice to certain student, we would give some particular score. Faculty members' progress through the process was tracked by using API score while they were in need of feedback regarding their performance.

To this end, I was required to develop a rank order of the faculty performance evaluation form. Initially HOF completed the document then transmitted it to HOE. HOD would then check the form and hand it over to the dean of academics. Then, a dean of academics will authenticate the form and send it to VC. After completing the form, the VC would check it and finally decide whether the faculty member had performed well or not.

The fourth one is linking publications to the portal in order for users to easily locate, attach, and verify publications as appendices to their projects. This connection provides a number of benefits, including:

- **Improved accuracy:** The library staff will verify the accuracy and currency of each publication attached by users so that they have confidence on these publications.
- **Reduced time spent searching:** The library portal allows users to carry out searches and therefore locate useful publications in short time.
- **Enhanced collaboration:** Sharing of publications between users' colleagues and collaborators becomes easier and effortless.



## **Blocking User so that he/she can only attach verified Publications from Library**

To prevent users from attaching unverified publications to their projects, the system can be configured to block users from attaching publications that are not in the library. This can be done by setting a policy that requires all publications to be verified before they can be attached to a project.

When a user attempts to attach a publication that is not in the library, they will receive an error message. The user can then contact the library staff to have the publication verified. Once the publication is verified, the user will be able to attach it to their project.

This blocking feature can help to ensure that the publications in the repository are accurate and up-to-date. It can also help to prevent users from attaching unverified publications to their projects, which can help to protect the integrity of the data.

### **3.1.2 GATHERING REQUIREMENTS AND ANALYSIS**

One of the major steps in this project was learning about the entire present architecture and obtaining the forms. We are grateful to Dr. Kushal Kanwar, Assistant Professor (SG) CSE & IT, for his assistance. He provided us with the following documents:

- Self Appraisal Forms of JUIT
- API Score Sheet
- Library Data Access

First, we read through the API score sheet in order to understand what the project was aimed at achieving. Afterward, we examined the Self Appraisal Forms for JUIT to know more about the university's performance at present. Lastly, we read the Library Data Access document to know how the university's library data is kept and obtained.

After we got an idea about the objectives, goals, and the current status of the project, we proceeded towards acquiring the forms. We reached Dr. Kanwar, who sent them to us electronically. We examined them then, to confirm their completeness and accuracy.

We cannot forget to acknowledge Dr. Kanwar for their cooperation in this exercise. We profited so much from his know-how and skills. With this assurance, we believe that the data collected will help develop an effective approach for managing the university's information.

#### **A. SELF APPRAISAL FORM**

The main and most important task was to understand the form. It has a total of twenty such fields or sections as it is called and each of these needs entering into the database for computerising the entire procedure.

**To accomplish this task, we divided the fields into two categories: simple and complex.**

- These simple fields include texts field and dates field which can be conveniently digitized. **(Fig 3.1.2.1)**
- Some examples of these fields include events hosted, classes attended/taken and so on.

**Finally, we devised an approach to digitize each field, considering the complexity of the field and its contents.**

1. Name _____	2. Department _____
3. Qualifications _____	4. Present Designation _____
5. University Joining Date _____	6. First Designation _____
7. Present Pay Scale & Pay _____	
8. Areas of Specialization and Current Interest _____	
9. Additional Qualification acquired during the year (Give full details) _____	
10. Pursuing Higher Studies (Give full details) _____	

*Fig 3.1.2.1 Because of their simplicity, Simple Fields are directly included in the Form Model.*

### **SIMPLE FIELDS**

The database's fields should be plain and straightforward. Some of the items included are name, department, qualifications, present designation, and date of joining (Figure 3.1.2.1). Each of these fields are all unalterable and will belong to a single user only. This implies that the database design should be kept simple by employing varchar, int, and date data types.

- **VARCHAR**

Character strings are stored by using the varchar data type. It may be made long or short at will, or it could be variable in its length. For instance, the name field could be a varchar(255) field to enable a maximum of 255-character name.

- **INT**

Integers are represented by using the int data type. An integer can also start with the minimum and go to the maximum value or remain unbounded. An example of this can be in the Joining Date field where it could be an int field that would accommodate any date.

- **DATE**

For dates we use the date data type. It is possible to specify the format of the date, or use that provided as default one. One such example is the Joining Date field, which should be a date field, allowing dates to be expressed as YYYY-MM-DD.

11. Orientation/Refresher Courses, Summer/Winter Schools, Faculty Development Programmes, Seminars/Conferences/Workshops Attended/ Organized:

S. No.	Title	Dates/ Duration	Sponsoring Agency and Organisation & Place held	Attended/ Organized	Remarks by the HoD
1					
2					
3					

*Fig 3.1.2.2 Complex Fields table*

## COMPLEX FIELDS

The screenshot shows a dashboard interface for 'Juit Forms'. On the left is a sidebar with navigation options: Dashboard, New Form, Reviewer Options (Review, Reviewed Forms), and Account Options (Logout). The main content area is titled 'Self Appraisal Form / ID: 5' and contains a form with 10 numbered fields:

- NAME: valbhav
- DEPARTMENT: CSE
- QUALIFICATIONS: None
- PRESENT DESIGNATION: None
- UNIVERSITY JOINING DATE: None
- FIRST DESIGNATION: None
- PRESENT PAY SCALE & PAY: None
- AREAS OF SPECIALIZATION AND CURRENT INTEREST: (empty text area)
- ADDITIONAL QUALIFICATION ACQUIRED DURING THE YEAR (GIVE FULL DETAILS): (empty text area)
- PURSING HIGHER STUDIES (GIVE FULL DETAILS): (empty text area)

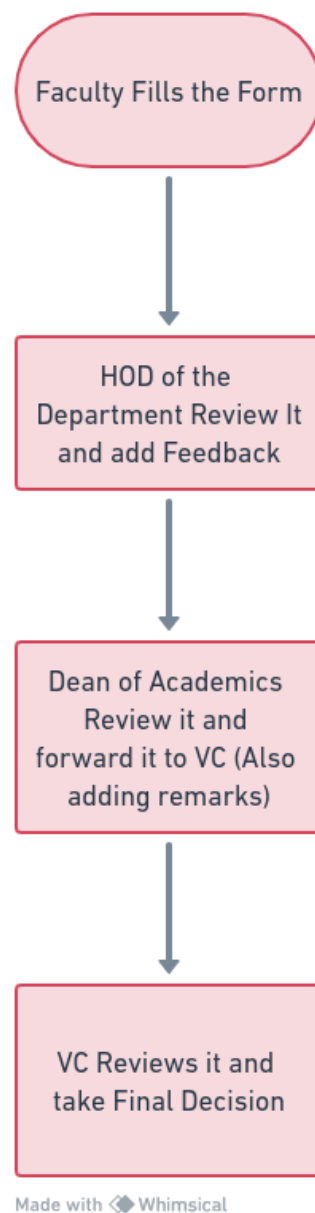
Below the form is a table for '11. Orientation/Refresher Courses, Summer/Winter Schools, Faculty Development Programmes, Conferences/Workshops Attended/Organized:'. The table has columns for Title, Sponsoring Agency, Organization, Place Held, Attended/Organized, and Actions. One row is visible with the following data:

TITLE	SPONSORING AGENCY	ORGANIZATION	PLACE HELD	ATTENDED/ORGANIZED	ACTIONS
abc	juit	juit	None	ATTENDED	<a href="#">Edit</a>

*Fig 3.1.2.3 Simple and Complex Fields in Dashboard*

## B. FORM HIERARCHY

The forms use a simple hierarchical structure. A faculty member initiates the process by filling a form that is then sent to the HOD. The HOD then affixes his signature on the form before submitting it to the Dean of Academic Affairs. The vice chancellor's (VC) office authenticates the form before sending it to VC. This form is reviewed by the VC, who will make the final assessment on how the faculty did during the academic year in question.



*Fig 3.1.2.4 HIERARCHY*

## C. API SCORE

The second key objective of this study entailed giving out points for every possible step a lecturer might undertake like attending an event, marking assignments and advising students. The faculty's progress and performance assessment were done with the use of the API scores.

Hence, it needed to be established that the developed scoring system was in line with the institution's guidelines and regulations. It had to imply the scores were fair and reliable, and they also had to measure a variety of activities appropriately as well.

Lastly, it was important to note that at any time in the future the scoring system could change. The company noted that at any time, the University could alter its standards and procedures, or could even introduce new activities in the API. Thus, it was essential to develop the scorecard in such a manner as to facilitate its later updating.

### Scores:

- Item 11:
  - Attended: 1, 3, or 5 API points for programs of less than one week, one week, and two or more than two weeks duration, respectively.
  - Organized: 5, 10, 20 API points for programs of less than one week, one week, and two or more than two weeks duration, respectively. Add 5 API points if the organizer is the Chief/Principal Organizer.
  - Seminars/Conferences/Workshops: 2 API points for each program, subject to a maximum of 5 API points. Organized: 5, 10, 20 API points for programs of one day, two/three days, and more than three days duration, respectively. Add 5 API points if the organizer is the Chief/Principal Organizer.
- Item 12:
  - Maximum API score for each component is 30.
  - Component 12.1 (A) and (B): 25 points if 95% or more classes are engaged, 15 points if 80% classes are engaged, and 0 points if less than 80% classes are engaged. API score may linearly vary between 15 and 25 if classes engaged are between 80% and 95%. API score of 5 is allowed if classes engaged are in excess of norms/schedule.
  - Component 12.2: API score of 10 is allotted for each sub-component. Maximum total API score for this component is 35.
  - Components 12.3 and 12.4: API score for 12.3 and each sub-component of 12.4 is 10. Maximum API score for 12.3 and 12.4 combined is 30.

These are some examples of assigning API Score according to User Input.

In addition to the requirements outlined above, the API score also needed to be easy to understand and use. This meant that the scoring system needed to be clear and concise, and it needed to be based on objective criteria. The API score should also be able to be calculated automatically, so that it would not be necessary for faculty members to manually enter their scores.

Here are some examples of how the API score could be used:

- A faculty member could use the API score to track their own progress and to identify areas where they could improve.
- A department chair could use the API score to evaluate the performance of their faculty members.
- A university administrator could use the API score to compare the performance of different departments or schools.

The API score could also be used to reward faculty members for their outstanding performance. For example, a faculty member who consistently achieves high API scores could be eligible for a promotion or a merit increase.

The API score is a valuable tool that can be used to improve the performance of faculty members and to ensure that the university is meeting its academic standards.

#### **D. LIBRARY DATA ACCESS**

JUIT LRC is a virtual library with lots of data regarding the publishing in the college. Nevertheless, the library lacks an api so that the information can be accessed through programming. Users will therefore have to manually access the data of the library, a process that can be laborious.

Web scraping can be used as one mode of automating the process of accessing JUIT LRC data. Web scraping is one of the methods that allow people to gather information from web sites. The information from the JUIT LRC website can be collected using a web scraper, and this data could be kept in a manner that is simple to browse through.

There are many web scrapers that one can use, but the scraper suited for any individual project depends on its unique requirements. Examples of widely used web scrapers are Python's Beautiful Soup, Scrapy, and Selenium.

A web scraper chosen for this purpose allows users to pull up data from the JUIT LRC website. Such information as the title of the publication, the author's name, year of publication, as well as the abstract are all retrievable.

The obtained information is typically kept either on CSV files, JSON files and databases etc. The information thus collected can be put into use in some manner like research, analysis, or simply reporting.

Automating the process of accessing JUIT LRC data with web scraping can save users a significant amount of time and effort.

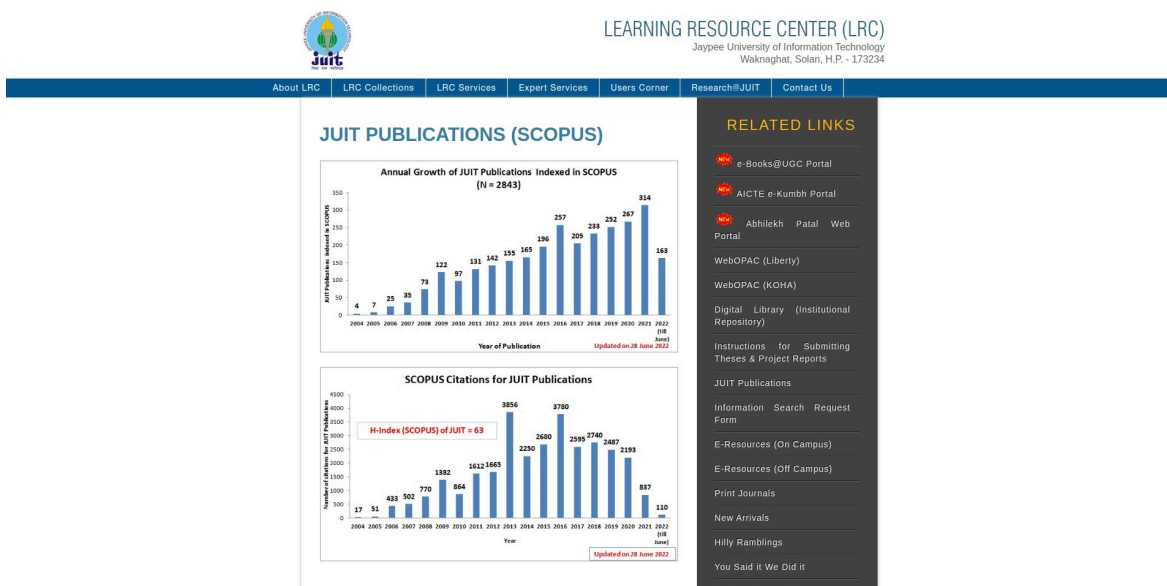


Fig 3.1.2.5 JUIT-LRC Website Screenshot

Moreover, the researchers can add research publications via google scholar. It will, however, be tagged not verified when a user or even the admin adds and upload on his own.

**Add Research Project**

**Create Research Project**

TITLE OF RESEARCH PROJECT/CONSULTANCY WORK

Title of Research Project

DETAILS OF SPONSORING AGENCY

Details of Sponsoring Agency

DURATION

Duration

SANCTION DATE

YYYY-MM-DD

STATUS

Status

AMOUNT SANCTIONED

Amount Sanctioned

CHIEF OR CO INVESTIGATOR SPECIFY

Chief or Co Investigator Specify

Create Research Project

Fig 3.1.2.6 JUIT-SDK Add Research Project Screenshot

## 3.2 PROJECT DESIGN AND ARCHITECTURE

This is the SELF-APPRAISAL DIGITALIZATION KIT (also known as the JUIT SDK), which involves relatively much more complicated technological work. Part three elaborates on the project's design and layout. sentence-structure.

### 3.2.1 DESIGN

The **JUIT SDK** is a web-based application that is built using a Model-View-Template (**MVT**) **architecture**. The application consists of a number of independent apps that are responsible for different aspects of the application's functionality. This provides scalability and fault tolerance to the application.

There is a model layer which holds the application's data and its business logic. View layer in the application presents the data to the user. The controller layer of the app controls user input and how the application flows.

Breaking our Requirements to the smallest level, we need two main things: user interface, backend, and database. We employed Django for the backend since it handles both the use cases directly.

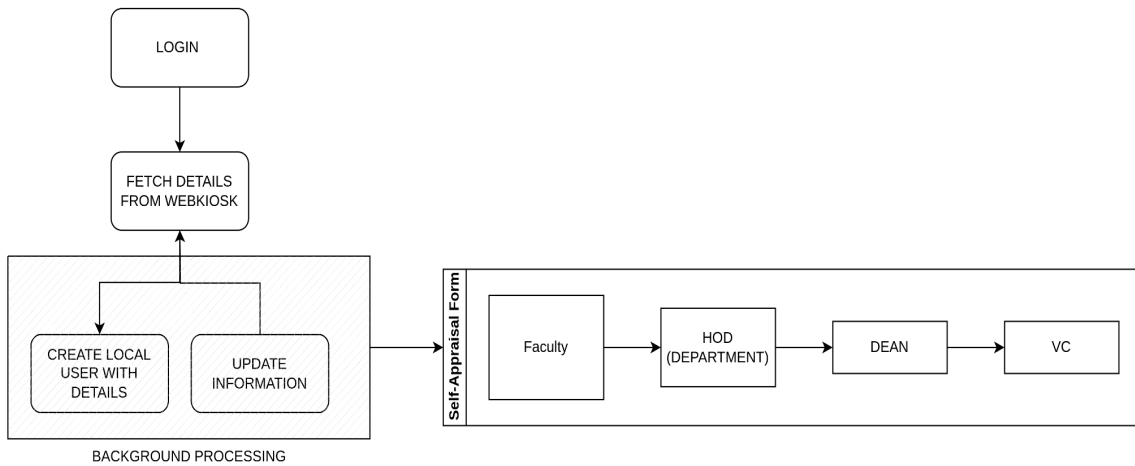
1. Simple UI: Therefore, the user interface must be intuitive. They should cater for users who do not have technical background.
2. Backend: In this regard, the back end handles the request of the user and stores the needed data in the database.
3. Database: All the collected data are stored in the database.

Django is a Python framework developed to simplify creation of complicated web applications. It has several features, making it suitable for developing a single UI, backend, and database.

1. Simple UI: Django comes along with numerous pre-defined templates, which are helpful to build up a simple user interface. The templates can be tailored to suit the requirements of the application.
2. Backend: The numerous tools in Django make it simple to create back-end. This software comes with a routing system, a template engine, and a database abstraction layer.
3. Database: Django allows for databases such as MySQL, PostgreSQL as well as SQLite.

We used Django to set up a basic UI, backend, and database for our app within a short time. This meant that we could concentrate all of our efforts on the main working element, rather than wasting time on infrastructure.





*Fig 3.2.1.1 Data Flow Diagram*

Basic User Flow is divided into **3 main components:**

- A. LOGIN
- B. FORM FILLING
- C. REVIEW

### **A. LOGIN**

Login functionality will be little complicated because we will have to directly authenticate clients from JUIT’s already installed Webkiosk system and retrieve all required data.

Users will login directly to the new system and not have to create new accounts. Rather, all their fields will be pre-filled. On the other hand, webkiosk does not have an authentication API and thus, we need an alternative method of authenticated which does not rely on an API.

We came up with a simple system that works as follows:

1. While logging into the new system for the first time, the new system will scrape the “Webkiosk” system in the background.
2. It will verify whether the user is a legitimate webkiosk system user.

In this case, the system will generate a new account in the new system while pulling through all the user’s details that were scrapped from the Webkiosk system if the user is a legitimate user.

The system provides a direct login for users without prompting them to create an account. This also assures the legitimate use of the Webkiosk system by all users. More on this in section 3.4 Implementation.

## **B. FORM FILLING**

This part is the heart of the whole system. Every faculty member will be submitting the form, so this part needs to be properly handled.

The form also should be user-friendly, gathering all required information at a time. The information must be correct, current. The form should be in an electronic format which is easy for processing.

After form submission, it should be verified for correctness and completeness. The faculty member should inform him if there are any mistakes that need correction within reasonable limits.

After the approval of the form, it should be placed in safe custody. The data in the form shall only be available with authorized personnel.

It is important to conduct a periodic review of the form to make sure that it continues to address the needs of the professors. The form should be changed if there are modifications that require adjustments.

## **C. REVIEW**

The other very important element of the system is forms. The form must be easily readable, and only certain heads of department have the right to look at specific forms (under him).

This is to make sure that all forms are filled correctly and correctly. HODs approve these forms after they are issued to all the faculty. They can recommend, approve or disapprove forms and also make the corrections.

The review procedure is a key component of the larger quality control framework of the forms administration system. It ensures that all forms are correctly and completely filled in and serve the best interests of an organization.

### **3.2.2 ARCHITECTURE AND DATABASE DESIGN**

Architecture and database design of JUIT SDK make sure that the system is effective, scalable, and reliable with data integrity.

#### **A. User Data:**

It captures faculty data such as names, departments, and contacts.  
To facilitate seamless authentication, it is connected to the Webkiosk system.

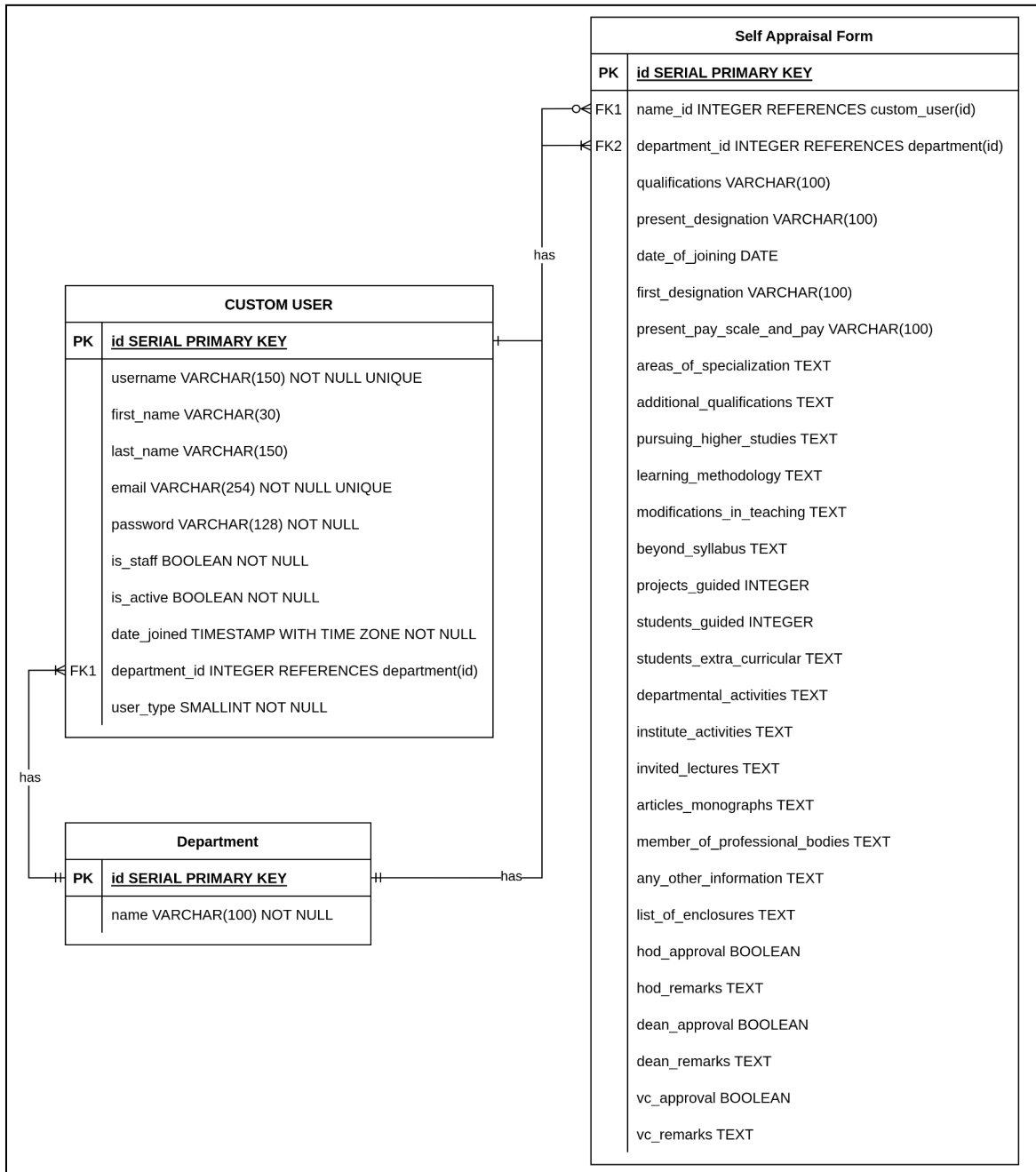
#### **B. Self-Appraisal Forms:**

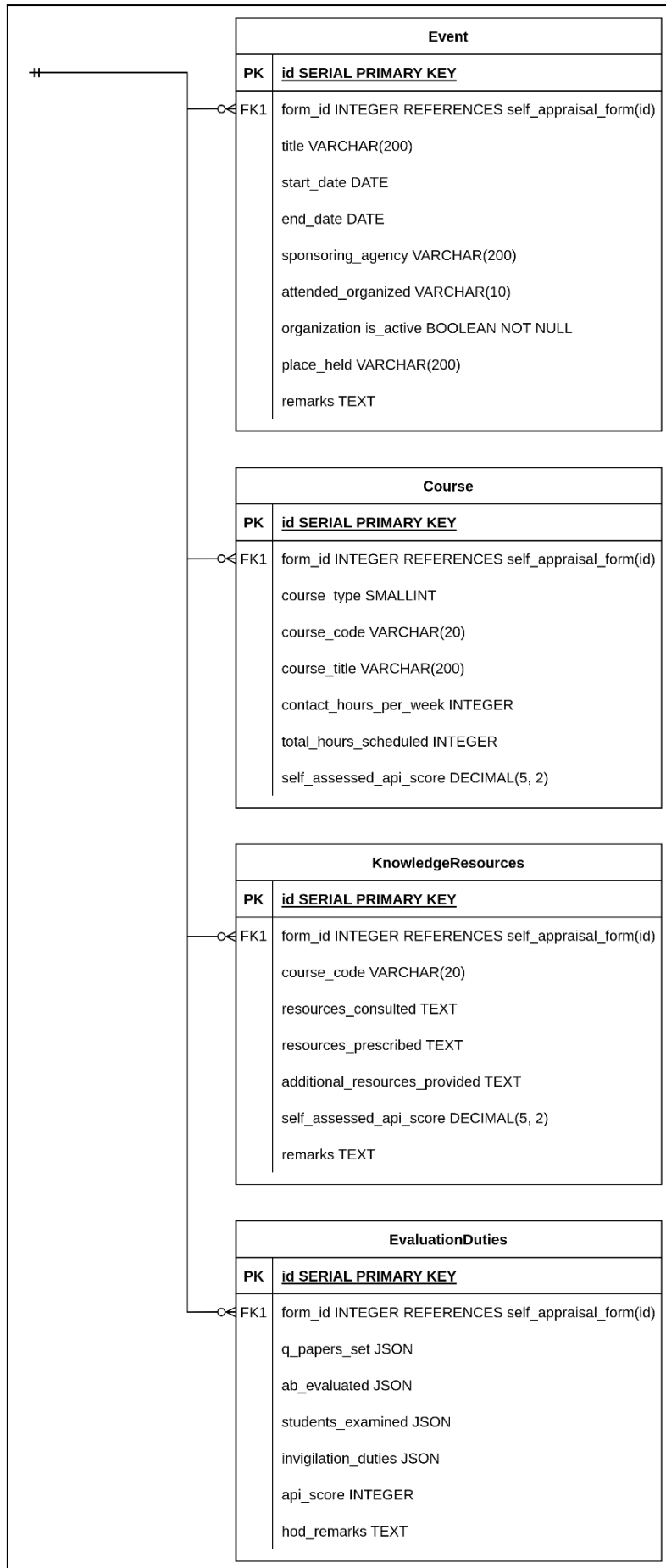
The stores filed self-reviewing statements with information about professional achievements, contributions, and aspirations.  
Secure storage and authorization controls for protection of sensitive information.

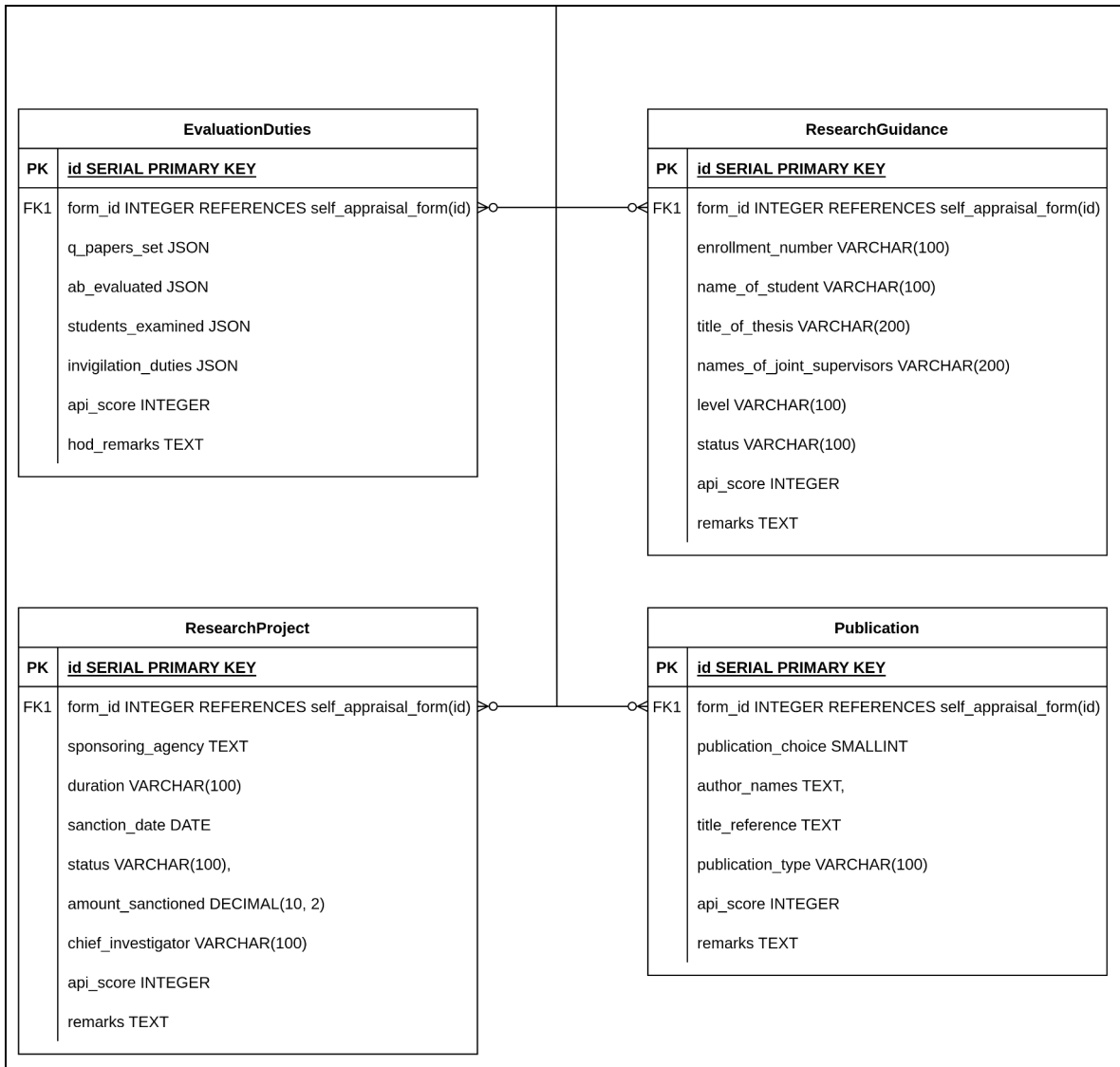
**Whole JUIT-SDK Consists of 10 Models/Tables as follows:**

1. User Model: With this model, it is possible to log data such as a user's name, email address, and role.
2. Department Model: The details stored in this model include department's name, code and location.
3. Self-Appraisal Form Model: This model keeps data on the different self appraisal forms, i.e., name of the form, definition and deadline.
4. Event Model: The model provides information on the particular events and the title, description, date and time of such event.
5. Course Model: The model comprises details regarding courses including the course' title, descriptions, starting dates, ending dates, and instructors.
6. Knowledge Resources Model: The model stores information regarding different types of knowledge resources like title, description, resource type, URL, among others.
7. Evaluation Duties Model: The first model retains details regarding the nature of the evaluation duties which entails the duties title, content, date for completion, and evaluator.
8. Publication Model: The model provides the data on publications like the publication title, authors, year of the publication, and a journal that it was published in.
9. Research Project Model: The model contains records of research projects such as the title, a description, when it begun, when it ended and who is the principal investigator.
10. Research Guidance Model: It contains details like the research guidance's name, a summary of it, its start and end date and the mentoring one.

# ERD DIAGRAM







### 3.3 DATA WAREHOUSING

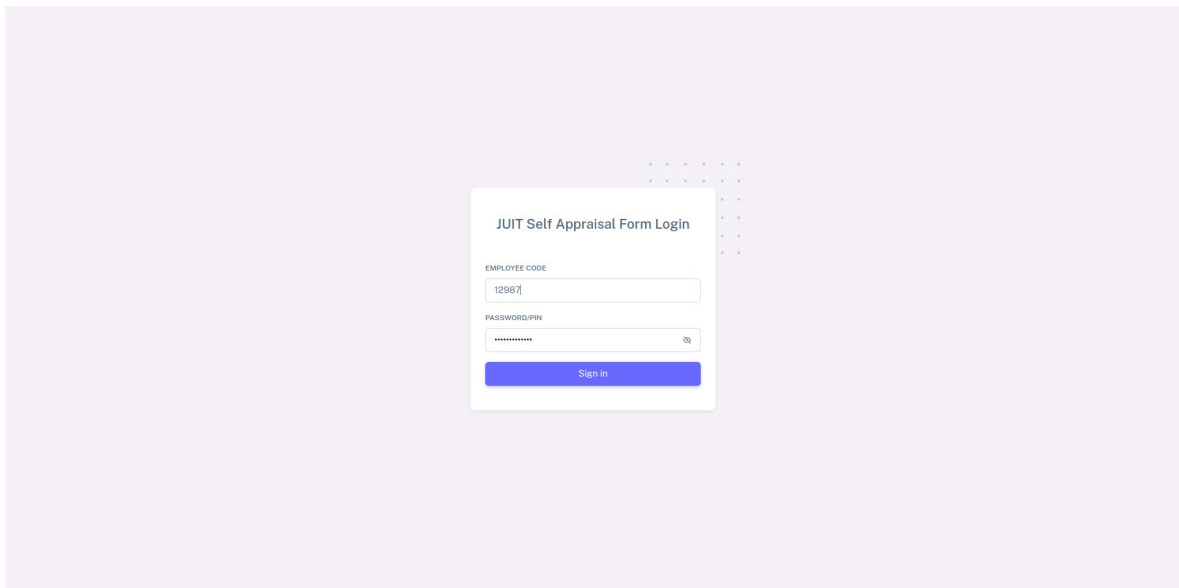
In addition there will be so much of information available in the JUIT SDK like all the details about events, classes and journal publications from the college. The student experience will be enhanced in many various ways with this information. For example, the data can be used to:

- To determine the trend of student involvement in events. This piece of information can be helpful in organizing other social events better suited for students.
- Look out for top classes or categories. The data collected can also serve in coming up with new programs which are tailored towards the desires of the pupils.
- Locate poor performing learners. Using this information, one can aid learners in becoming more successful.

One of the most notable features is that it will incorporate PostgreSQL as its strong and open – source object – relational database management system. It is well-renowned for its resiliency, extensive functionality, and good performance in working with data. Suitable in large data storage for the numerous data samples will provide the JUIT SDK.

Besides the data that gets directly collected from students, JUIT SDK will rely on information captured from college's site, social media platforms and academic records. The collected data will give a broader perspective of students' experiences, which may uncover aspects that require improvement.

### 3.4 IMPLEMENTATION



The login page of the application is captured in fig 3.4.1. User provides username and password in relevant boxes. On clicking of “Login”, the user will be validated, after which they will be directed to the homepage of the application. An error message will show up if a wrong username and password are inputted by the user.



Fig 3.4.2 shows a dashboard that provides a high-level view of all the drafts forms, Under Review



New Forms / **Drafts**

FORM ID	DEPARTMENT	PRESENT DESIGNATION	PRESENT PAY	EDIT
8	None	None	None	<a href="#">Continue</a>
9	CSE	None	None	<a href="#">Continue</a>

*Fig 3.4.3 Draft Screen*

Forms For Review / **Drafts**

FORM ID	FACULTY NAME	DEPARTMENT	ACTIONS
1	vaibhav	CSE	<a href="#">View Form</a>
3	vaibhav	CSE	<a href="#">View Form</a>
4	vaibhav	CSE	<a href="#">View Form</a>
5	vaibhav	CSE	<a href="#">View Form</a>
7	vaibhav	CSE	<a href="#">View Form</a>

*Fig 3.4.4 Form Review*

Self Appraisal Form / **ID: 10**

1. NAME:  
vaibhav

3. QUALIFICATIONS:  
None

5. UNIVERSITY JOINING DATE:  
None

7. PRESENT PAY SCALE & PAY:  
None

9. ADDITIONAL QUALIFICATION ACQUIRED DURING THE YEAR (GIVE FULL DETAILS):

2. DEPARTMENT:  
None

4. PRESENT DESIGNATION:  
None

6. FIRST DESIGNATION:  
None

8. AREAS OF SPECIALIZATION AND CURRENT INTEREST:

10. PURSUING HIGHER STUDIES (GIVE FULL DETAILS):

[Edit](#)

---

11. Orientation/Refresher Courses, Summer/Winter Schools, Faculty Development Programmes, Conferences/Workshops Attended/Organized: [+ Add Event](#)

TITLE	SPONSORING AGENCY	ORGANIZATION	PLACE HELD	ATTENDED/ORGANIZED	ACTIONS
No Events Found					

---

12. Teaching, Learning and Evaluation Activities [+ Add Course](#)

*Fig 3.4.5 Form Filling (From Starting)*

[Edit](#)

### Evaluation Duties

S. NO.	ACTIVITY	CLASS	T1	T2	T3
1	No. of Q. Papers Set	UG	1	10	0
		PG	0	10	0
2	No. of A/ B Evaluated	UG	899	99	8
		PG	1	100	0
3	No. Of Students Examined through Practical/ Seminar/ Project Examination	UG	10	10	10
		PG	1	10	10
4	No. of Examination Invigilation Duties	Allotted	10	10100	100
		Performed	10	0	0

[Edit](#)

(A) CONTRIBUTION/ PARTICIPATION IN STUDENTS EXTRA & CO-CURRICULAR ACTIVITIES:
(B) CONTRIBUTION/ PARTICIPATION IN DEPARTMENTAL ACTIVITIES & DEVELOPMENT:

*Fig 3.4.6 Form (Filling Evaluation)*

TITLE	SANCTION DATE	STATUS	AMOUNT SANCTIONED	CHIEF INVESTIGATOR	ACTIONS
No Research Projects and Consultancy Works:					
17. Research Guidance:					<a href="#">+ Add Event</a>
ENROLLMENT NUMBER	NAME	TITLE	JOINT SUPERVISORS	LEVEL	STATUS
No Events Found					
18. MEMBERSHIP OF PROFESSIONAL BODIES/ NATIONAL/ INTERNATIONAL COMMITTEES:			19. ANY OTHER INFORMATION:		
20. LIST OF ENCLOSURES:					
<a href="#">Edit</a>					
<b>Submit Form</b>					
Please be sure. This action is irreversible.					
<input type="checkbox"/> Certified that the above data is correct and I shall be responsible for any inaccurate/incorrect data and shall be liable for suitable action for the same, as decided by the authorities.					
<a href="#">Submit Form</a>					

© 2023 , made by Vaibhav Sharma & Rishabh Kesarwani

*Fig 3.4.7 Form (Submitting Form)*

Forms For Review / **Drafts**

FORM ID	FACULTY NAME	DEPARTMENT	ACTIONS
1	vaibhav	CSE	<a href="#">View Form</a>
3	vaibhav	CSE	<a href="#">View Form</a>
4	vaibhav	CSE	<a href="#">View Form</a>
5	vaibhav	CSE	<a href="#">View Form</a>
7	vaibhav	CSE	<a href="#">View Form</a>

*Fig 3.4.8 Form (All Forms for Review)*

17. Research Guidance:

ENROLLMENT NUMBER	NAME	TITLE	JOINT SUPERVISORS	LEVEL	STATUS	
8792	98	788	78	PhD	ONGOING	<a href="#">✎</a> <a href="#">🗑️</a>

REMARKS BY THE HOD:

[Add/ Edit Remarks](#)

*Fig 3.4.9 Form (Adding Remarks)*

```
1  juitforms
2  |— authfort
3     |— __init__.py
4     |— admin.py
5     |— apps.py
6     |— models.py
7     |— tests.py
8     |— urls.py
9     |— views.py
10 |— db.sqlite3
11 |— formreview
12     |— __init__.py
13     |— admin.py
14     |— apps.py
15     |— form.py
16     |— migrations
17     |— models.py
18     |— tests.py
19     |— urls.py
20     |— views.py
21 |— juitform
22     |— __init__.py
23     |— asgi.py
24     |— settings.py
25     |— urls.py
26     |— wsgi.py
27 |— manage.py
28 |— requirements.txt
29 |— selfappraisal
30     |— __init__.py
31     |— admin.py
32     |— apps.py
33     |— form.py
34     |— migrations
35     |— models.py
36     |— tests.py
37     |— urls.py
38     |— views.py
```

*Fig 3.4.10 Folder Structure*

### 3.5 KEY CHALLENGES

- A big concern is how can the data collected securely be done utilizing the JUITSDK. This data will be confidential, therefore there will be a need to secure it from undue access, breach, alteration, or erasure.
- Another problem for JUIT SDK to handle is its scalability. This will increase the number of students using the SDK hence putting much pressure on the system.
- Ensuring that JUIT SDK gathers feedback from users is never-ending task. Change is a necessity in order for the system to remain applicable for all its users, it must not cease evolving.
- Another challenge is to make designing the JUIT SDK usable. Students, faculty, and administrators should find it easy operating within the system.

### EVALUATION DUTIES

Evaluation Duties

S. NO.	ACTIVITY	CLASS	T1	T2	T3
1	No. of Q. Papers Set	UG	100	0	0
		PG	0	0	0
2	No. of A/ B Evaluated	UG	0	0	0
		PG	0	0	0
3	No. Of Students Examined through Practical/ Seminar/ Project Examination	UG	0	0	0
		PG	0	0	0
4	No. of Examination Invigilation Duties	Allotted	0	0	0
		Performed	0	0	0

Edit

Fig 3.5.1 EVALUATION DUTIES

```
1 class EvaluationDuties(models.Model):
2
3     def default_json():
4         return {"UG": [0, 0, 0], "PG": [0, 0, 0]}
5
6     def default_json_duties():
7         return {"ALLOTTED": [0, 0, 0], "Performed": [0, 0, 0]}
8
9     form = models.OneToOneField(SelfAppraisalForm, on_delete=models.CASCADE)
10    q_papers_set = models.JSONField(default=default_json, null=True, blank=True)
11    ab_evaluated = models.JSONField(default=default_json, null=True, blank=True)
12    students_examined = models.JSONField(default=default_json, null=True, blank=True)
13    invigilation_duties = models.JSONField(default=default_json_duties, null=True, blank=True)
14    api_score = models.IntegerField(null=True, blank=True)
15    hod_remarks = models.TextField(null=True, blank=True)
16
17    def __str__(self):
18        return f"form: {self.form}"
```

*Fig 3.5.2 Model*

# CHAPTER 4: TESTING

## 4.1 TESTING STRATEGY

The JUIT SDK will be tested using a combination of manual and automated testing. Manual testing will be performed by Small group of faculty to verify the functionality of the SDK. Automated testing will be performed using a variety of tools, such as Selenium and pytest, django Tests.

### MANUAL TESTING

Manual testing will be performed on the following areas:

- User interface
- Functionality
- Performance
- Security

### AUTOMATED TESTING

Automated testing will be performed on the following areas:

- User interface
- Functionality
- Performance

Automated testing tools will be used to verify the functionality of the SDK and to identify any potential bugs.

The JUIT SDK will be automatically tested using a variety of tools, such as:

- Selenium
- Unittest

The Python standard library module, unittest, is used as Django's unit test. This test is based on the class approach in this module. Hence, every one of the tests lives in its own class and inherits from the unittest.TestCase class.

The first step of writing a unit test is creating a new class derived from unittest.TestCase. You then should write one or many methods within the class which begin with the phrase "test". Every test must ensure that particular part of your coding is correct.

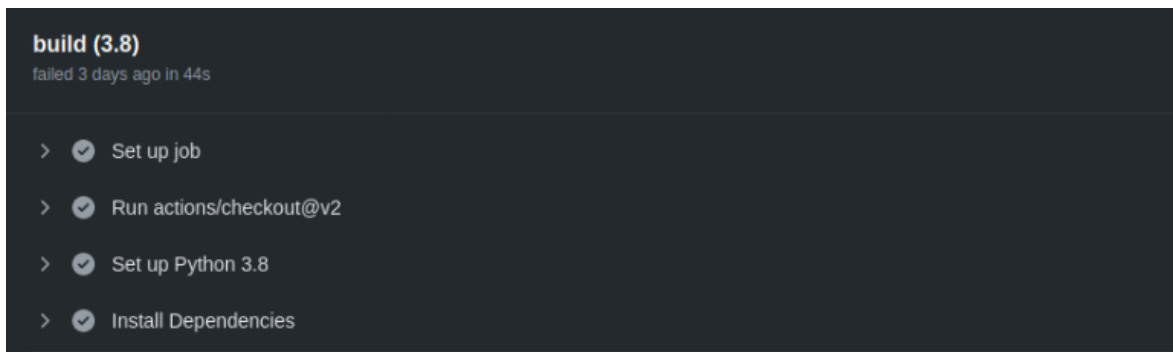
For instance, when writing a unit test for a function that sums up two numbers, one can come up with a method named "test add numbers". The method is a function that takes two arguments, the first argument is the first\_number to add, whereas the second argument will be the second number to add. The process involves summing up the two values and comparing the result with the expected number. The

test would be regarded as successful if the outcome equalled the expected value. Otherwise, the test would fail.

You can then run the tests by invoking the `unittest.main()` function after defining your test cases. It will initiate testing all tests within the file with a reporting result of those done. The report will highlight how many tests were executed, how many these tests succeeded and also how many of them failed.

In addition, there are several tests that facilitate writing unit tests, Django. Coverage, a unit test for measurement of test coverage while `unittest.mock` is a tool that one uses to mock dependencies in a set.

## 4.2 AUTOMATING DJANGO TESTS WITH GITHUB ACTIONS



*Fig 4.2.1 Github Workflow*

The following figure, i.e., Figure 4.2.1 illustrates how we used the Github workflow for our Django project. It begins with a pull request from the dev branch onto the prod branch. Once the pull request is created, Github Actions will automatically run the following steps:

- Linting: flake8 performs a lint on the code for bugs before being installed.
- Static analysis: Bandit analyses the code looking for potential safety breaches.
- Unit tests: Unit tests help to verify that the code works correctly.

Integration tests: Integration tests run to check if the code integrates well with the rest of the system.

End-to-end tests: End-to-end tests are carried out to make sure that the code works how it ought to be doing in production environment.

Finally, for a fully automated procedure, we included automatic Github Actions in our production branch. They occur every time a new pull request is made in the develop branch to go directly to the production branch. They execute the linting, static analysis, unit tests, integration tests, and end-to-end tests and forward a notification to the programmer upon failure.



This has made it possible for us to improve the quality of our code and catch bugs early before deploying them in production environment. Additionally, it has aided our efforts to shorten the period of merging pull requests into the production branch.

# CHAPTER 5: RESULTS AND EVALUATION

## 5.1 RESULTS

The honorable VC Sir as well as other board members engaged in a very productive dialogue with us. There was a lot of positive responses to the Project.

In the meeting, we presented the most current features, updates, and functionalities of the project. We also gave details of our achievements and also, incorporated the feed-back that we got from the Board. We also linked the project with the Google Scholar and college library management system.

The director of the board thanked us for the job well done. They were excited about the project and helped create a climate for constructive criticism in order to help refine the project and product even more. In addition, they also highlighted how the project would positively influence university administration in totality.

### ACTION ITEMS

- Make user interfaces even simpler and easier to use. The interfaces should be designed to meet the needs of users no matter their level of expertise and individuals with disabilities.
- Conduct more tests on data management mechanisms to ascertain their strength. This encompasses subjecting the mechanisms to numerous conditions such as high volumes of data, multiple users and unanticipated errors.
- Prepare a full end-user training session post-project implementation. This will guarantee that the end-users will exploit the system productively and appropriately.

### NEXT STEPS

- From now onwards, we shall include the relevant ideas acquired, and ensure that the project fulfills the needs it intends. Such measures include incorporation of stakeholders, users, and the project team feedback.
- Our focus on excellence gains momentum when team members continue to commit themselves to maintain the drive for success. This includes working even harder, remaining focused and being willing to adopt new ideas.

## 5.2 COMPARISON WITH EXISTING SOLUTIONS

Previously the procedure was fully manual and looked something like this.

**JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT**  
**Annual Self Assessment - Faculty**  
**For Academic Year 20 - 20**

1. Name \_\_\_\_\_ 2. Department \_\_\_\_\_
3. Qualifications \_\_\_\_\_ 4. Present Designation \_\_\_\_\_
5. University Joining Date \_\_\_\_\_ 6. First Designation \_\_\_\_\_
7. Present Pay Scale & Pay \_\_\_\_\_
8. Areas of Specialization and Current Interest \_\_\_\_\_
9. Additional Qualification acquired during the year (Give full details) \_\_\_\_\_
10. Pursuing Higher Studies (Give full details) \_\_\_\_\_
11. Orientation/Refresher Courses, Summer/Winter Schools, Faculty Development Programmes, Seminars/Conferences/Workshops Attended/ Organized:

S. No.	Title	Dates/ Duration	Sponsoring Agency and Organisation & Place held	Attended/ Organized	Remarks by the HoD
1					
2					
3					

**12. Teaching, Learning and Evaluation Activities:**

12.1 Lectures/Tutorials/Practical's/Projects/Seminars Conducted:

**(A) ODD SEMESTER July 20\_\_ To Dec. 20\_\_**

S. No.	Course Code	Course Title	Contact Hours/ Week	Total No. of Hours Classes in Semester		Self Assessed API Score	Remarks by the HoD
				Scheduled	Engaged		
1							
2							
3							
TOTAL							
Classes Allotted/ Scheduled and Engaged in excess of norms							

This new solution is fully digital and presents a complete picture of faculties' performance on a single dashboard. These comprise all occurrences, writings, and anything else.

The dash board is straightforward and user-friendly, allowing one to keep track of faculty performance at a glance. Users can also make changes on this basis and according to their unique requirements.

The dashboard provides a wealth of information, including:

- Faculty activity levels
- Publication counts
- Event participation
- Grants awarded
- Student evaluations

Such data is necessary in determining faculty performance in order to pinpoint those who need to improve and also appreciate the outstanding ones. The dashboard can likewise be utilized to study the trends over time that will provide insights on how to strengthen support for faculty in the University.

In essence, the new solution represents a useful improvement and enhancement of faculty performance. This presents the full perspective on what the faculty does which helps in identifying areas that require further development. It is also adjustable allowing for adjustment of it to special requirements.

# CHAPTER 6: CONCLUSION AND FUTURE SCOPE

## 6.1 CONCLUSION

One of the major projects that form part of the university's digitalisation process is the JUIT SDK project. This is a total package which renders the evaluation of faculty easier and transparent based on evidence.

Faculty, along with university IT staff and independent consultants. While the IT department developed a software platform, faculty members examined the system's design and functions. The company employed outside experts on data analysis and user experience design.

Everyone involved invested in his efforts, his talent and joint work helped project JUIT SDK become successful. The project team worked for round-the-clock facing numerous issues that are typical in development of sophisticated software systems. They also had a creative approach by utilizing diverse methods of tackling problems and addressing customers' needs. After that, it was again very successful when the staff of the university's IT department, lecturers as well as the external experts worked together professionally. Success of this project was achieved by ensuring that the right people were on board.

The JUIT SDK is likely to offer massive benefits for its host institution, i.e., the university in question. Faculty appraisal is now more effective and fair by simplifying them. Additionally, the system is used to record the faculty ratings, which can be used in decision making, budgeting and planning. The university can be said to be embracing decision-making that is evidence-based, transparency, and an efficiency culture; which is JUIT SDK.

The progress being shown by this JUIT SDK project is setting a trend in this university. This demonstrates the commitment of the university on digitisation. Their pride reflects their commitment in the development of the development environment (JUIT SDK) for the future.

# REFERENCES

- [1]. Research on Big Data Security and Privacy Risk Governance. 2021-  
<https://ieeexplore.ieee.org/document/9727068>, 2021
- [2]. Django Project Documentation <https://docs.djangoproject.com/en/4.2/intro/overview/>
- [3]. Scalability analysis comparisons of cloud-based software services -  
<https://journalofcloudcomputing.springeropen.com/articles/10.1186/s13677-019-0134y>,  
2019
- [4]. Staying afloat amidst extreme uncertainty: A case study of digital transformation in  
Higher Education, <https://www.sciencedirect.com/science/article/pii/S0040162523002883>  
2023
- [5]. Comparative Study of the Performance Appraisal Systems for Academic Members’  
Performance Appraisal Systems in the Various Universities in around the World  
According to the Diagnostic Model: A Qualitative Research,  
[https://www.researchgate.net/publication/270227022\\_Comparative\\_Study\\_of\\_the\\_Perfor  
mance\\_Appraisal\\_Systems\\_for\\_Academic\\_Members'\\_Performance\\_Appraisal\\_Systems\\_i  
n\\_the\\_Various\\_Universities\\_in\\_around\\_the\\_World\\_According\\_to\\_the\\_Diagnostic\\_Model  
\\_A\\_Qualitati](https://www.researchgate.net/publication/270227022_Comparative_Study_of_the_Performance_Appraisal_Systems_for_Academic_Members'_Performance_Appraisal_Systems_in_the_Various_Universities_in_around_the_World_According_to_the_Diagnostic_Model_A_Qualitati) 2014
- [6]. Research in data warehouse modeling and design: Dead or alive?  
[https://www.researchgate.net/publication/220933865\\_Research\\_in\\_data\\_warehouse\\_mode  
ling\\_and\\_design\\_Dead\\_or\\_alive](https://www.researchgate.net/publication/220933865_Research_in_data_warehouse_modeling_and_design_Dead_or_alive) 2006
- [7]. Survey on Cross Site Request Forgery (An Overview of CSRF) -  
[https://www.researchgate.net/publication/281583832\\_Survey\\_on\\_Cross\\_Site\\_Request\\_Fo  
rgery\\_An\\_Overview\\_of\\_CSRF](https://www.researchgate.net/publication/281583832_Survey_on_Cross_Site_Request_Forgery_An_Overview_of_CSRF) 2013
- [8]. Unlocking the Magic of Single Page Applications with Django and HTMX.  
[https://vaaibhavsharma.medium.com/unlocking-the-magic-of-single-page-applications-wit  
h-django-and-htmx-f0ba8d93be11](https://vaaibhavsharma.medium.com/unlocking-the-magic-of-single-page-applications-with-django-and-htmx-f0ba8d93be11), 2022
- [9]. PostgreSQL: The World's Most Advanced Open Source Relational Database  
<https://www.postgresql.org/docs/current/tutorial-fk.html>
- [10]. The Implementation Of Postgres  
[https://www.researchgate.net/publication/3296158\\_The\\_Implementation\\_Of\\_Postgres](https://www.researchgate.net/publication/3296158_The_Implementation_Of_Postgres),  
1990
- [11]. Django Web Development Simple & Fast, <https://ijcrt.org/papers/IJCRT2105197.pdf>,  
2021
- [12]. Representational State Transfer (REST),  
[https://ics.uci.edu/~fielding/pubs/dissertation/rest\\_arch\\_style.htm](https://ics.uci.edu/~fielding/pubs/dissertation/rest_arch_style.htm) 2000
- [13]. Jinja is a fast, expressive, extensible templating engine.  
<https://jinja.palletsprojects.com/en/3.1.x/intro/#installation>

- [14]. The Django template language  
<https://docs.djangoproject.com/en/4.2/ref/templates/language/>
- [15]. Django Source Code-  
<https://github.com/django/django/blob/main/django/shortcuts.py>
- [16]. Pytest Documentations- <https://docs.pytest.org/en/7.4.x/>
- [17]. Django Password Manager -  
<https://docs.djangoproject.com/en/4.2/topics/auth/passwords>
- [18]. BeautifulSoup - <https://www.crummy.com/software/BeautifulSoup/>
- [19]. Web Scraping - [https://www.researchgate.net/publication/317177787\\_Web\\_Scraping](https://www.researchgate.net/publication/317177787_Web_Scraping)
- [20]. A Review on Web Scrapping and its Applications -  
[https://www.researchgate.net/publication/335577015\\_A\\_Review\\_on\\_Web\\_Scrapping\\_and\\_its\\_Applications](https://www.researchgate.net/publication/335577015_A_Review_on_Web_Scrapping_and_its_Applications)

# API Score

---

## ORIGINALITY REPORT

---

10%

SIMILARITY INDEX

9%

INTERNET SOURCES

3%

PUBLICATIONS

5%

STUDENT PAPERS

---

## PRIMARY SOURCES

---

1

[ir.juit.ac.in:8080](http://ir.juit.ac.in:8080)

Internet Source

3%

---

2

[www.jiit.ac.in](http://www.jiit.ac.in)

Internet Source

1%

---

3

[www.ir.juit.ac.in:8080](http://www.ir.juit.ac.in:8080)

Internet Source

1%

---

4

[livrepository.liverpool.ac.uk](http://livrepository.liverpool.ac.uk)

Internet Source

1%

---

5

Submitted to University of Plymouth

Student Paper

<1%

---

6

[doaj.org](http://doaj.org)

Internet Source

<1%

---

7

[django.readthedocs.io](http://django.readthedocs.io)

Internet Source

<1%



**JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT**  
**PLAGIARISM VERIFICATION REPORT**

Date: .....

Type of Document (Tick):  PhD Thesis  M.Tech Dissertation/ Report  B.Tech Project Report  Paper

Name: \_\_\_\_\_ Department: \_\_\_\_\_ Enrolment No \_\_\_\_\_

Contact No. \_\_\_\_\_ E-mail. \_\_\_\_\_

Name of the Supervisor: \_\_\_\_\_

Title of the Thesis/Dissertation/Project Report/Paper (In Capital letters): \_\_\_\_\_

**UNDERTAKING**

I undertake that I am aware of the plagiarism related norms/ regulations, if I found guilty of any plagiarism and copyright violations in the above thesis/report even after award of degree, the University reserves the rights to withdraw/ revoke my degree/report. Kindly allow me to avail Plagiarism verification report for the document mentioned above.

**Complete Thesis/Report Pages Detail:**

- Total No. of Pages =
- Total No. of Preliminary pages =
- Total No. of pages accommodate bibliography/references =

(Signature of Student)

**FOR DEPARTMENT USE**

We have checked the thesis/report as per norms and found **Similarity Index** at .....(%). Therefore, we are forwarding the complete thesis/report for final plagiarism check. The plagiarism verification report may be handed over to the candidate.

(Signature of Guide/Supervisor)

Signature of HOD

**FOR LRC USE**

The above document was scanned for plagiarism check. The outcome of the same is reported below:

Copy Received on	Excluded	Similarity Index (%)	Generated Plagiarism Report Details (Title, Abstract & Chapters)	
	<ul style="list-style-type: none"> <li>• All Preliminary Pages</li> <li>• Bibliography/Images/Quotes</li> <li>• 14 Words String</li> </ul>		Word Counts	
<b>Report Generated on</b>			Character Counts	
		<b>Submission ID</b>	Total Pages Scanned	
			File Size	

Checked by  
Name & Signature

Librarian

.....

**Please send your complete thesis/report in (PDF) with Title Page, Abstract and Chapters in (Word File) through the supervisor at [plagcheck.juit@gmail.com](mailto:plagcheck.juit@gmail.com)**