MERN STACK DEVELOPMENT USING VIRTUAL MACHINE & iBPS

Internship Report

Submitted for the partial fulfilment of the degree of

Bachelor of Technology

In

Mathematics & Computing

Submitted By

Mayank Tomar

0901MC201039

UNDER THE SUPERVISION AND GUIDANCE OF

Dr. D K Mishra

Assistant Professor

Department of Engineering Mathematics and Computing

माधव प्रौद्योगिकी एवं विज्ञान संस्थान, ग्वालियर (म.प्र.), भारत

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR (M.P.), INDIA

Deemed to be University

NAAC ACCREDITED WITH A++ GRADE

January-May 2024

DECLARATION BY THE CANDIDATE

I hereby declare that the work entitled MERN STACK DEVELOPMENT USING VIRTUAL MACHINE & iBPS is my work, conducted under the supervision of **Dr. D K Mishra, Assistant Professor** during the session Jan-May 2024. The report submitted by me is a record of bonafide work carried out by me.

I further declare that the work reported in this report has not been submitted and will not be submitted, either in part or in full, for the award of any other degree or diploma in this institute or any other institute or university.

Mayank Tomar
0901MC201039
B.Tech. VIII Sem

Date: 17-05-2024
Place: Gwalior

This is to certify that the above statement made by the candidates is correct to the best of my knowledge and belief.

Guided By:

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Assistant Professor
Department of Mathematics and Computing
MITS, Gwalior

Departmental Project Coordinator

21/5/24

Dr. Dr D K Jain
Professor
Department of Engineering
Mathematics & Computing
MITS, Gwalior

Approved by HoD

Dr. Vikas P. Shinde
Professor & HoD
Department of Engineering
Mathematics & Computing
MITS, Gwalior

PLAGIARISM CHECK CERTIFICATE

This is to certify that I/we, a student of B.Tech. in **Engineering Mathematics & Computing** have checked my complete report entitled "MERN STACK DEVELOPMENT USING VIRTUAL MACHINE & IBPS" for similarity/plagiarism using the "Turnitin" software available in the institute.

This is to certify that the similarity in my report is found to be 16% which is within the specified limit (20%). The full plagiarism report along with the summary is enclosed.

Mayank Tomar

0901MC201039

Checked & Approved By:

Dr. J K Muthele
Associate Professor
Department of Mathematics and Computing
MITS, Gwalior

ABSTRACT (FOR PROJECTS)

A REPORT FOR END TERM EVALUATION OF INTERNSHIP

This internship report describes the internship progress till now at the IndVibe Infotech Pvt Ltd, Indore. Indvibe Infotech is the leading provider of digital transformation platform with native process automation, content services, and communication management capabilities. IndVibe Infotech Pvt Ltd provide end-to-end development of web and mobile apps in integration with contemporary technologies like Python, IoT, AR/VR, AI, and Web Technology to boost the online-success of businesses.

About the Organization:

INDVIBE INFOTECH PVT LTD Company will inspire its employees to be the best they can be. We will engage in sustainable practices and anticipate the needs of our customers. We will maximize return to the stockholders while still maintaining quality in our products. Being a top-notch Custom software development company, our services are designed to take your business to the next level, reducing the gap between you and the heights of success you wish to achieve.

Internship:

Mern Stack Development

Mernstack Development MERN is a free and open-source JavaScript software stack for building dynamic web sites and web applications. The MERN stack is MongoDB, Express.js, ReactJS, and Node.js. Because all components of the MERN stack support programs that are written in JavaScript, MERN applications can be written in one language for both server-side and client-side execution environments.

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(Deemed to be University) NAAC Accredited with A++ Grade

ACKNOWLEDGEMENT

The full semester internship has proved to be pivotal to my career. I am thankful to my institute, **Madhav Institute of Technology and Science** to allow me to continue my disciplinary/interdisciplinary internship as a curriculum requirement, under the provisions of the Flexible Curriculum Scheme (based on the AICTE Model Curriculum 2018), approved by the Academic Council of the institute. I extend my gratitude to the Director of the institute, **Dr. R. K. Pandit** and Dean Academics, **Dr. Manjaree Pandit** for this.

I would sincerely like to thank my department, **Department of Mathematics and Computing, for allowing** me to explore this internship. I humbly thank **Dr. V P Shinde**, Professor and Head, Department of Mathematics and Computing, for his continued support during the course of this engagement, which eased the process and formalities involved.

I am sincerely thankful to my faculty mentors. I am grateful to the guidance of **Dr. D K Mishra**, Assistant Professor, Department of Mathematics and Computing, for his continued support and close mentoring throughout the internship. I am also very thankful to the faculty and staff of the department.

Mayank Tomar

0901MC201039

PROOF OF INTERNSHIP OFFERED BY THE INDVIBE INFOTECH PVT. LTD.

IndVibe Infotech Pvt Ltd

Iso 9001:2015 certified company

INTERNSHIP SELECTION LETTER

Date 01-January, 2024

This is to certify that **Mr. Mayank Tomar** is a student of B.tech specialization in Mathematics and Computing from Madhav Institute of Technology and Science, Gwalior(M.P.) has been provisionally selected for the 04 months (01-january,2024 to 01-may,2024)Internship Programme in **Mernstack Development,** at IndVibe InfoTech Pvt Ltd.

Wishing you a great future in the IT Industry and looking forward to seeing you at IndVibe InfoTech Pvt Ltd.

Warm Regards

Center Head

IndVibe InfoTech Pvt Ltd

302 B, 3rd Floor Rajat Complex,18 Kibey Compound Near Madhumilan Square, Indore
indvibeinfotech@gmail.com
Mob. : 9098884202, 9926651477, 9993988368

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ACRONYMS

Abbreviation	Description
MERN	MongoDB, Express, React, and Node.js
MongoDB	A document-oriented database that stores data in JSON format
Express	A web application framework that streamlines the applications
React	A front-end JavaScript library that provide a toolkit for interfaces
Node.js	A JavaScript web server that enables running JavaScript code
AJAX	AJAX is an acronym of asynchronous JavaScript And XML.
API	stands for Application Programming Interface
ASP	stands for Active Server Pages. .Net refers framework
BLOB	acronym for Binary Large Object.
CDA	stands for Content Delivery Application
CDN	stands for Content Delivery Network.
CMA	stands for Content Management Application
CMS	stands for Content Management System
CRUD	stands for Create, Read, Update and Delete

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Chapter 1: INTERNSHIP OVERVIEW

1.1 Introduction:

The internship starts with one-week orientation program i.e., NBSO. In NBSO, I interacted with colleagues and seniors. I learnt about Indvibe policies, work culture, company legacy. It is followed by IEEP training. In this training, I was taught about Company Products. After IEEP training, I attended the IBSSW workshop. IBSSW workshop includes a project. It was a team project. The team was provided with an SRS. Our task was to transform the SRS into an application products.

1.2 Objective and Scope:

One of the core reasons and purposes of the internship is to give exposure of a specific job, profession, or industry. Internship provides a clear idea of strengths, weaknesses, likes, and dislikes. Knowing that I have hands-on experience will make me more confident in my job.

1.3 Internship Trainings:

1.3.1 NBSO:

It was a one-week long orientation program. We were introduced with Company policies, work culture, company legacy. Welcome Session & Interaction with Delivery Leaders, Code of Ethics & Business Conduct, Network of System Support, Goal Setting & Goal Assessment, Learning & Development, CSR Engagement, Company Culture and Value System, Campus to Corporate, Position Insight & Interaction with Delivery Leader are some of the sessions organized under NBSO.

1.3.2 IEEP:

This program is oriented towards building technical competency for Implementation

teams at Company products (OmniDocs, iBPS, OmniScan). This program includes Blended Learning Methodology encompassing "Teach Me, Show Me, Let Me Try" attained through:

1. Fusion of Agile and Practice-based Learning Dynamics.

2. Self-Paced eLearning [SPeL] Track with multiple Step-by-Step Course Modules.
3. Each Course Module includes learning videos, pdfs, and recordings of live sessions for self-study.
4. Requisite Hands-On under the guidance of Tech Buddy.

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The course shall be executed in the workshop mode with assessment / assignments and exposure to simulated project implementation environment. It is designed to benefit the participants by:

1. Giving them a feel of real time project execution.
2. Enabling them to understand working environment during project implementation.
3. Getting hands-on opportunities to explore products capabilities further.

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T he objective of Quality System Orientation is to get conversant/ refresh the Quality Standards pertaining to Software Project and bring its entire participant towards a common platform. Following are the parts of this workshop:

1. How to fill timesheets.
2. Get familiar with THECOMPASS.

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1.4.1 VM or IP:

A Virtual Machine (VM) is a compute resource that uses software instead of a physical computer to run programs and deploy apps. Virtual machine technology is used for many use cases across on-premises and cloud environments. A VM has one primary IP address per network adapter. The primary IP address is assigned to the VM by the automatic or manual network it's attached to. Primary IP is used to access the VM from other machines connected to the same network.

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Enterprise class document archival and retrieval system - Built using robust server-side Java and J2EE technologies. Enterprise Content Management (ECM) Suite allows uS to access the right content in the right customer context and build the right experiences. The suite enables end-to-end management of your enterprise content,

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iBPS provides a Web Portal where all application modules are integrated into multiple views. These views are configurable basis user role within the organization.iBPS enables the user to easily capture requirements while process designing. User can generate the process specification document in HTML, PDF or DOC format.iBPS supports integration with various ERPs, DMS, etc. One can register external web applications within the iBPS's OmniApp window. Hence, user doesn't have to go to different windows to look for the relevant information.

1.4.6 MS SQL Server:

MS SQL Server is a relational database management system (RDBMS) developed by Microsoft. This product is built for the basic function of storing retrieving data as

required by other applications. It can be run either on the same computer or on another across a network.

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2.1 Objective:

The project is about discrepancies that occur in the banking system.

Discrepancy is defined as a difference or inconsistency.

Currently the branches are sending the Discrepancy by Mails to the RM and sending daily MIS to the Central Team. Central Team daily merges all Discrepancy data with single file. It is very time taking process as it is very difficult to track raised discrepancy details. The objective of this project is to automate this process.

2.2 Solution Scope:

Below functionality is to be the part of delivery:

1. End to end workflow for tracking purpose
2. Email triggers functionality
3. Master maintenance control through frontend access
4. Reports

2.3 Working:

For automation, single workflow will be created under application to raise the discrepancy to RM, with auto mail function. Discrepancy forms Discrepancy masters will be created with product mapping. If Decision is not made in the given time reminder emails will be triggered. Also discrepancy masters will be created with product mapping. It will help to enable easy tracking and TAT monitoring of transactions on daily basis.

Chapter 3: PRELIMINARY DESIGN

3.1 Process Designer:

iBPS (Intelligent Business Process Suite) Process Designer is a graphical tool that provides designing of business processes in a flow chart fashion with clear indication of the worksteps, conditions, and sequences in which tasks must be performed from initiation to completion. It enables users to design workflow processes with steps in series or in parallel or combination of both. It enables defining all worksteps in a process, their relationship, various processing rules, actions, work to be performed, and so on. It also provides compiled reports to measure correctness of the definition.

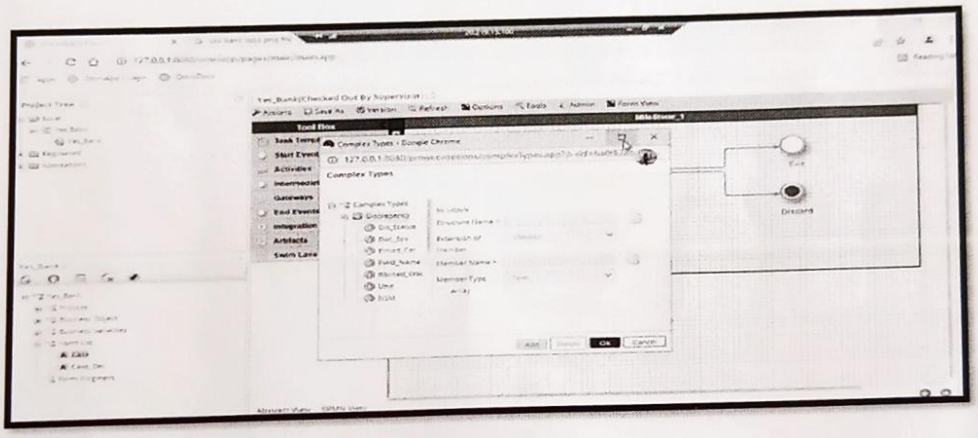


Fig 1: Process Designing

3.2 IForm:

Form Builder is an application that provides the facility of designing forms through its Graphical User Interface (GUI), and executing forms by associating certain functions with them. This interface can be a part of different applications or any third-party application. The forms designed using this interface can be reused, thus, significantly reducing the coding time for programmers/developers.

Fig 2: IForm Designing

MDM:

Master Data Management System (MDM) is a platform independent web-based tool, using which client can perform database management operations on their cabinets. User can Add, Modify the Tables and their Fields based on their rights.

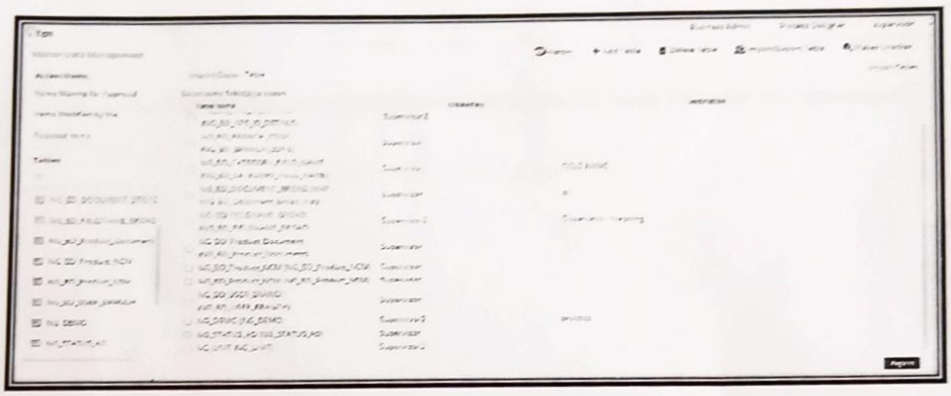


Fig 3: MDM

3.3 Reports:

Report is in tabular format. It can be created in two ways: customized and default. Default reports are reports gives the log information of process, workitem or activity. Customized report can contain anything like any variable value, form values or workitem properties based on the user's choice.

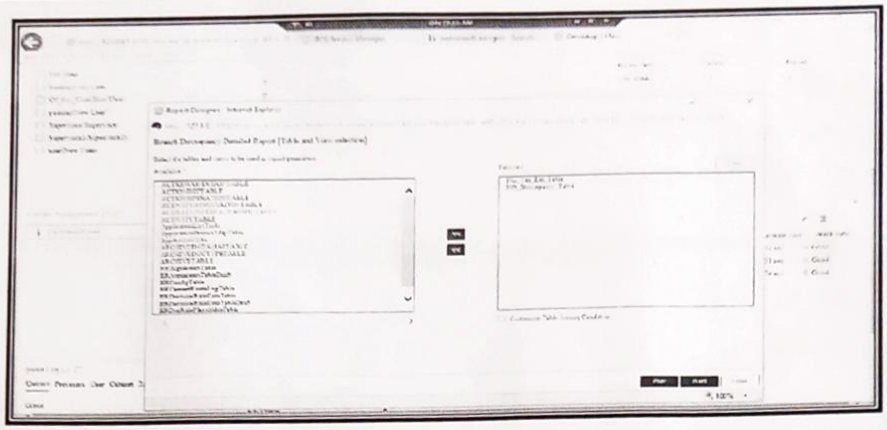


Fig 4: Report Designing

3.4 Database:

Databases are structured to facilitate the storage, retrieval, modification, and deletion of data in conjunction with various data-processing operations. Many forms of database can be used as – internal table, external table, complex variables etc.

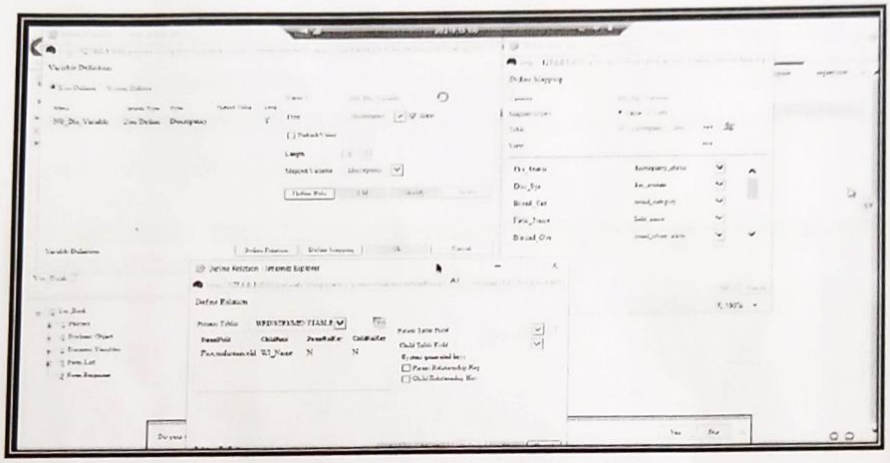


Fig 5: Complex Variable

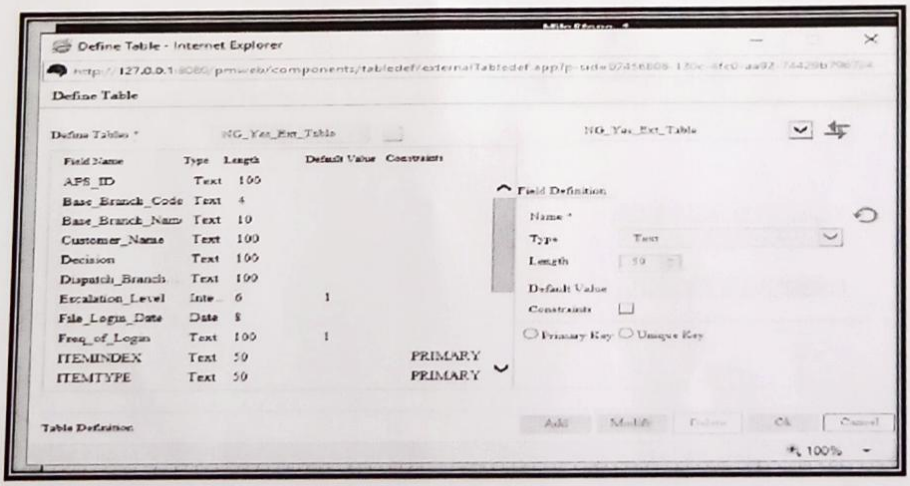


Fig 6: External Table

3.5 Triggers:

Triggers are the events that perform some specific task. These tasks includes sending a mail, setting the value for data variables, invoking an application, invoking data form for data entry, and communicating from external systems for data updating and retrieval. There are seven standard types of triggers, such as, Mail trigger, Launch Application trigger, Execute trigger, Data Entry trigger, Set trigger, Generate response trigger and Exception trigger.

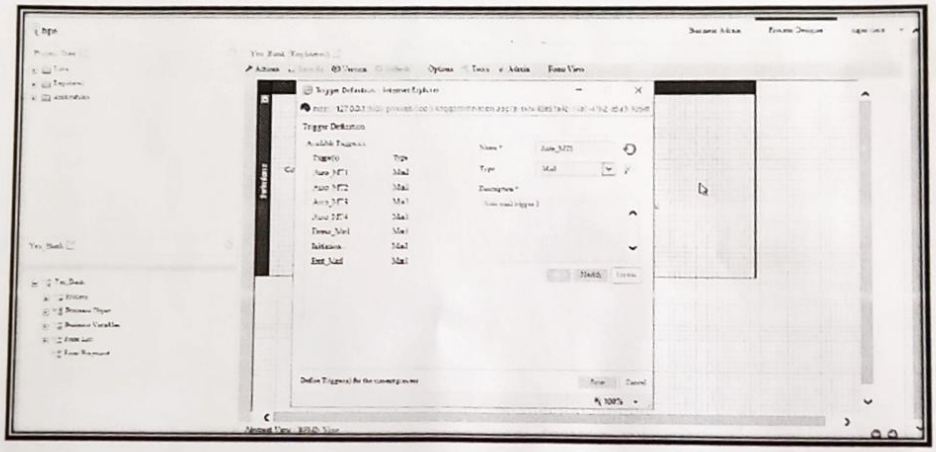


Fig 7: Trigger Functionality

Chapter 3: FINAL ANALYSIS

4.1 Results:

4.1.1 Work Flow:

In the resulting workflow, case is initiated with a form. It is then transferred to Decision_Ack workstep, where it is checked if accepted then it goes to Exit, if rejected goes to Discard. But if no decision is taken then timely reminder mails are sent and it is exited if no decision is taken even after a 45 days.

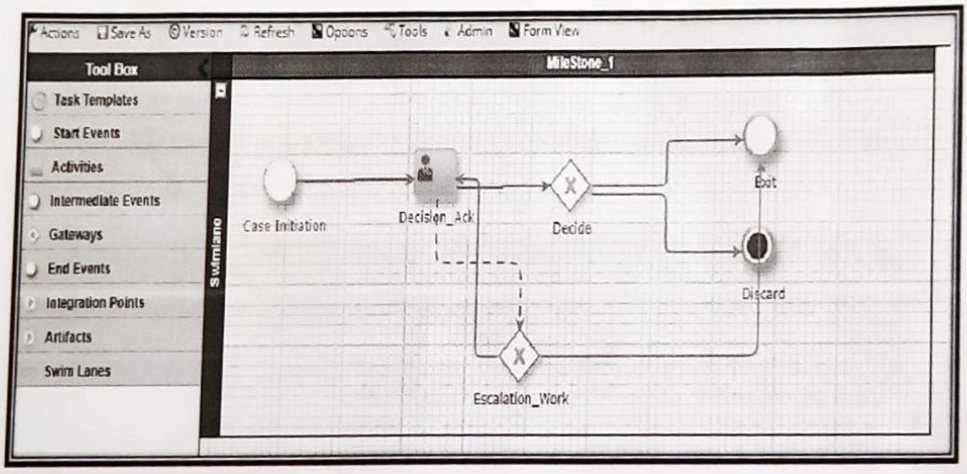


Fig 8: Process Flow

4.1.2 IForm:

Iform is used as a communication medium between different worksteps. The figure shows the iform created for the given project. It contains different details that are stored in MDM.

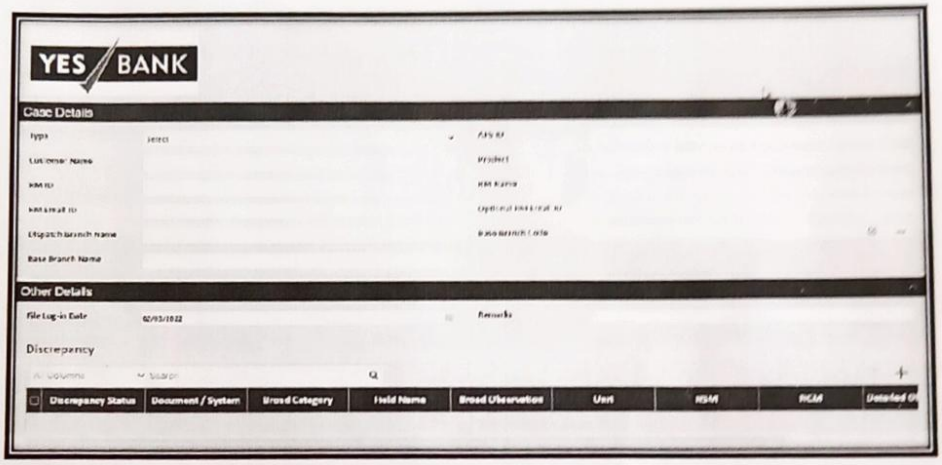
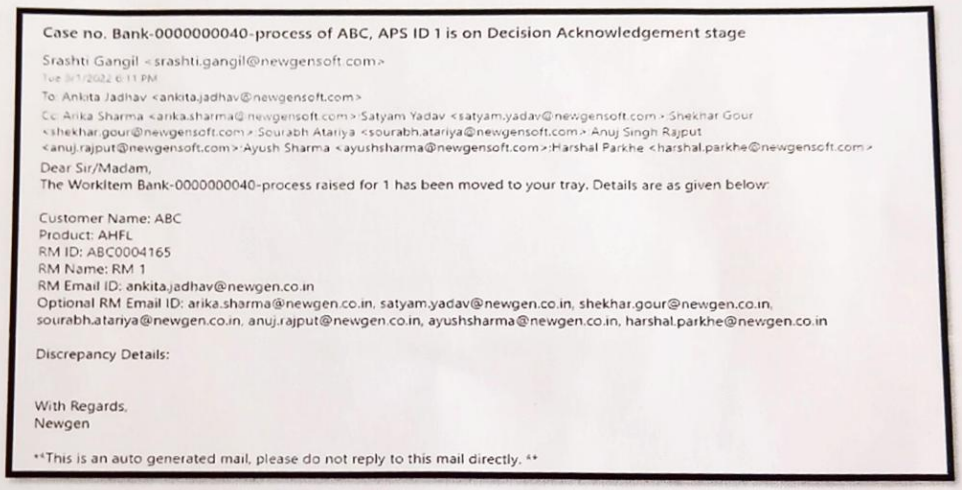


Fig 9: IForm

4.1.2 Email:

Mail triggers allow user to send e-mail notifications with predefined message and subject text to specified users. The predefined message and subject text can also contain variable names that are substituted by their actual values at run time. Mail triggers can be triggered on the entry of workitems in a workstep, or through Actions, ToDo Lists, and so on.



Case no. Bank-0000000040-process of ABC, APS ID 1 is on Decision Acknowledgement stage

Srashti Gangil <srashti.gangil@newgensoft.com>
Tue 8/1/2022 6:11 PM

To: Ankita Jadhav <ankita.jadhav@newgensoft.com>

Cc: Arika Sharma <arika.sharma@newgensoft.com>; Satyam Yadav <satyam.yadav@newgensoft.com>; Shekhar Gour <shekhar.gour@newgensoft.com>; Sourabh Atariya <sourabh.atariya@newgensoft.com>; Anuj Singh Rajput <anuj.rajput@newgensoft.com>; Ayush Sharma <ayushsharma@newgensoft.com>; Harshal Parkhe <harshal.parkhe@newgensoft.com>

Dear Sir/Madam,
The WorkItem Bank-0000000040-process raised for 1 has been moved to your tray. Details are as given below:

Customer Name: ABC
Product: AHFL
RM ID: ABC0004165
RM Name: RM 1
RM Email ID: ankita.jadhav@newgen.co.in
Optional RM Email ID: arika.sharma@newgen.co.in, satyam.yadav@newgen.co.in, shekhar.gour@newgen.co.in, sourabh.atariya@newgen.co.in, anuj.rajput@newgen.co.in, ayushsharma@newgen.co.in, harshal.parkhe@newgen.co.in

Discrepancy Details:

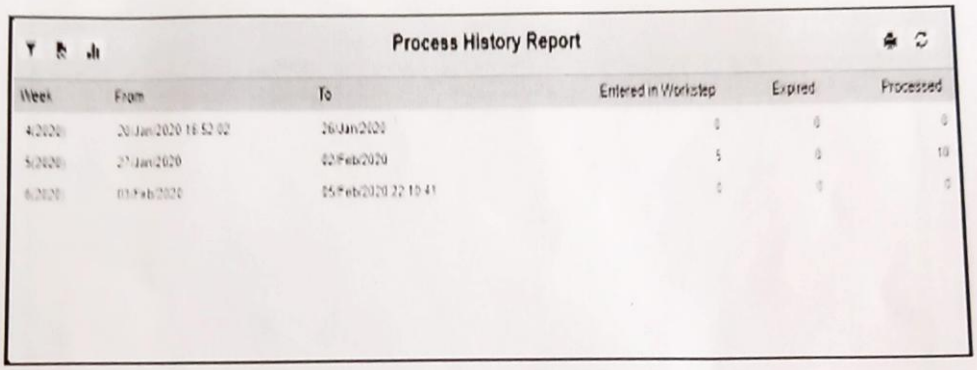
With Regards,
Newgen

**This is an auto generated mail, please do not reply to this mail directly. **

Fig 10: Triggered Email

4.1.3 **Report:**

Process Report: Displays a detailed report of all the worksteps in the process. Process Report can be saved in any of the three formats – Doc, PDF & HTML.



Process History Report

Week	From	To	Entered in Workstep	Expired	Processed
4/2020	20/Jan/2020 18:52:02	26/Jan/2020	0	0	0
5/2020	27/Jan/2020	02/Feb/2020	5	0	10
6/2020	03/Feb/2020	05/Feb/2020 22:10:41	0	0	0

Fig 11: Process History Report

4.1.4 Server:

The servers are registered on ofservices. The servers registered for the project are Process Server, Mailing Agent and Expiry server.

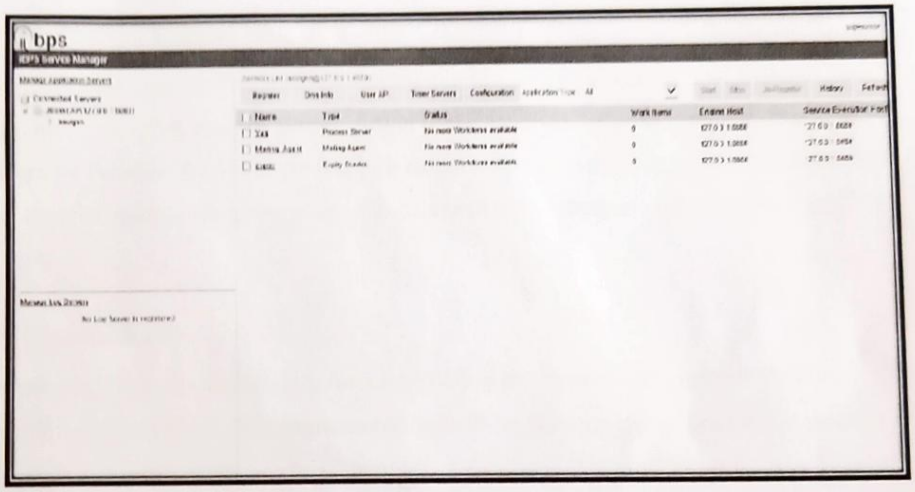


Fig 12: Registered Servers

4.2 Application:

Banking System uses this project for checking the discrepancy purposes.

Account Opening discrepancy can also be checked using this project.

Discrepancy Check is common functionality in different fields.

Loan Approval problems can be be resolved using this application.

4.3 Problems Faced:

Managing mail triggers. Difficulty in setting conditions for escalating mail triggers. File-login date field value was not getting stored in the database. How to map complex types with queue variable. How can we fetch all fields with APS id and map the data at the same time. How to upload document of specific size and type. Database Field deletion and Integrity.

4.4 Limitations:

This project is created specifically for banks which are clients of Company. Outside network it can't be used. This implementation will be done on top of OmniFlow product suite; thus, the implementation has dependency on OmniFlow product suite. Any change in the existing process flow during the development phase is not part of the scope.

4.5 Conclusion:

This project is primarily intended for Bank business & technical users group & implementation team.

4.5.2 IBSSW:

The course shall be executed in the workshop mode with assessment / assignments and exposure to simulated project implementation environment. It is designed to benefit the participants by:

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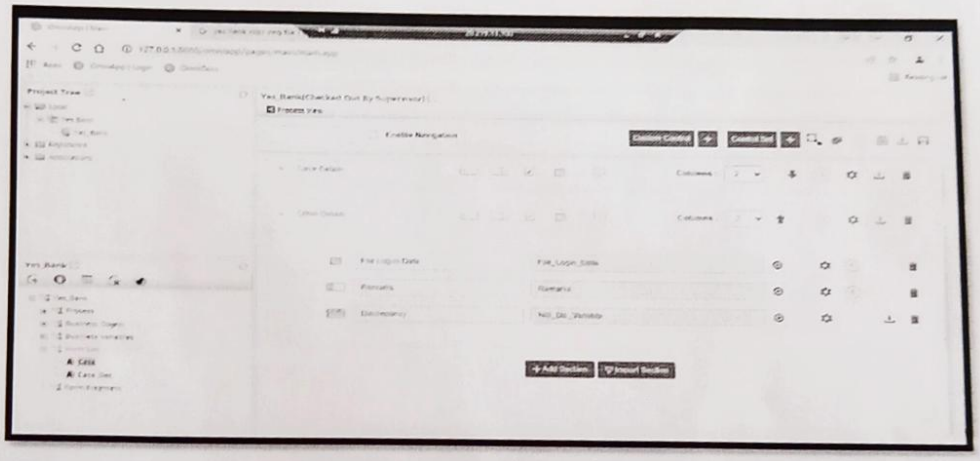

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6.8 MDM:

Master Data Management System (MDM) is a platform independent web-based tool, using which client can perform database management operations on their cabinets. User can Add, Modify the Tables and their Fields based on their rights.

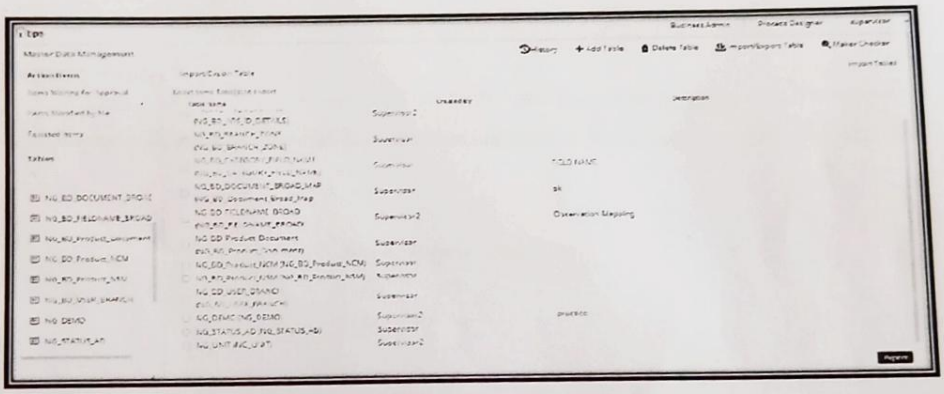


Fig 3: MDM

6.9 Reports:

Report is in tabular format. It can be created in two ways: customized and default. Default reports are reports gives the log information of process, workitem or activity. Customized report can contain anything like any variable value, form values or workitem properties based on the user's choice.

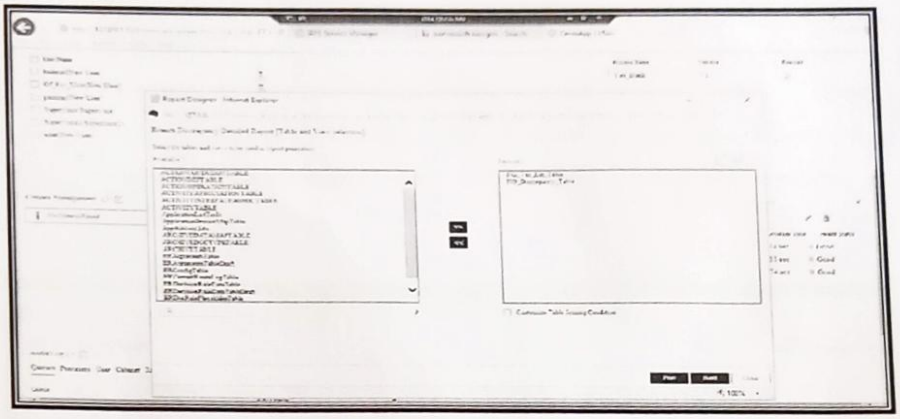


Fig 4: Report Designing

6.10 Database:

Databases are structured to facilitate the storage, retrieval, modification, and deletion of data in conjunction with various data-processing operations. Many forms of database can be used as – internal table, external table, complex variables etc.

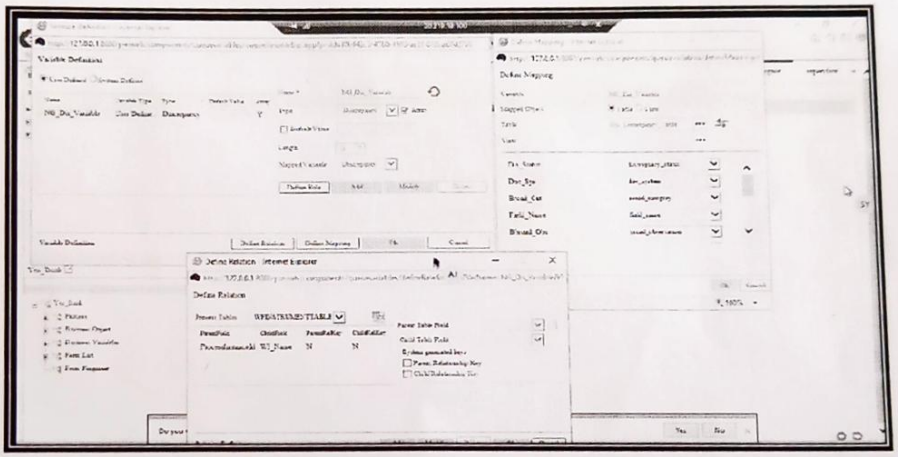


Fig 5: Complex Variable

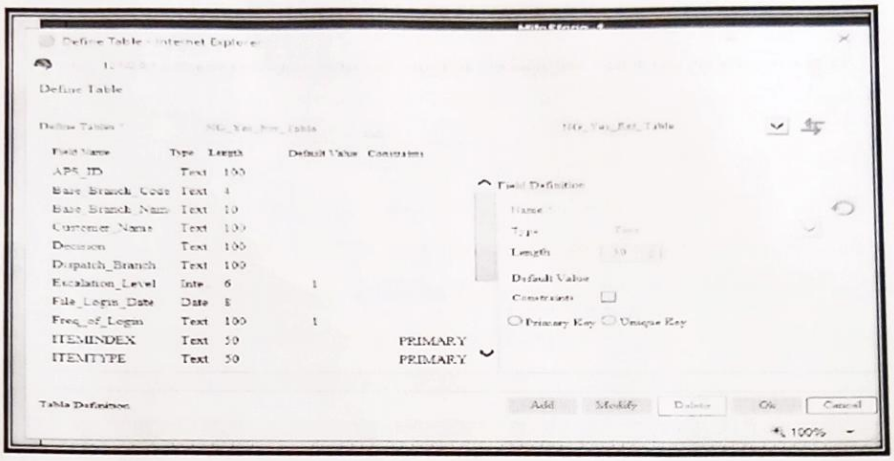


Fig 6: External Table

6.11 Triggers:

Triggers are the events that perform some specific task. These tasks includes sending a mail, setting the value for data variables, invoking an application, invoking data form for data entry, and communicating from external systems for data updating and retrieval. There are seven standard types of triggers, such as, Mail trigger, Launch Application trigger, Execute trigger, Data Entry trigger, Set trigger, Generate response trigger and Exception trigger.

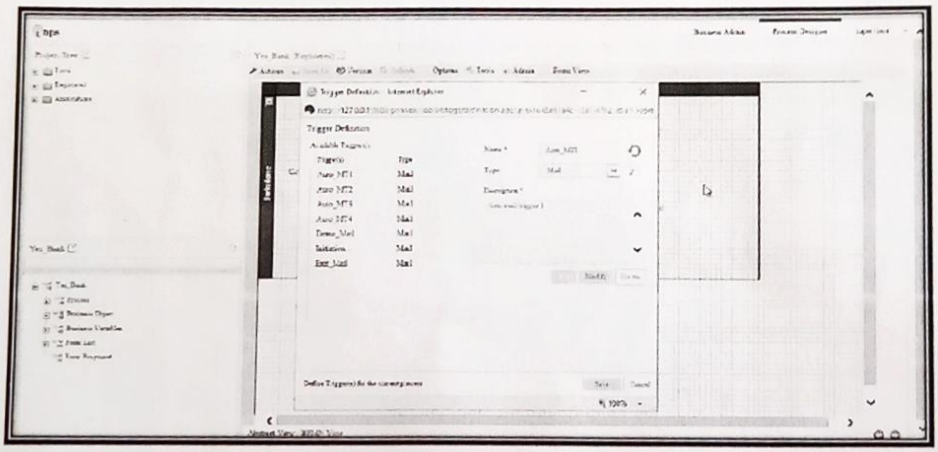


Fig 7: Trigger Functionality

Chapter 3: FINAL ANALYSIS

7.6 Results:

7.6.7 Work Flow:

In the resulting workflow, case is initiated with a form. It is then transferred to Decision_Ack workstep, where it is checked if accepted then it goes to Exit, if rejected goes to Discard. But if no decision is taken then timely reminder mails are sent and it is exited if no decision is taken even after a 45 days.

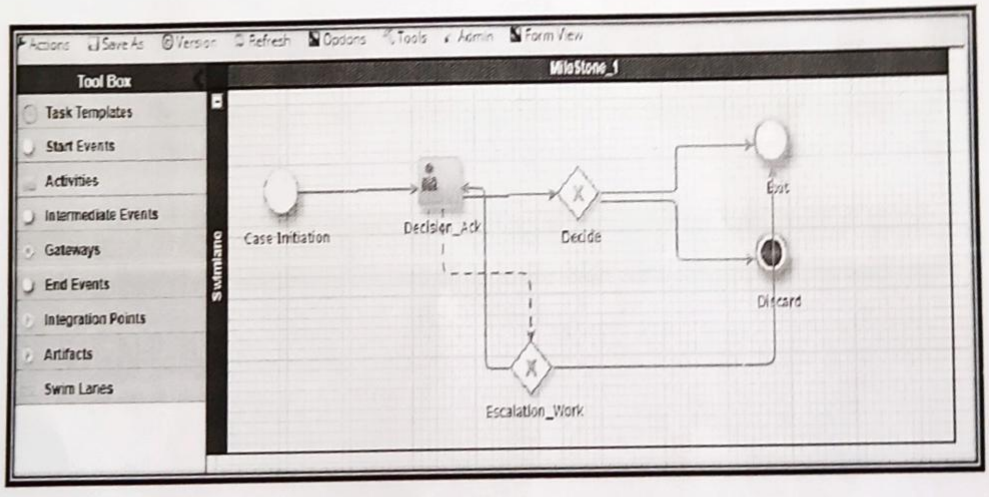


Fig 8: Process Flow

7.6.8 IForm:

Iform is used as a communication medium between different worksteps. The figure shows the iform created for the given project. It contains different details that are stored in MDM.

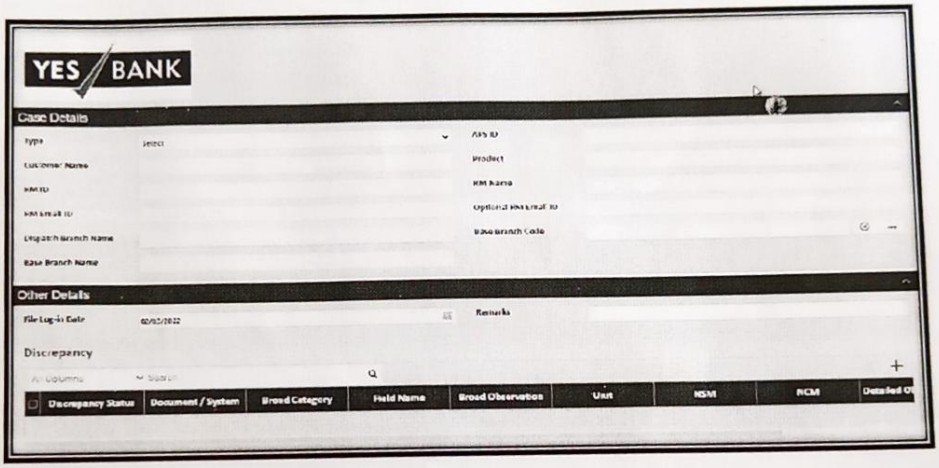
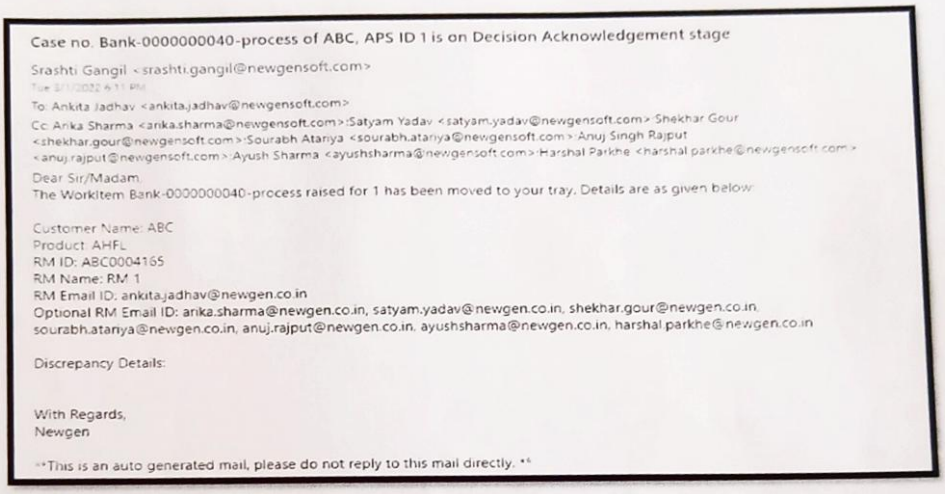


Fig 9: IForm

7.6.9 Email:

Mail triggers allow user to send e-mail notifications with predefined message and subject text to specified users. The predefined message and subject text can also contain variable names that are substituted by their actual values at run time. Mail triggers can be triggered on the entry of workitems in a workstep, or through Actions, ToDo Lists, and so on.



Case no: Bank-0000000040-process of ABC, APS ID 1 is on Decision Acknowledgement stage

Srashti Gangil <srashti.gangil@newgensoft.com>
Tue 3/1/2022 6:11 PM
To: Ankita Jadhav <ankita.jadhav@newgensoft.com>
Cc: Arika Sharma <arika.sharma@newgensoft.com>;Satyam Yadav <satyam.yadav@newgensoft.com>; Shekhar Gour <shekhar.gour@newgensoft.com>;Sourabh Atariya <sourabh.atariya@newgensoft.com>; Anuj Singh Rajput <anuj.rajput@newgensoft.com>;Ayush Sharma <ayushsharma@newgensoft.com>;Harshal Parkhe <harshal.parkhe@newgensoft.com>

Dear Sir/Madam,
The Workitem Bank-0000000040-process raised for 1 has been moved to your tray. Details are as given below:

Customer Name: ABC
Product: AHFL
RM ID: ABC0004165
RM Name: RM 1
RM Email ID: ankita.jadhav@newgen.co.in
Optional RM Email ID: arika.sharma@newgen.co.in, satyam.yadav@newgen.co.in, shekhar.gour@newgen.co.in, sourabh.atariya@newgen.co.in, anuj.rajput@newgen.co.in, ayushsharma@newgen.co.in, harshal.parkhe@newgen.co.in

Discrepancy Details:

With Regards,
Newgen

**This is an auto generated mail, please do not reply to this mail directly. **

Fig 10: Triggered Email

7.6.10 Report:

Process Report: Displays a detailed report of all the worksteps in the process. Process Report can be saved in any of the three formats – Doc, PDF & HTML.

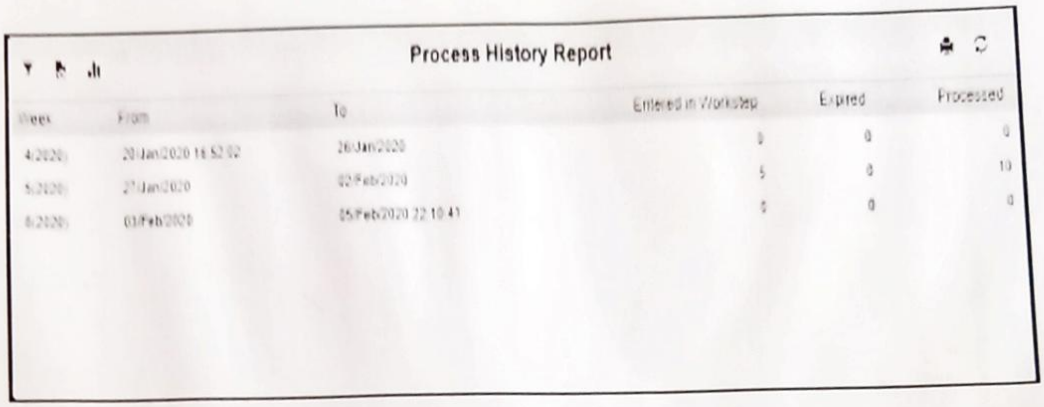


Fig 11: Process History Report

7.6.11 Server:

The servers are registered on ofservices. The servers registered for the project are Process Server, Mailing Agent and Expiry server.

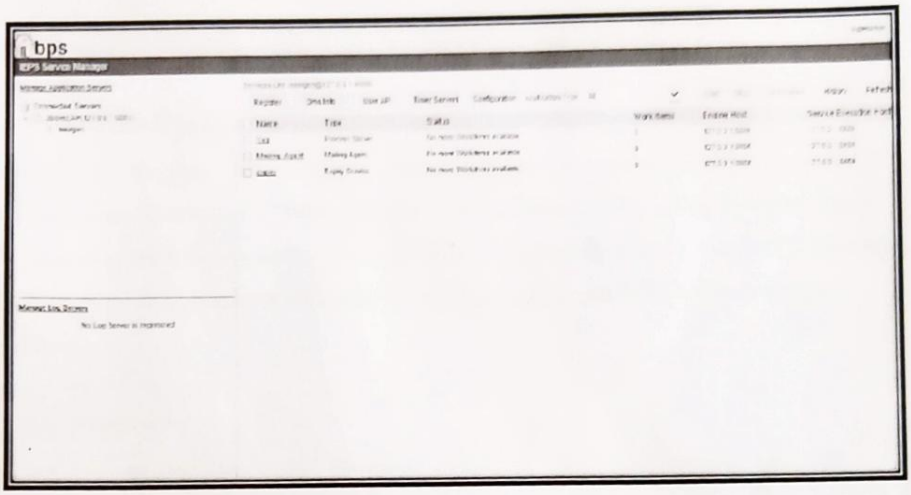


Fig 12: Registered Servers

7.7 Application:

Banking System uses this project for checking the discrepancy purposes.

Account Opening discrepancy can also be checked using this project.

Discrepancy Check is common functionality in different fields.

Loan Approval problems can be be resolved using this application.

7.8 Problems Faced:

Managing mail triggers. Difficulty in setting conditions for escalating mail triggers. File-login date field value was not getting stored in the database. How to map complex types with queue variable. How can we fetch all fields with APS id and map the data at the same time. How to upload document of specific size and type. Database Field deletion and Integrity.

7.9 Limitations:

This project is created specifically for banks which are clients of Company. Outside Newgen network it can't be used. This implementation will be done on top of Company OmniFlow product suite; thus, the implementation has dependency on OmniFlow product suite. Any change in the existing process flow during the development phase is not part of the scope.

7.10 Conclusion:

This project is primarily intended for Bank business & technical users group & Company implementation team.

References

1. **GitHub Repositories**:
    - Explore GitHub repositories tagged with "MERN Stack" or "Full Stack" to find a variety of projects, ranging from simple CRUD applications to more complex ones.
    - Example repository: mern-crud - A simple MERN stack CRUD application.
2. **YouTube Tutorials**:
    - YouTube is a great resource for finding step-by-step tutorials on building MERN stack projects.
    - Example tutorial: Build and Deploy a Full Stack MERN Project by Traversy Media.
3. **Online Courses**:
    - Websites like Udemy, Coursera, and Pluralsight offer courses on building MERN stack applications.
    - Example course: MERN Stack Front To Back on Udemy by Brad Traversy.
4. **Medium Articles**:
    - Medium often hosts detailed articles and tutorials on various aspects of MERN stack development.
    - Example article: Building a Full Stack MERN Application by JavaScript in Plain English.
5. **Official Documentation and Guides**:
    - Refer to the official documentation and guides of MongoDB, Express.js, React.js, and Node.js for in-depth information and tutorials.
    - Example guide: MERN Quick Start.

6. **Open Source Projects**:

    - Explore open-source projects built using the MERN stack on platforms like GitHub. You can learn a lot by studying and contributing to these projects.
    - Example project: RealWorld Example App - A full-stack MERN implementation of the RealWorld app, demonstrating best practices in modern web development.

7. **Community Forums and Q&A Sites**:

    - Websites like Stack Overflow and Reddit's r/MERN community are great places to ask questions, find resources, and engage with the MERN stack developer community.

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Internship_Project Report.docx

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7	University of Limpopo on 2020-11-08 Submitted works	2%
8	chat.stackexchange.com Internet	1%

Sources overview

ANNEXURE-1

LEARNING OUTCOMES

Full Stack MERN project provides learners with a comprehensive understanding of modern web development concepts and technologies, equipping them with the skills needed to build and deploy full-stack web applications.

1. **Understanding of the MERN Stack**: Developers gain a deep understanding of each component of the MERN stack - MongoDB for database management, Express.js for server-side application framework, React.js for building user interfaces, and Node.js for server-side JavaScript execution.

2. **RESTful API Development**: Learners typically gain experience in designing and implementing RESTful APIs using Express.js, including handling CRUD (Create, Read, Update, Delete) operations.

3. **Database Management with MongoDB**: Developers learn to work with MongoDB, a NoSQL database, including schema design, data modeling, and CRUD operations using MongoDB's query language.

4. **Frontend Development with React.js**: Understanding how to build interactive and dynamic user interfaces using React.js, including state management, component lifecycle methods, and handling user input.

5. **Integration of Frontend with Backend**: Learners understand how to connect the frontend React.js application with the backend Express.js server, including making HTTP requests to fetch and send data.

6. **Authentication and Authorization**: Implementing user authentication and authorization using techniques such as JSON Web Tokens (JWT), OAuth, or session-based authentication, to secure the application.

7. **Deployment**: Knowledge of deploying MERN stack applications to production environments, including setting up servers, configuring databases, and deploying frontend and backend code.

8. **Error Handling and Debugging**: Understanding how to handle errors gracefully, debug issues, and implement error logging to monitor and troubleshoot applications effectively.

9. **Performance Optimization**: Techniques for optimizing the performance of MERN stack applications, including code optimization, database indexing, and caching strategies.

10. **Project Management and Collaboration**: Experience working on a full-stack project from conception to deployment, including version control using Git, collaboration with team members, and project management methodologies.

ANNEXURE-2

DAILY DIARY

Week	Duration Start date – End date (DD/MM/YY) - (DD/MM/YY)	Progress of Internship/ Project
Week - 1	01/01/2024– 15/02/2024	Excellent
Week - 2	16/02/2024 – 15/03/2024	Excellent
Week - 3	16/03/2024 – 15/04/2024	Excellent
Week - 4	16/04/2024 – 15/05/2024	Excellent

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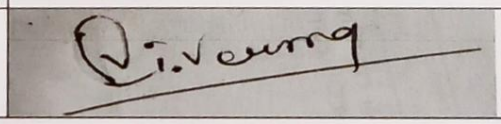
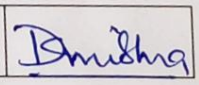
FORTNIGHTLY PROGRESS REPORT (FPR) FROM INDUSTRY/COMPANY MENTOR

Name of Student	Mayank Tomar		Enrollment No.	0901MC201039	
Department	Mathematics & Computing		Sem.	8 (session: Jan-June 24)	
Industry/Organization	Indvibe Infotech pvt ltd.		Date/Duration	01/01/24 -15/02/24	
Criterion	**Poor**	**Average**	**Good**	**Very Good**	**Excellent**
Punctuality/Timely completion of assigned work				YES	
Learning capacity/Knowledge up gradation					YES
Performance/Quality of work					YES
Behaviour/Discipline/Team work					YES
Sincerity/Hard work				YES	
Comment on nature of work done/Area/Topic					
OVERALL GRADE (Any one)	**POOR/AVERAGE/GOOD/VERY GOOD/EXCELLENT**				
Name of Industry/Company Mentor	Mr. Vishal Verma				
Signature of Industry/Company Mentor					

Receiving Date	**19/02/24**	**Name of Faculty Mentor**	**Dr. D K Mishra**	**Sign**	

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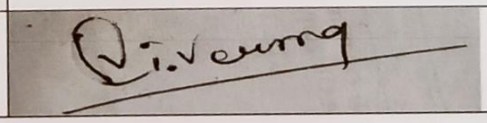
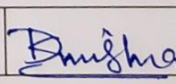
Signature of Industry/Company Mentor	

Receiving Date	**17/03/24**	**Name of Faculty Mentor**	**Dr. D K Mishra**	**Sign**	

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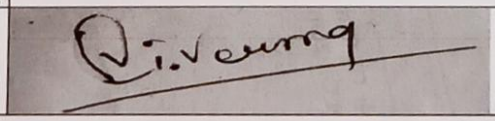
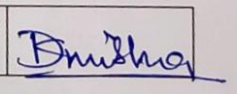
Signature of Industry/Company Mentor					

Receiving Date	**19/04/24**	**Name of Faculty Mentor**	**Dr. D K Mishra**	**Sign**	

CERTIFICATE OF INTERNSHIP

IndVibe Infotech Pvt Ltd

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INTERNSHIP COMPLETION CERTIFICATE

Date 02-May, 2024

This is to certify that **Mr. Mayank Tomar** is a student of B.tech specialization in Mathematics and Computing from Madhav Institute of technology and science, Gwalior (M.P.) has been successfully completed the 04 months (01-January, 2024 to 01-may, 2024) Internship Programme in **Mernstack Development,** at IndVibe InfoTech Pvt Ltd.

Wishing you a great future in the IT Industry and looking forward to seeing you at IndVibe InfoTech Pvt Ltd.

Warm Regards

Center Head

IndVibe InfoTech Pvt Ltd

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indvibeinfotech@gmail.com
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