

JIRA REPORT EXTRACTION

(Based on Automation Anywhere tool)

Project report submitted in partial fulfilment of the requirement

For the degree of

BACHELOR OF TECHNOLOGY IN ELECTRONICS AND COMMUNICATION ENGINEERING

By

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UNDER THE GUIDANCE OF

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DECLARATION BY SCHOLAR

We hereby declare that the work reported in the B-Tech thesis entitled “**Jira Report Extraction**” submitted at **Jaypee University of Information Technology, Waknaghat India**, is an authentic record of our work carried out under the supervision of **Mrs. Vidyavathi. Bagalkoti**. We have not submitted this work elsewhere for any other degree or diploma.

(Signature of the Scholars)

Department of –Electronics and Communication Engineering

Jaypee University of Information Technology, Waknaghat, India

Date (23-05-19)

CERTIFICATE

Candidate's Declaration

We hereby declare that the work presented in this report entitled **Jira Report Extraction** in partial fulfilment of the requirements for the award of the degree of **Bachelor of Technology in Electronics And Communication Engineering** submitted in the department of Electronics And Communication Engineering, Jaypee University of Information Technology Waknaghat is an authentic record of our own work carried out over a period from Feb 2019 to May 2019 under the supervision of **Mrs. Vidyavathi Bagalkoti**.

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

ACKNOWLEDGEMENT

We owe our profound gratitude to my project supervisor **Mrs. Vidyavathi Bagalkoti**, who took keen interest and guided us all along in our project work titled —**Jira Report Extraction**, till the completion of our project by providing all the necessary information for developing the project. The project development helped us in our research and got to know a lot of new things in our domain. We are really thankful to her.

LIST OF ACRONYMS AND DESCRIPTION

S.NO	Acronym	Description
1	UAT	User Acceptance Test
2	PM	Project Manager
3	URL	Uniform Resource locator
4	SME	Subject Matter Expert
5	RPA	Robotic Process Automation
6	RDT	Remote Desk Top
7	OHR	Office of Human Resources.
8	Bot	A robot programmed to mimic a human activity and perform a specific task in the same way as a human does
9	Jira	A tool used for bug tracking, issue tracking, and project management.
10	BC	Business Controller
11	UAT	User Acceptance Test
12	PM	Project Manager
13	URL	Uniform Resource locator
14	SME	Subject Matter Expert
15	RPA	Robotic Process Automation
16	OHR	Office of Human Resources.

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ABSTRACT

As the whole process of extracting Jira report was done manually and the query was built manually there was huge chance of human error happening in this process. This automation will Minimize the chance of human error and also the time spend in extracting the Jira reports would be saved.

Currently the manual process is to login to relevant Jira link periodically and build the query in Jira search screen and extract and provide the reports so that reports can be circulated among the relevant stakeholders. In order to avoid the time delay and human errors in this process the aim is to automate the process of report extraction from Jira and place it in a shared folder.

CHAPTER 1

AUTOMATION ANYWHERE

1.1 Important Features of Automation Anywhere

Automation Anywhere (AA), the world's largest RPA software provider comes out as a front-runner once again in 2018 and occupying a determined position in regards to market impact. More organizations rely on robotic automation platform to develop their intelligent digital workforces. Automation anywhere tool employs software bots that enable industries to automate their repetitive business processes. In addition to comprehensive enterprise RPA platform, AA includes build-in artificial intelligence technologies and predictive analytics to offer even greater business value. This chapter aspires to offer a balanced outline of automation anywhere features to automate complex tasks.

1.2 What is Automation Anywhere RPA?

Automation Anywhere is a standout amongst the most prevalent RPA sellers offering amazing and easy to understand RPA capacities to robotize the business forms that are performed by people. AA is an online administration framework that incorporates a control to run start to finish computerized business errands for organizations. More than 500 driving brands over the world utilize this apparatus to deal with and scale their business forms with almost zero mistake rates and limiting operational expenses. The AA enables building contents to perform tedious errands as opposed to composing code. They can computerize an expansive scope of errands from fundamental dimension Windows design ventures to a definitive systems administration and remote database forms. The three core components in the AA engineering are:

1. **Bot Creator** – It allows the developers to create bots to automate their desktop-based applications.
2. **Control room**- An application that works as a controller and handles the complete execution and management of clients, scripts, credentials, roles, security, etc.
3. **Bot Runner** – A machine that agrees to run the bot. The status of bot execution is reported again to the control room.

The company offers various products to support enterprises in their journey of the digital transformation. They are as given beneath:

1.2.1 Automation Anywhere Enterprise RPA

The item is devoted for the business client and contains propelled abilities to offer a natural interface for the business client, bot engineer, and the automation administrator. This stage is simplest to utilize, supports to maintain a strategic distance from multifaceted nature and guarantees quick appropriation and fast sending. It not just satisfies the prerequisite of the advanced workforce yet in addition be adaptable to develop with the business needs.

1.2.2 IQ Bots

IQ Bot is a cognitive bot designed to support as well as learn from business users and enable the business user to experience the power of advanced artificial intelligence technologies. Integrated with the automation anywhere enterprise RPA, the IQ Bot offers enterprise massive gains in productivity, as it includes competent of automating complex tasks involving unstructured data. The table below explains the different types of bots in automation anywhere: Task bot, Meta bot, and IQ bot

TYPES OF BOTS IN AUTOMATION ANYWHERE		
Task Bot	Meta Bot	IQ Bot
Automate rules-based repetitive tasks, in areas like document administration	Automation building blocks that facilitates scalability with next-generation integration	Relies on continuously learning and enhancing process automation
Best for: Repetitive, rules-based tasks that rely on structured data	Best for: Complex scalable processes	Best for: Managing through fuzzy rules & processing unstructured data

FIGURE 1.1: TYPES OF BOT

1.2.3 Bot Insights

The platform shows measurements and charts to examine bot execution in the framework. It likewise permits ascertaining the time spared in the mechanization procedure. It is the first investigation arrangements work for bots. Bot Insights firmly coordinates the continuous business bits of knowledge with the advanced workforce execution.

1.2.4 Bot Farm

It is an on-request undertaking grade stage for RPA bot. The stage scales the limit of the advanced workforce by sending bots whenever, anyplace with a solitary snap. It can make, send and handle a large number of programming bots and can guarantee strength, flexibility, and adaptability.

1.2.5 Bot Store

The main commercial center for attachment and play bots committed for business computerization activities. It empowers ventures to find, send and activate bots, including process bots, application bots and intellectual bots in a small amount of seconds.

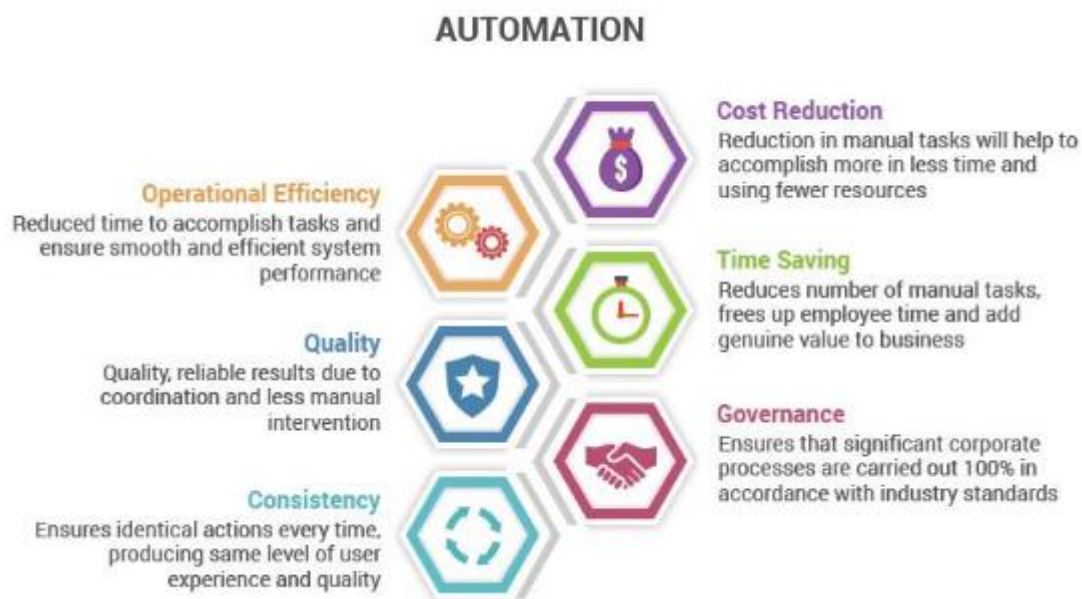


FIGURE 1.2: UNIQUE FEATURES OF AA

1.3 Prominent Features of Automation Anywhere Tool

In the domain of the RPA, the computerization anyplace RPA is remarkable for its functionalities to lessen the time taken to meet the handling. With this instrument, the venture can make SMART bots to perform assignments in different zones of the organizations. Also, no programming information is required for mechanization as it permits point and snap activities or record activities. Certainly, the mechanization anyplace programming concocts a lot of novel highlights to help the procedure automation. How about we burrow profound through some significant functionalities offered by this device:

1.3.1 Task Editor

In the automation anywhere, it is possible to generate tasks by dragging and dropping items from the toolbox. With the help of the task editor, the user can alter, break down and even improve the recorded tasks. The task editor consists of 380 plus actions including:

- Keyboard & Mouse actions
- Windows actions
- Database actions
- Conditional Actions
- Files/Folder Actions
- Loop actions
- Internet actions
- Clipboard actions

1.3.2 Workflow Designer

This component permits making an easy to-comprehend, inbuilt graphical portrayal of the business forms. It is committed for robotizing forms that incorporate different errands into an arrangement alongside exchange ways to help when a stage comes up short.

1.3.3 Report Designer

With this mechanization anyplace RPA include, the client can produce and print reports showing the execution history of specific assignments. It additionally permits making custom reports. The AA instrument highlights Task Timeline, Task Run, Workflow Timeline, Visual Logs, and ROI reports.

1.3.4 Trigger Manager

This AA include encourages to execute work processes or assignments dependent on the outside occasions like a procedure or administration begin/stop, a record or envelope change or framework execution changes like CPU utilization/plate space.

1.3.5 Workload Management

This component incorporates organized line the board to satisfy the requests of big business class SLA. Outstanding burden Management (WLM) permits the manual prioritization of high-esteem exchanges inside the robotized line the board model. Completely coordinated with BotFarm, the automation anyplace undertaking RPA offers the SLA adding machines and RPA-as-an administration functionalities that empower to turn on a great many bots to fulfill the computerization need in a flash. In this manner this component guarantees the better procedure enhancement.

1.3.6 Automation Lifecycle Management

Mechanization Lifecycle Management (ALM) empowers a request to the rushed procedure of structure RPA automation in extensive associations. It engages the RPA bots to advance through the whole phases of the product lifecycle as referenced by the endeavor. ALM incorporates the prescribed procedures of programming advancement to guarantee fruitful repeatability. Moreover, this element contains a total form control, variant correlation, lock/open, rollback and that's only the tip of the iceberg.

1.3.7 High Availability and Disaster Recovery (HA/DR)

The HA/DR makes catastrophe recuperation virtual nonissue. While the common business progression arrangement just offers catastrophe recuperation at the server level, the undeniable HA/DR guarantees the recuperation through the bot level just as over numerous areas in the event of intrusion.

1.3.8 Predictive Operational Analytics

With the inherent bot bits of knowledge, the focal room of version 11 highlights prescient operational investigation. The RPA examination from the visual dashboards incorporates noteworthy bits of knowledge like bots in danger of disappointment, bots with the most elevated rate of profitability and considerably more. Likewise, the investigation and revealing highlights offer the business with insight about the bots execution and their impact on the business.

1.3.9 Tray Notification with Numeric Indications

In Enterprise 11, the focal control room is refreshed with the plate notice, alongside a numeric sign that alert or caution clients about issues to determine them in a split second.

1.3.10 Cloud-Ready Architecture

The automation anyplace venture RPA can be introduced and sent on both on-premises and cloud supplier stages like Microsoft Azure and AWS. This cloud-prepared design offers interminable adaptability and adaptability. It additionally offers the best scope of choices to satisfy the exceedingly requesting sending prerequisites of huge associations.

1.3.11 Citrix Automation with AISense

Some security conditions, including Citrix, are picture based frameworks and are hard to mechanize. In these situations, bots are just permitted to utilize keystrokes and mouse clicks, in this manner the decisions are constrained to arrange based automation, OCR based computerization, and picture based mechanization. An AISense highlight of computerization anyplace applies eminent AI abilities to encourage the automation of any information. Therefore, the AISense examines the application picture to identify UI components and consequently manufactures all the UI objects.

1.3.12. Recorders

Utilizing the recorders in the computerization anyplace, the clients can record, spare and run the testing activities. This choice records the client activities as per the control organizes. It offers the most straightforward approach to make a bot without composing programs. Establishing a RPA task through an account is quicker than making an undertaking physically. Three sorts of account alternatives are accessible in the chronicle usefulness of AA. They are:

- Smart Recorder - Captures whole action as article cloning. It gives greater adaptability amid account undertakings that include different innovations like Java, HTML, and Flex.
- Screen Recorder – Captures exercises like mouse move, mouse snaps, and console activities. It catches the web and window screen. It is otherwise called a standard recorder.
- Web Recorder – Used for web information extraction. This choice precisely and dependably records just as robotizes web-arranged assignments without programming rationale.

1.3.13. Visualize Technology

The inbuilt visualize technology of VB content encourages the storyboard and pictorial perspectives on the robotized assignments. This innovation can be utilized in different perspectives in the Task proofreader to catch picture acknowledgment utilizing IF direction and pictures on interest utilizing a Snap point symbol.

1.3.14. Image Recognition and OCR

Another component in the automation anyplace device that licenses affirmation, similarly as a relationship of pictures, is image recognition. This request enables to see some part of an image from any document or the whole site page. Along these lines, OCR incorporate is productive where image recognition ends up being dynamically refined. It licenses changing over substance and pictures into characters in a pushed way.

1.3.15. Screen Scrapping or Web Data Extraction

This part allows expelling both sorted out (tables) and unstructured data dispersed over the site pages, also as customers would physically. In addition, as these exercises are saved, they can be robotized in an accurate way in later runs. With the web data extraction incorporate, AA ends up versatile to arrange any kind of web advancement and non-nosy.

1.3.16. Central Backup, Security and Disaster Recovery

With AA gadget, customers never again required to sign on to each structure on the framework, rather, they can focus their endeavors to apply all fortifications similarly as updates in a solitary spot. Moreover, with the bank-grade security shows, motorization wherever attempt RPA ensures that the fragile information is all around guaranteed in the central storage facility.



FIGURE 1.3: SECURITY

The tool also allows scheduling backups of the test case; hence, users can recover corrupted or lost files if needed.

1.3.17. Process in Vision

Procedure in Vision encourages clients to report the procedure. With this arrangement, clients can record their procedure just once and afterward convert and offer the whole procedure caught in a video, storyboard, PDF or PPT. Furthermore, anyone in the association can examine and isolate region of redundancy, cross-division task duplication and computerize forms in a split second. Procedure in Vision highlights moment recording, wide joint effort, automation nimbleness and altering of the accessible mechanization process.

1.3.18. Snap Point Icon

Indeed, even the undertakings execute in a mechanized, even manner, it is noteworthy to follow the conduct and execution of the product. Snap point symbol gives screen depictions of the recorded strides on interest to help clients to analyze a disappointment. In this manner, rather than perusing the errands, they can envision them in a graphical way.

1.3.19. ROI Calculator in COE Dashboard

The arrival on venture mini-computer lives in the focal point of perfection dashboard that enables organizations to allocate money related qualities to their errands and ascertain the investment funds got through RPA automation. This component loads the expenses just as advantages of computerization. Return on initial capital investment figuring breaks down the components like

- Reduced error rates
- Training benefits
- Resource cost for time-saved
- Resource realignment
- Knowledge capture
- Automated troubleshooting

1.3.20. Other New Features in AA Enterprise 11

Notwithstanding the above highlights, the rendition 11 accompanies new highlights like DBCS (Double-Byte Character Set) to help universal dialects, Credential Vault API, best of breed OCR motors and workbench for Task Bots and Meta Bots.

CHAPTER 2

Development Methodology

The development methodology used here is Agile. This strategy is a training that advances constant cycle of improvement and testing all through the product improvement lifecycle of the undertaking. Both advancement and testing exercises are simultaneous not normal for the Waterfall model.

2.1 Advantages of Agile Methodology

There are numerous focal points of Agile method for management of project. Agile method can help groups oversee work all the more proficiently and take every necessary step all the more adequately while conveying the most elevated quality item inside the requirements of the spending limit. While Agile groups function admirably as a unit and can respond better to the unavoidable changes that accompany most undertakings, there is one aspect of task the board that Agile groups regularly neglect: Visual administration. With visual administration, Agile groups can upgrade their capacity to work viably by exhibiting the information in a visual manner instead of in rundown structure on a spreadsheet or in a wiki. This way, it is simpler to understand project details and to oversee change.

Foremost benefits of visual project management for Agile include:

- Visibility of project specifics
- Increased team efficiency
- Ability to adapt to changes
- Ability to scale
- Stakeholder Engagement and Satisfaction.
- Early and Predictable Delivery.
- Predictable Costs and Schedule.
- It gives your team Purpose.

- Agile management reduces the common risks that are associated with the delivery, scope, and budget of the project.

2.2 Principles of Agile Development

- The agile process promotes sustainable development.
- Always accede to change of requirements matter how early or late in the project.
- Deliver software that works within a shorter time-scale.
- Both developers and business professionals must work closely together daily throughout the duration of the project.
- Motivate people to build a project by creating an environment of appreciation, trust, and empowerment.
- Working software is the important measure of progress.
- Continuous attention to excellence and quality in technical development and design boosts the agility.
- Simplicity is a crucial part of effective agile management.
- Self-organized teams produce the best architecture, requirements, and design.
- Teams should reflect through inspection and adaption to be more effective.

Agile is a method for getting the work done that truly matters. For instance, in place of spending hours or days building out a detailed project plan that may or may not match the project's execution, an Agile team would begin with a small portion of work, measure progress, after that continue down the path once abundant feedback has been gathered to indicate they are on the right path.

Ethics of how to work as an agile team are laid out in the Agile Manifesto, a set of guidelines that were developed by software developers to establish expectations around how to operate. These ethics place:

- Individual before procedure and tools
- Working software over documentation
- Collaboration over mediation
- Modification of management over project planning

One of the essential zones of center for agile groups is the capacity to work iteratively. Iterative work is finished in short cycles with a little bit of the general undertaking done at one time. The primary advantage of iterative work is that less work gets squandered. That is, when something changes about the undertaking, the measure of re-work that must be done is limited. At the end of the day, groups don't need to go too far down one way, just to discover they should backtrack and start from the very beginning once more. The subject of iterative work stretches out past the venture level and can be connected by separating any measure of work into reasonable goodies that can be obviously spoken to outwardly.

Development Cycle

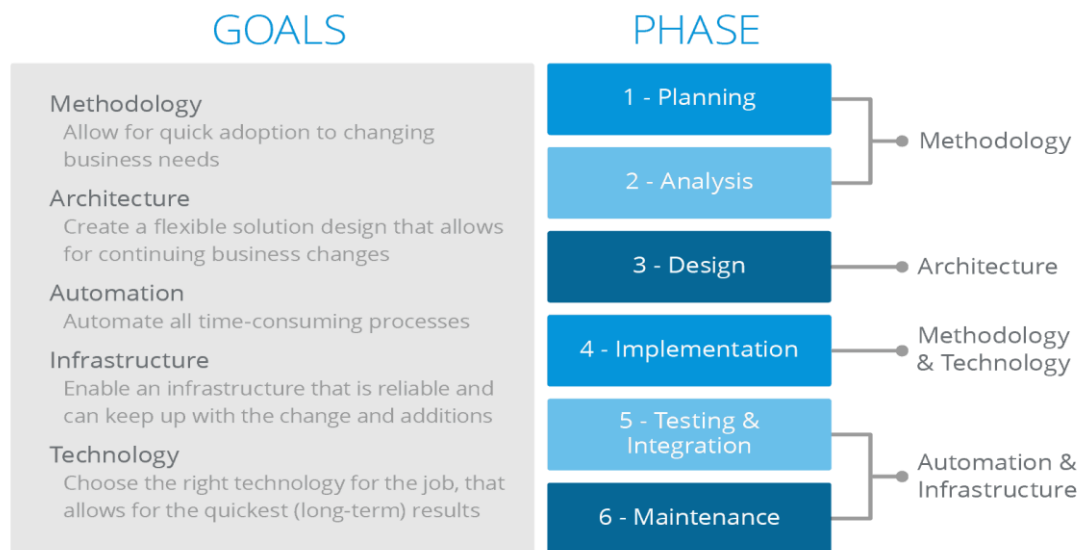


FIGURE 2.1: DEVELOPMENT CYCLE

CHAPTER 3

JIRA TOOL

3.1 Why use Jira?

- JIRA gives you a chance to organize, dole out, track, report and review your 'issues', from programming bugs and helpdesk tickets to extend undertakings and change demands
- More than only an issue tracker, JIRA is an extensible stage that you can alter to coordinate your business forms
- JIRA improves efficiency by eliminating time squandered on following issues and coordination
- JIRA improves quality by guaranteeing all errands are recorded down with every one of the subtleties and followed up till finishing

3.2 One application. Many uses.

- Bugs/Change Requests
- Tracking Help-desk / Support / Customer Service
- Project Management
- Task Tracking
- Requirements Management
- Workflow / Process Management

3.2 JIRA Features

3.2.1 Issue Creation

- Creating errands, bug reports, highlight demands, helpdesk tickets, is a breeze
- No need to interpret issues from messages to Excel worksheet any longer
- Issue can be effectively made by means of – Web: Filling the structure on the Web page – Email: Sending an email to a preconfigured email address
- Allows adjustable things for various issues types

3.2.2 Reports

- JIRA conveys constant, pertinent data in a helpful configuration
- JIRA empowers the administration to have clear perceivability of the circumstance

3.2.3 Others

- Secure – JIRA gives fine-grained venture level security
- Usable – Intuitive interface planned in view of both business and specialized clients
- Track – Keep track all things considered, changes and work logged against issues
- Administration – A low upkeep framework with direct organization ability
- Extensible – With more than 100 modules contributed by the network
- Open – An open API, full source code get to consider further combination and customization of JIRA usefulness



FIGURE 3.1: WHO USES JIRA?

CHAPTER 4

Executive Summary

Automation of Jira report extraction is the project to automate the process of extraction of Jira report and to place it in a shared folder. Currently the manual process is to login to relevant Jira link periodically and build the query in Jira search screen and extract and provide the reports so that reports can be circulated among the relevant stakeholders. In order to avoid the time delay and human errors in this process the aim is to automate the process of report extraction from Jira and place it in a shared folder.

The extraction of Jira report is repeating process, to overcome this, our team will develop Bot which would perform the whole process automatically without much human intervention.

4.1 SCOPE

The scope of RPA implementation will be

- Logging into JIRA tool, extract and save the report in a shared location, logging of error and scheduling of automation and all relevant documentation.

4.2 OUT OF SCOPE

- Infrastructure for this automation is out of scope.
- Any requirements which has not mentioned in Scope section will be out of scope

CHAPTER 5

HIGH LEVEL ARCHITECTURE

The Architecture diagram will have Bot creator who will develop the bot. The developer will create, edit and execute the bot as part of development process. Bot Runner will be used in production environment. Control Room is centralized management of bot creator and bot runner in real time.

The presentation layer has three users i.e., Accountant, Developer and Administrator this is a thin layer where it will reside in Genpact environment. The Jira environment has a Virtual desktops & Servers. The Control room will be installed on Virtual server and AA 10.5 client will be installed on VDI for developing bots & running bots.

Advantages of Architecture:

- Bot will work on top of the existing applications, so there is no changes in existing infrastructures/applications
- Zero risk and zero downtime. Because the server side code is not touched by AA
- Credentials are encrypted as per regulatory compliant requirement
- AA supports Powerful Automated version control system

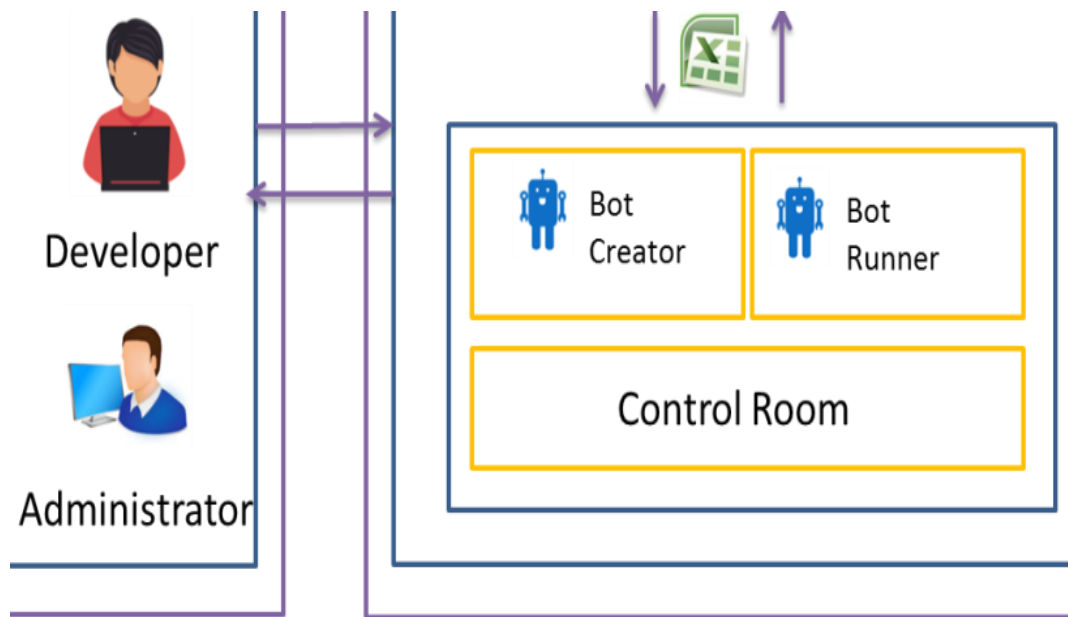


FIGURE 5: ARCHITECTURE

5.1 SECURITY

Automation Anywhere Control Room is a centralized administration module that is enabled to do 24 hour surveillance over all users, tasks, servers, & logs. It provides complete user management, monitoring, and troubleshooting facilities with a graphical interface. The CR is also used for pushing tasks to clients, scheduling them, running them, and checking the logs.

The following sections detail out how the various security requirements are addressed:

5.2 ACCESS CONTROL

- Bot's credentials will be maintained by the 'Credential Manager' role created within the Control Room. A designated person will be assigned this role. The role will only allow him/her to manage the credentials of Bot.
- All roles within Automation Anywhere will be created according to the Jira Security requirements. Control Room's 'Security' component provides an access control list that will be used to create/modify roles to segregate the duties as per the security requirements. All requests for roles will be done through 'Service Now' and will follow the approval mechanism followed by Jira. Once the request is approved, the Control Room Administrator will create the role / add the user to a role, based on the request. Please refer the matrix below (the actual file also embedded) to understand the different roles created for this project and the respective accesses

Role	Control Room (CR)												All Client						Comments						
	Repository Management			Credential Management			Task Scheduling			User Management			Operational Room			Audit Log				Creator (in Development)			Runtime (Bot processing)		
	Read	Write	Delete	Read	Write	Delete	View	Manage	Read	Write	Delete	View	Manage	Read	Manage	Create	View (Processing)	Modify		Run	Audit / Log	View (Processing)	Update (Release)	Audit / Log	
Administrator	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	CR Admin will be acting as Admin and manage the Control Room. As CR will be accessible for scheduling, it will also manage users along with other CR Admins (not all)	
RPA Developer / L1 & Support	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Development team / Level 2 Support team will only have access to create/modify the code and run the bot along with access to the logs in Development environment only.	
Credential Manager	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	This role will provide access to the 'Credential Manager' module within the Control Room. As the role will access the module to manage the credentials used by the bot, it will provide access to the logs in Development environment only.	
RPA Support (L1 and L2)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	This role will provide the user to run the bot along with accessing the logs. As the role will not be able to modify the code or credentials or perform any other activity, the Level 2 Support (Developer Team) and Level 2 Support team will have this role as their main role in the bot.	

Note : Control Room is only for Bot management - All the Bot processing activities like development/modification of code, testing and running of the bot happens on the client VDI, i.e. on Development (i.e., Creator) or Runtime (i.e., Bot Runner/Support) environments. All these activities are protected by VDI login credentials, which will only be available with the 'Credential Manager'

FIGURE 5.1: ROLES AND ACCESS CONTROL

Note: Control Room is only used for Bot management - All the Bot processing activities like development /modification of code, testing and running of the bot happens on the client VDI, i.e. on Development (i.e., Creator) or Runtime(i.e., Bot Runner/support) environments. All these activities are protected by VDI logon credentials, which will only be available with the 'Credential Manager'

- Password and other confidential information are encrypted while transferring over the wire. This is implemented using hybrid security using RSA+AES+HMAC (2048 bit key).
- Passwords entered in the application or any other sensitive information are not stored on the client machine, rather it is encrypted using AES (256 bits key length) and RSA (2048 bits key length) and stored into the database using SHA256 algorithm after salting.
- Passwords are protected in memory using system level Data Protection API (DPAPI), so that it cannot be discovered by memory mapping tools.
- Credential Manager will be given access to enter the Bot password through AA- Control room which is encrypted

5.3 SECURE CODING

- Fields data which are used with Encrypt Keystroke & Encrypt Text options in commands are protected using machine level data protection APIs to avoid its direct visibility on the screen.
- Client sessions are very much secured by JSON based token authentication mechanism. It includes management of session expiration and session renewal policies
- After completion of the transaction the reverse traceability will be performed through Audit log file which will be stored in server.

5.4 DATA SECURITY

Bot will not store any data although it will process the data using existing process steps and participant applications. Existing process data security process/ framework will be applicable as it is and will not be impacted by the BOT.

5.4.1 Secure Bot Communication

- The Client/Server communication model has server-side authorization for any user action such as upload, download or delete of server files.

- Unauthorized users cannot gain privilege escalations to perform these actions and hence the application security is not compromised.

5.4.2 Handling Sensitive User Information in Automation Anywhere

- To remember a user on a specific machine, last logged in user information is saved on the local disk. However, this information does not contain any password. It is used to do application level auto-login on next application start up.
- Fields data which are used with Encrypt Keystroke & Encrypt Text options in commands are protected using machine level data protection APIs to avoid its direct visibility on the screen.
- Client sessions are secured by JSON based token authentication mechanism. It includes management of session expiration and session renewal policies.
- Task files are obfuscated to protect against direct access of task contents. This includes all the information provided while recording or creating a task.

5.5 MONITORING

Monitoring is supported by centralized Control Room with 24-hour surveillance over all users, tasks, servers, & logs. Provides complete user management, monitoring, and troubleshooting facilities with a graphical interface. Push tasks to clients, schedule them, run them, and check logs.

The Monitoring support will be as per Support agreements

5.6 LOGGING & AUDIT TRAIL

Logging for the bot is done using two types of logs:

5.6.1 Business/Audit Logs

All transaction level details will be stored within the Business/ Audit log. The file will provide full traceability of all activities performed by the bot. The name of the file will be '**Activity_Log.txt**'. The file will be reviewed periodically by the operations team. A sample of the log is embedded here.

5.6.2 Technical logs

All technical information (task level details, access to all applications, errors and exceptions) for each transaction will be captured within the log file '**Technical_Log.txt**'

A sample of the log is embedded here. Both these logs will be stored on the local desktop machine (developer's vdi)



Technical_Log.txt

5.6.3 Control Room Logs

Control Room also provides logs that can be used to track/audit all activities done on the tool.

5.6.4 Log Retention

Bot Log retention policy this server/ centralized location up to period of One year.

5.6.5 Log Rotation

A new folder will be created every day with the name '**yyyy-mm-dd**'. Within the folder two log files will be created:

5.6.5.1 'Activity_Log.txt' - This file will hold the business logs for that day. This log file can only be accessed by the operations team and the RPA team

5.6.5.2 'Technical_Log.txt' - This file will hold the technical logs for that day's transactions. This log file can only be accessed by the operations team and the RPA team.

5.7 TO BE PROCESS

The process map below explains the To-Be process that will be performed by Bot. Each process step in the process maps has been arrived at based on the disaggregation sheet.

The following are advantages for the process automation:

- Eliminate human errors & save Time
- Improve Reliability (i.e., work 24X7) & process time
- Cost saving (i.e., FTE count will be minimum)
- Improve Customer Satisfaction.

5.7 PROCESS FLOW WITH UI SCREEN

This section explains the steps followed by the bot for performing the Jira report extraction Process as per the updated To-Be process flow. To begin the process, the bot will go through the link.

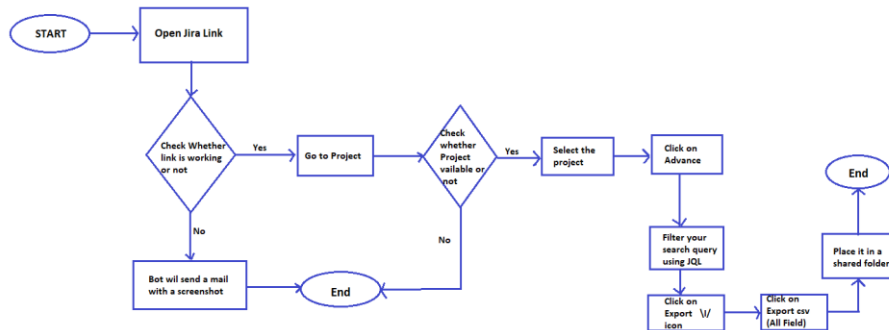


FIGURE 5.2: FLOWCHART

Step: 1

Bot will open Jira Link using AA Command Web Recorder option.

Step: 2

Bot will click on Project icon on left Panel

- In AA there is an Command called “Object Cloning” to click on **projects** icon

Step: 3

Bot will click on Project Name icon on Center Panel

- In AA there is an Command called “Object Cloning” to click on project name Link.

Step: 4

Bot will click on Project Link on Right corner

- In AA there is a Command called “Object cloning” to click on Export icon.

Step: 5

Bot will click on Export icon on Right corner

Step: 6

Bot will click on Export Excel csv (all fields) from the drop down options.

- In AA there is a Command called “Object cloning” to click on Export Excel csv (all fields).

Step: 7

Bot will now place the downloaded Excel csv file into the shared folder

CHAPTER 6

EXCEPTION AND ERROR HANDLING

6.1 If wrong or incorrect Link shared to Bot: In this case, Bot will send a mail to operation's team. The mail template will be as follows

Incorrect or Broken Link

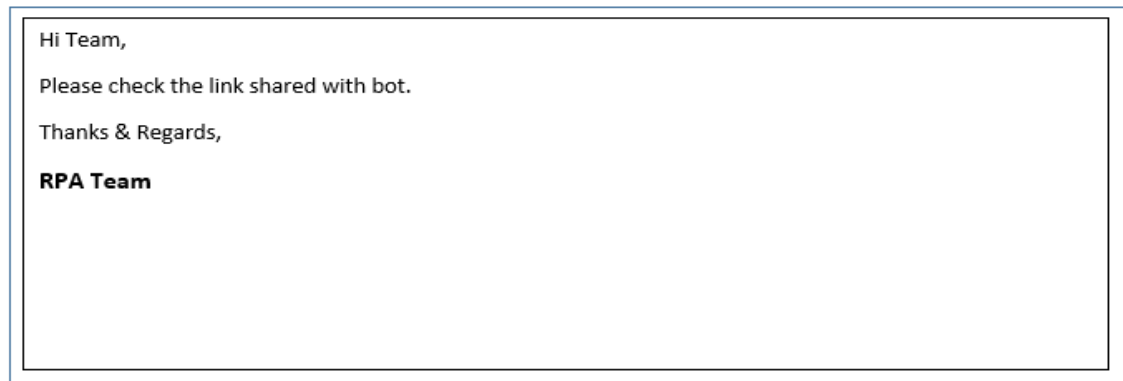


FIGURE 6.1: INCORRECT LINK MAIL

6.2 Browser not opened or not responded: In this case Bot will send mail to operation's team. The mail template will be as follows

Browser not opened or not responded

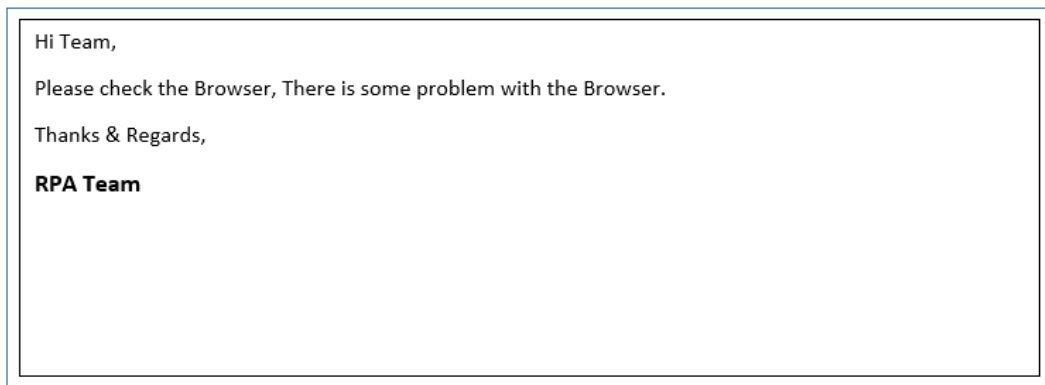


FIGURE 6.2 : BROWSER NOT RESPONDED MAIL

6.3 If there is any error while storing file into the shared folder: In this condition Bot will send mail to operation's team.

The mail template will be as follows

Please check folder access rights

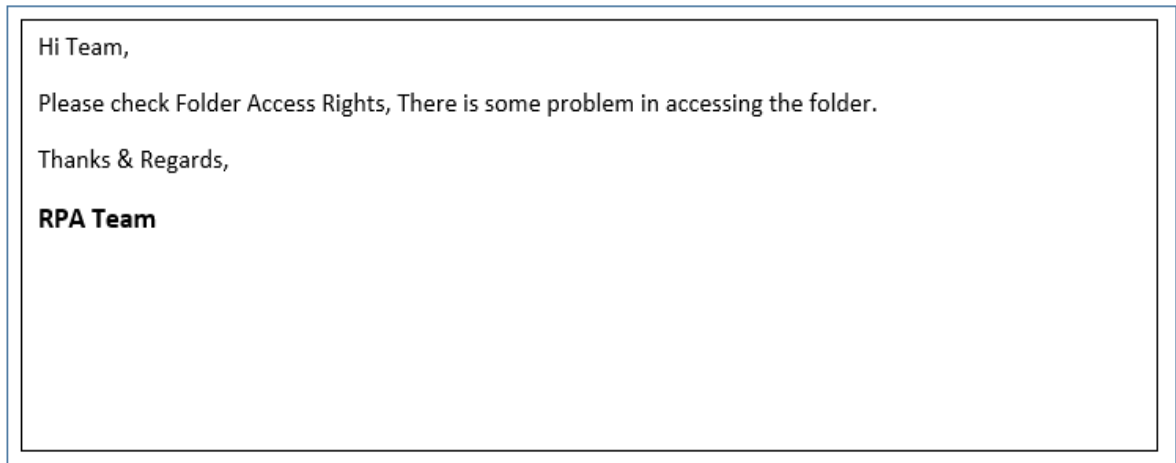


FIGURE 6.3: CHECKING ACCESS RIGHTS

CHAPTER 7

RISKS AND MITIGATION

This section will explain to probable risks that bot can have and its mitigation plan furnished as follows

SL.No	Risk	Mitigation
1	Consolidated Excel in not coming in agreed format	<ul style="list-style-type: none">• Bot will send a mail to Accountant(Operation Team)• The Accountant(Operation Team) need to check Excel sheet before sending a mail• If any changes in Agreed Excel Template that need to inform to the development team and it considered as a CR and re-work on coding
2	Jira GUI Changes	If any changes in Jira GUI that need to inform to the development team and it considered as a CR and re-work on coding
3	Screen Resolution	If any changes in Screen resolution of Jira Screen, then, it need to inform to the development team and it considered as a CR and re-work on coding

CHAPTER 8

TECHNICAL SPECIFICATIONS

The following are the recommended IT infrastructure recommended by the Automation Anywhere 10.5.

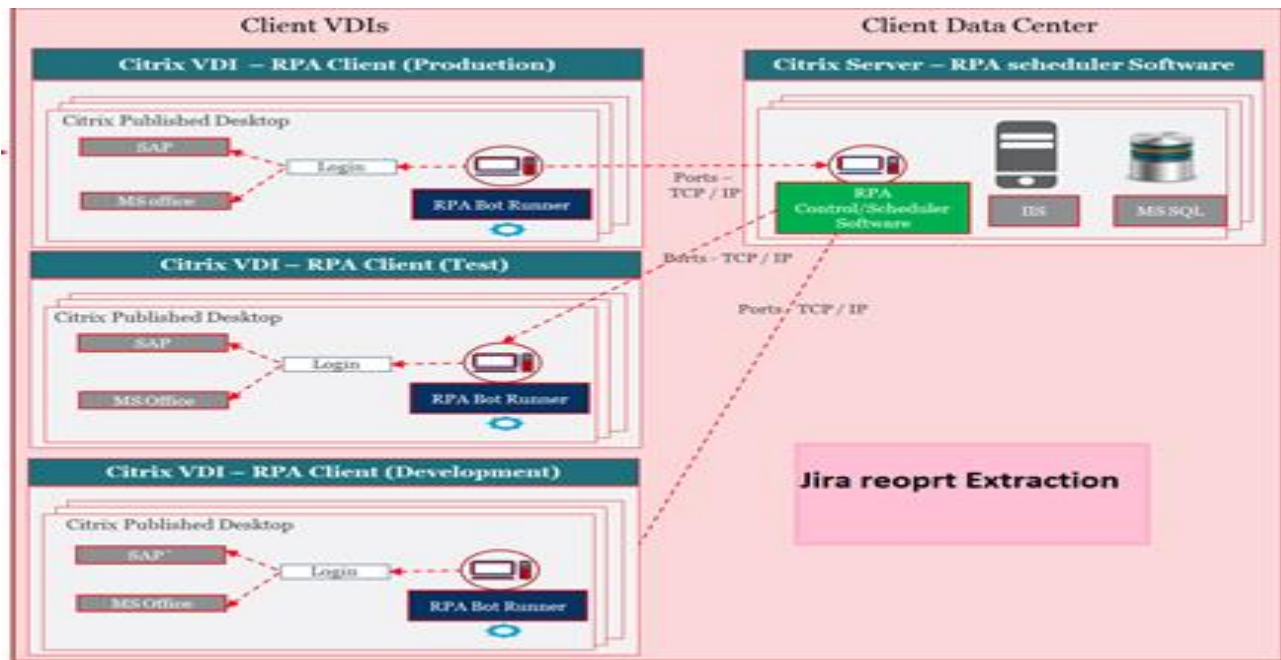


FIGURE 8.1: TECHNICAL SPECIFICATIONS

8.1 Control Room Server for Development/UAT/Production

- x64 Server Based CPU with Minimum 4 Core and Two Threads
- 8 GB RAM required
- JRE 1.8 onward
- Microsoft Windows 7.0 SP1 (Minimum)
- Microsoft Windows Server 2012 R2 (Recommended)
- Internet Information Services 7.5 Onwards
- .NET Framework 4.6 is requisite.
- Microsoft SQL Server 2014 Express Service Pack 1 (SP1 for express installation) or Microsoft SQL Server 2012 Express/Standard/Enterprise or higher (for Standalone installation)- This will come free along with AA software
- Access required for C:\D: drive for software installation and log file creation.

- Microsoft Office
- Version control integration (if required)
- Required Ports need to open

8.2 Number of Virtual Desktops

- 1 dedicated Virtual Desktop for Development
- 1 dedicated Virtual Desktop for User Testing + Prod
- No. of dedicated Virtual Desktops for Production varies based on Number of Production licenses required

8.3 Number of Genpact Desktops

- 1 Genpact dedicated Desktop dedicated for Development
- 1 Genpact dedicated Desktop dedicated for Testing + Prod
- No. of dedicated Virtual Desktops for Production varies based on Number of Production licenses required

8.4 ASSUMPTIONS, Dependencies and Constraints

- Client will setup all Automation Anywhere 10.5 environment at Citrix environment before starting development
- In the Bridge file sheet, If there is no invoice & no mail id of BC for the respective line item then Bot will not process that line item
- Grant access to Developer's OHR ID to login onto Genpact Desktop from where they should be able to login to Citrix/VDI desktop.
- Test Environment that is a replica of Production need to be available for all the applications to build and test the automation.
- Admin access on Remote desktops to install Rapid Automation software.
- Access required on remote desktops for log file creation
- Copy Paste functionality should be enabled inside Citrix/VDI
- Access to shared filer to process files.
- TCP/UDP Port (e.g. 8001) to be opened between the different remote desktops.

- RDP default communication Port (e.g. 3389) need to be opened on the Remote desktops to enable RDP
- Any changes in the application URL or changes in User interfaces, requires changes in the bot code

CHAPTER 9

CONTROL ROOM OF AA

9.1 CONTROL ROOM

Automation Any where's Control Room is a central interface that allows you to manage and monitor all the processes of RPA infrastructure. It allows you to manage your bots, monitor activities, create and manage users and roles, monitor connected and disconnected devices, view audit logs, schedule when to run bot etc., briefly, it has master controls.

Some of the Control Room features are as follows:

- View task relevant activities using the Dashboard
- Manage and configure users (client and administrator), assign roles and licenses using the Users page
- Create new and manage existing roles using the Roles page
- View the history, tasks in progress and the tasks and activities carried out in control room using the Activity page
- Manage the automation (bot) files repository and schedule or run tasks using the Bots page
- Manage credentials and lockers using the Credentials page
- View and manage the statuses of devices using the Bot runners and bot creators page
- View schedule details using the Scheduled activity page
- Manage various work items using Workload management page
- View recent activities of users and administrators using the Audit Log page

9.2 JIRA ENVIRONMENT DETAILS

It has three environments for automating the Report Extraction process. Each environment has a specific purpose, which has elaborated as below:

9.2.1 Development Environment

RPA Development team, access this environment to develop Robotic Application

9.2.2 UAT Environment

CR Administrator & Operations team (designated member) has access to this environment

Operations team (designated member) will login to RDT with the User ID of Jira and login to AA with ID created by CR Admin to perform UAT

CR Administrator will move code from Development environment to UAT Environment

9.2.3 Production Environment

CR Administrator team & Operations team(designated member) has access to this environment

Operations team(designated member) will login to RDT with the User ID of Jira and login to AA with ID created by CR Admin to run Bot

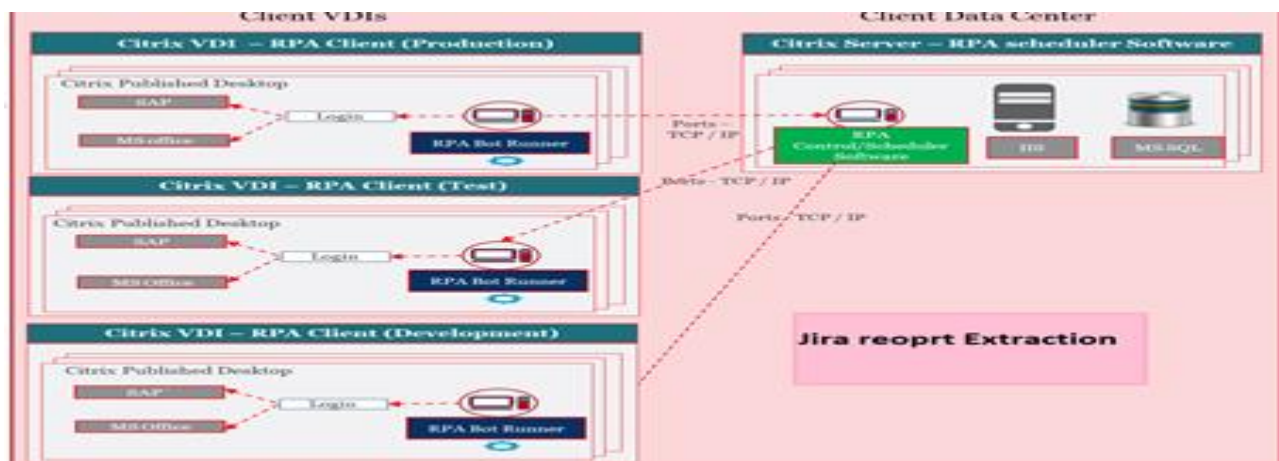
CR Administrator will move final code from Development environment to Production Environment

There are three types of users who can access these environments

RPA Development Team

- Akash Kumar
- Siddhika Seth

FIGURE 9.1: recommends the following IT infrastructure.



9.3 OPERATIONS TEAM LOGIN TO AA

Operations Team members can login to the Remote desktop, for which the access is created by RPA Team.

RPA Administrator will create credentials for one common login to AA in UAT/Production. As the User login is as per AA license (Currently only two licenses are procured for UAT and Production), the same can be shared within the operations team in order to run the Bot for UAT/production

Following steps explain on how to run the bot in both environments

STEP: 1 Click on Remote Desktop Connection icon on Citrix environment

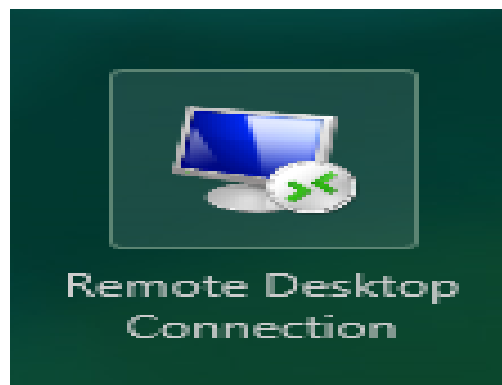


FIGURE 9.2: Desktop Icon

STEP: 2 Enter respective system name, then click on “Connect” button



FIGURE 9.3: ENTER USER NAME

STEP: 3 Enter password here, then click on OK button

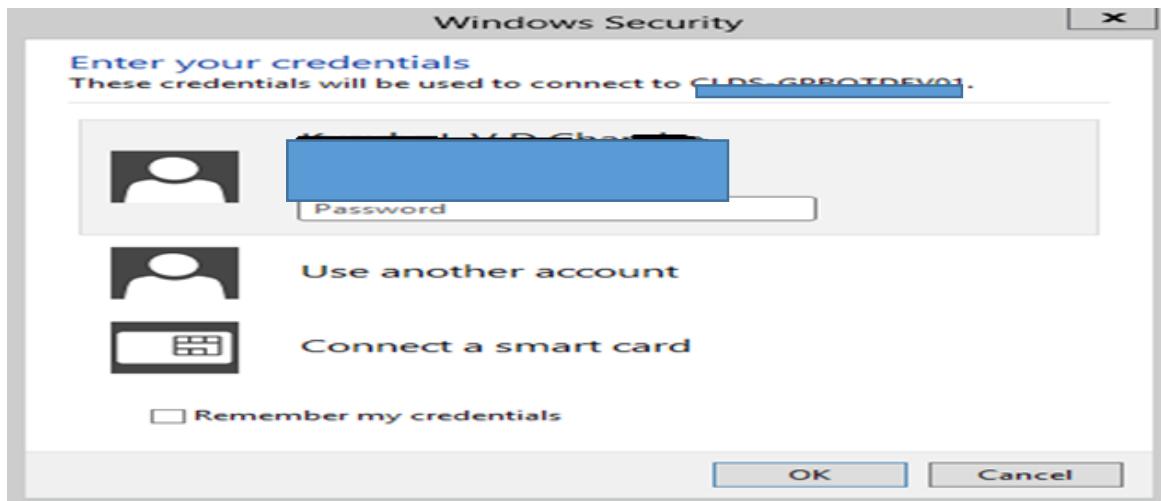
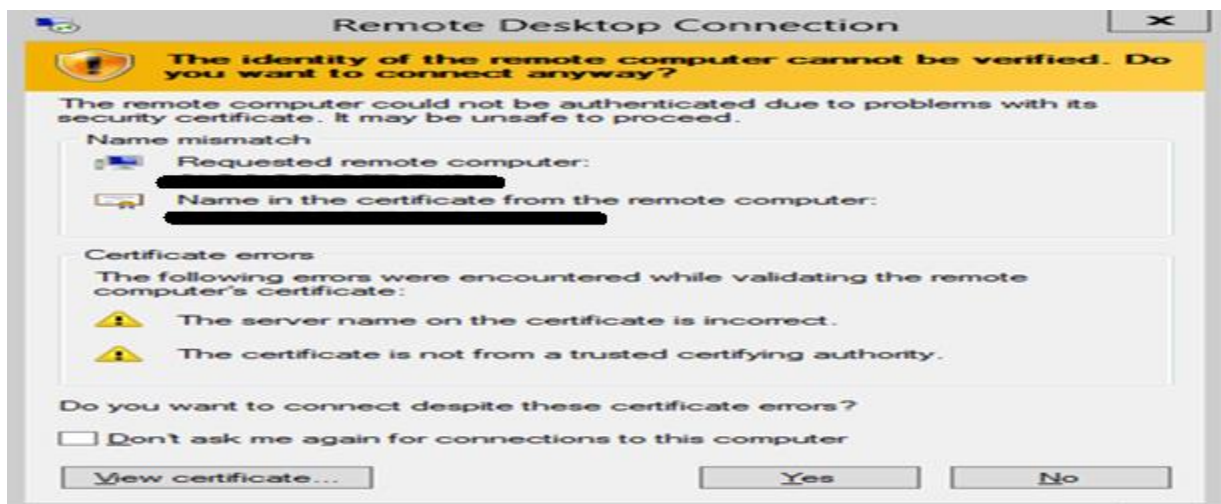


FIGURE 9.4: ENTER PASSWORD

STEP: 4 Click on “Yes” button if this window pops up (sometimes)

FIGURE 9.5: CLICK YES BUTTON



STEP: 5 Double-click on AA Enterprise client 10.7 Icon on Remote Desktop

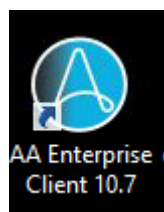


FIGURE 9.6: AA ICON

STEP: 6 Enter Automation Anywhere credentials and then click “Login” button

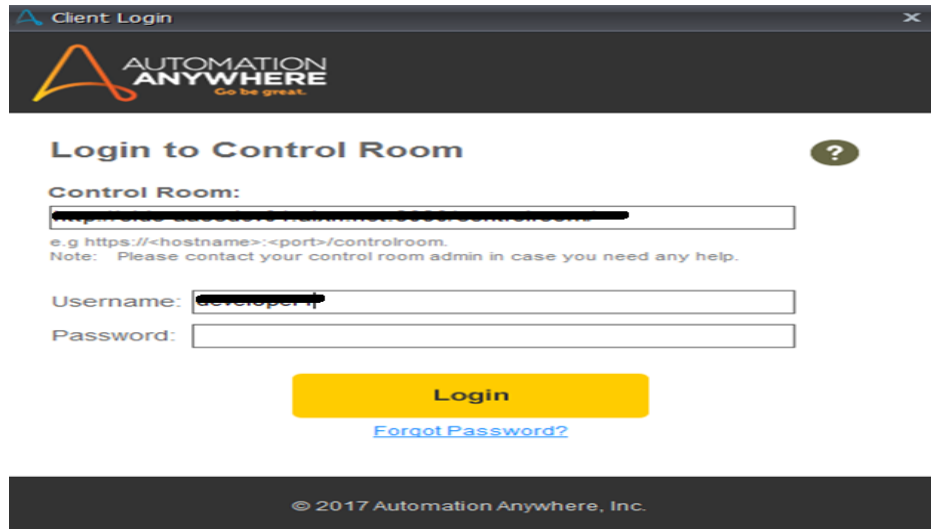


FIGURE 9.7:CONTROL ROOM

STEP: 7 Click on “My Tasks” in Automate Panel (Please see below highlighted with Red), then click on “App’s Name”

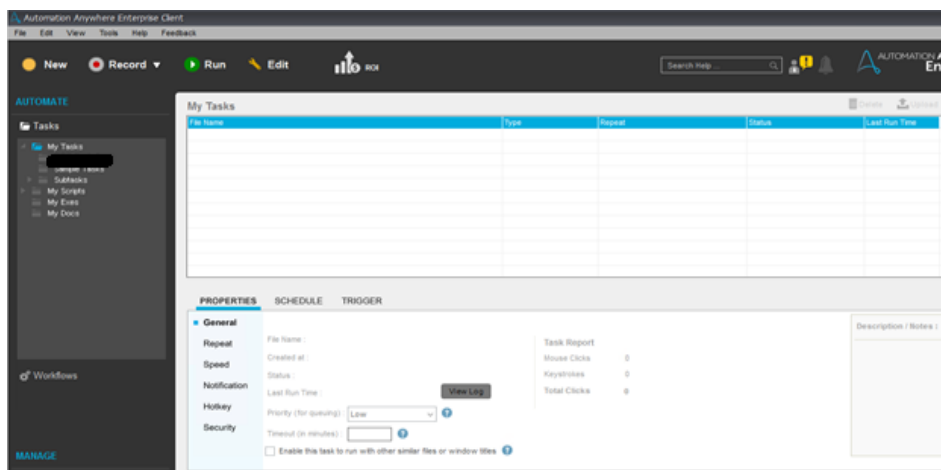


FIGURE 9.8: AA CLIENT

STEP: 8 To run the Bot, double-click on “MasterTask.atmx” file or select the MasterTask.atmx and click on Run button which is highlighted in red box

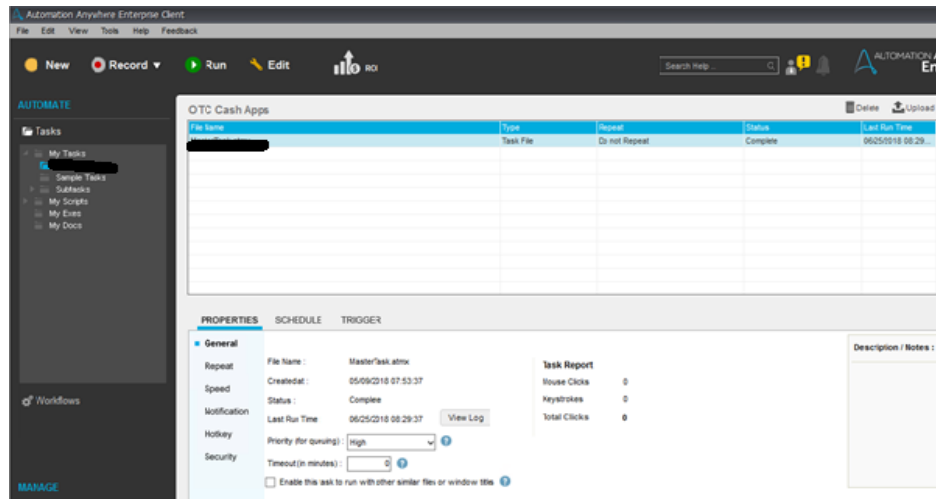


FIGURE 9.9: RUN

STEP: 9 User need to check mail from Bot to know the status of bridge file processed.

9.4 CREDENTIAL MANAGER LOGIN TO CR

AA Administrator creates a user as “Credential Manager”, who can only enter Outlook and access SAP with login credentials of Bot, while the password is entered the same cannot be viewed by any one including AA Administrator as it is encrypted.

While running the bot, the passwords related to Outlook and SAP are automatically picked from control room to perform actions

STEP: 1 Launch Control Room through internet explorer using following URL

Enter User Name: Michael and Password: *****

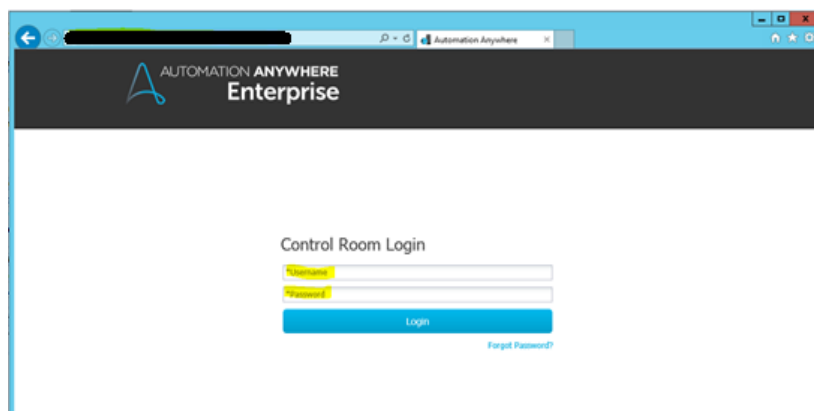


FIGURE 9.10: CONTROL ROOM LOGIN

STEP: 2 After Logging to CR, click on Credential Manager, which is highlighted in Yellow

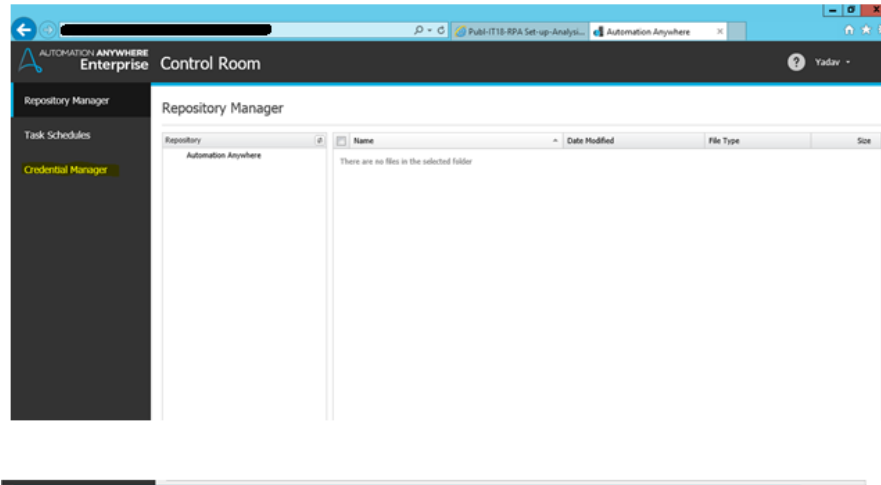


FIGURE 9.11: CREDENTIAL MANAGER ICON

STEP: 3 Select process name which you want to change the password and then click on edit button which is highlighted in yellow

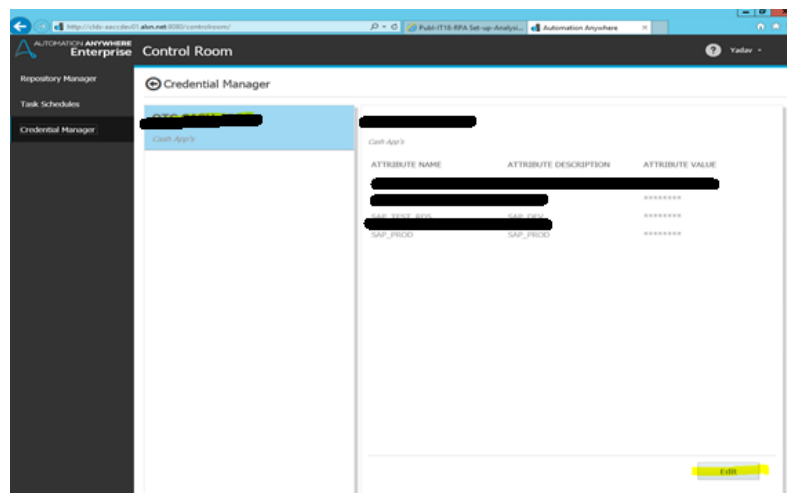


FIGURE 9.12: SELECT PROCESS NAME

STEP: 4 Update the password on required fields like in Outlook and SAP click on save.

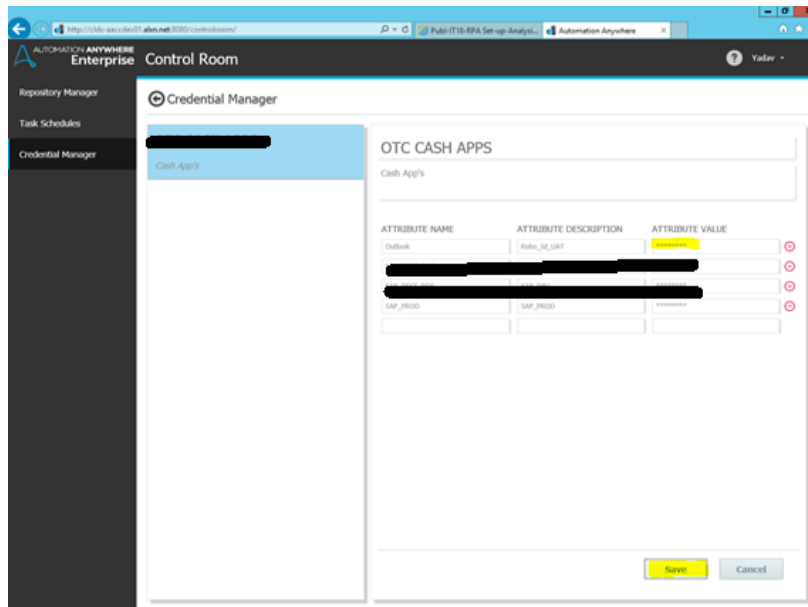


FIGURE 9.13: UPDATE THE PASSWORD

9.5 CR ADMIN ACTIVITIES

As a Control Room Administrator, the following activities will be performed.

9.5.1 DASH BOARD OF CR: Administrator can view the dashboard for the registered clients. The dash board shows number of registered clients connected to control room, Active users (i.e. Users created in control room), Failed tasks in last 2 days, Task in Progress, Upcoming tasks (Which are scheduled) and Repository (i.e., tasks which are uploaded in control room).

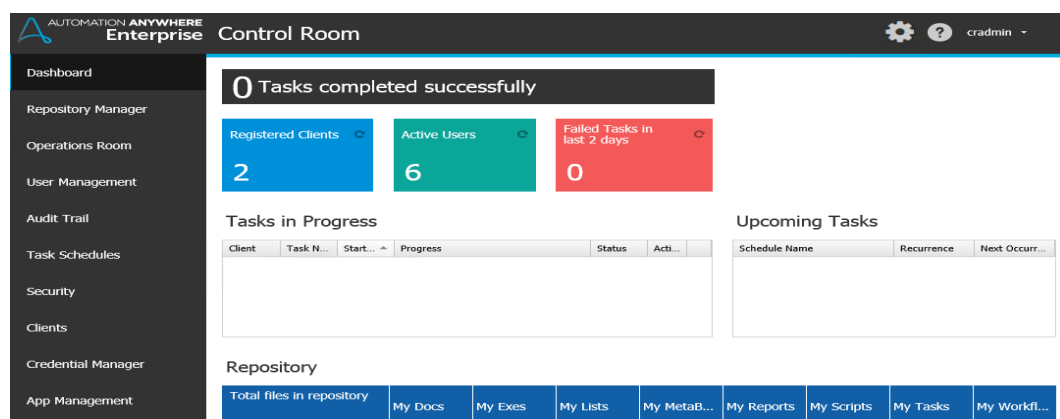


FIGURE 9.14: DASHBOARD OF CR

9.5.2 ADD/EDIT/DELETE USERS in CR

Click on User Management tab on left panel to do these operations

a) Add Users: To add user click on “Actions” button then click on “Create user”

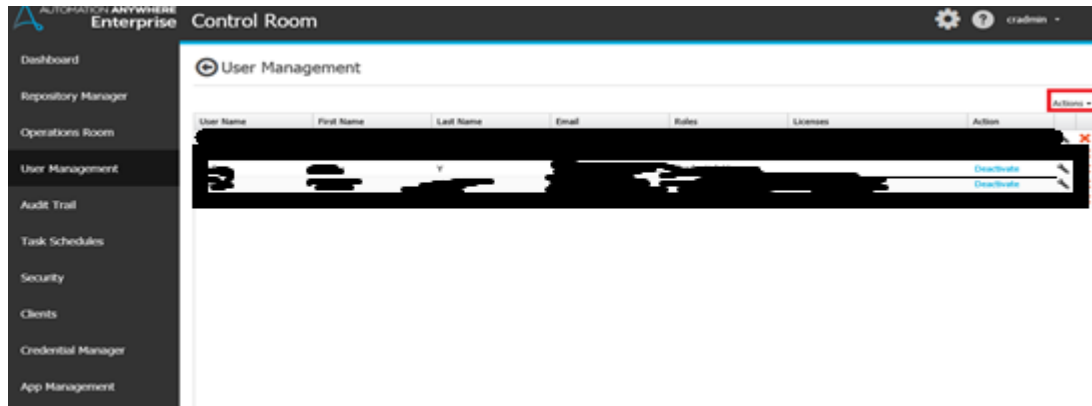


FIGURE 9.15: ADD USERS

Fill the all the field with appropriate information and regarding role select appropriate role and add license to the role by clicking “Allocate license”

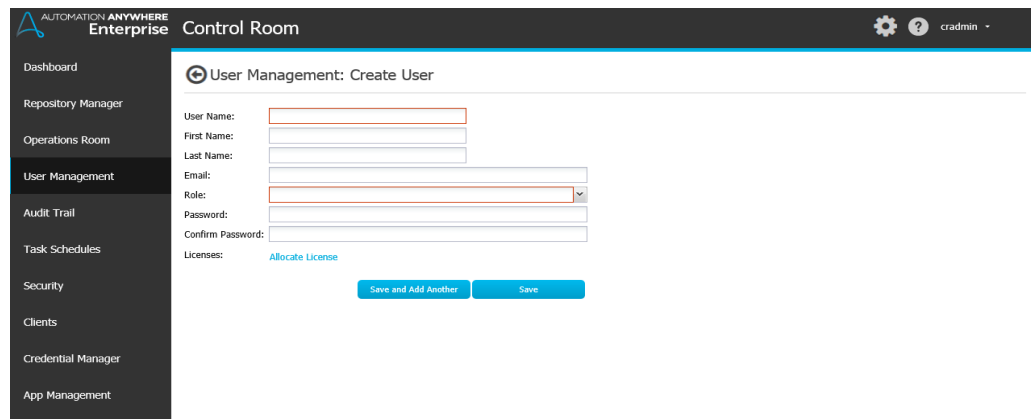


FIGURE 9.16: ALLOCATE LICSENCE

There are three options available, based on requirement, select “Development” if user belongs

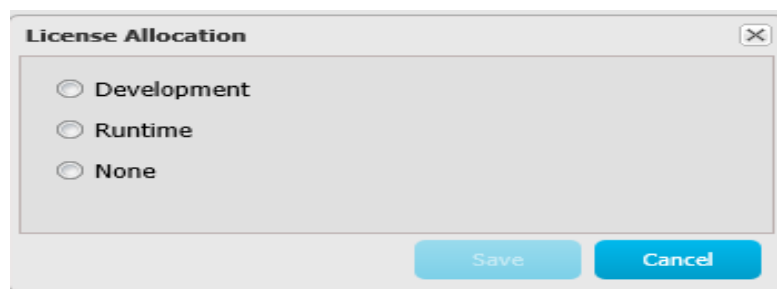



FIGURE 9.17: TYPES OF LISCENCE

to development. For users who are involved in UAT & Production, select “Runtime”, whereas these users can’t view/edit the code, they can only run the bot. For the users who login to CR for any other purpose, select “None” Option and then click “Save” button.

- b) Edit Users: To edit users click on  button as shown below. After that user can edit these details and then click on “SAVE” button to save the changes.

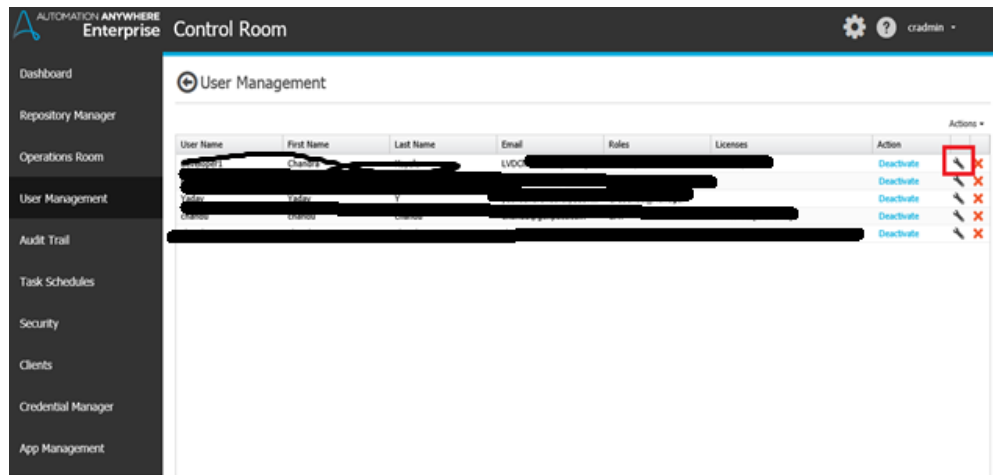


FIGURE 9.18: SETTINGS ICON IN USER MANAGEMENT

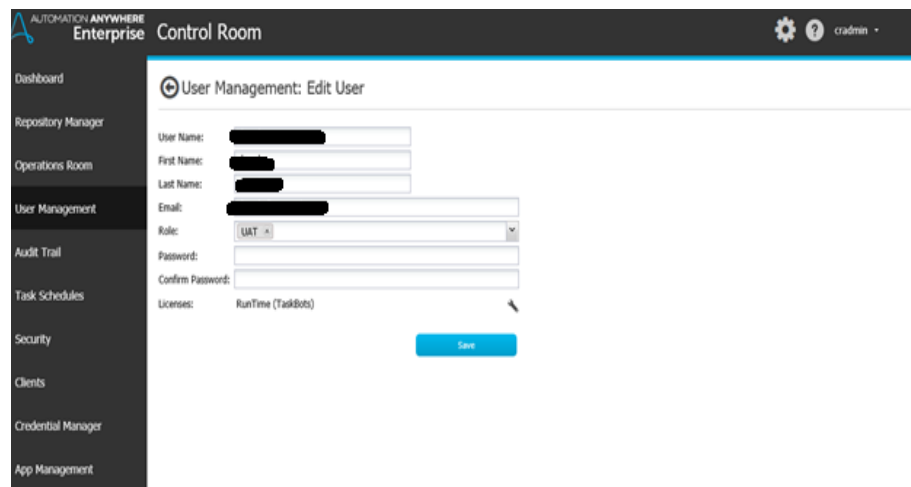


FIGURE 9.19: USER AMANAGEMENT: EDIT USER

- c) To Delete User: In user management click on **✖** button then click on “Yes” button for deleting the users as shown below

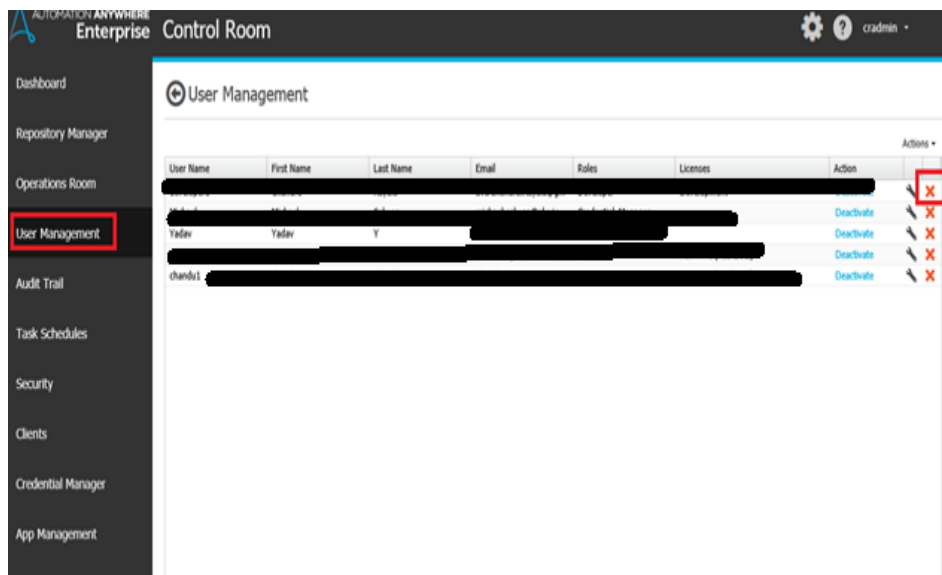
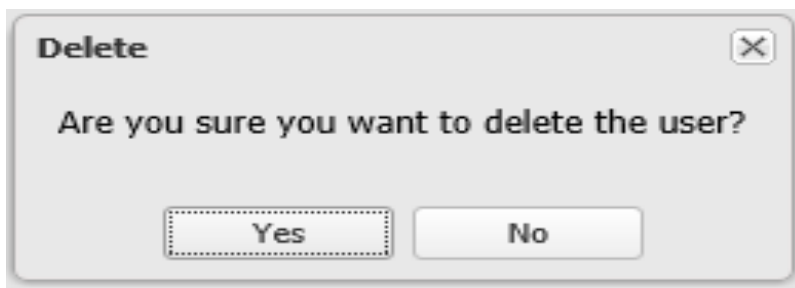


FIGURE 9.20: USER MANAGEMENT: DELETE



9.6 ROLES & RESPONSIBILITIES

Click on “Security” tab from left panel of CR. If user wants to create new role, user have to click on “Create New Role”. These roles are using while creating users.

- a) Create New Roles: For creating new roles administrator have to click on “Create New Roles.

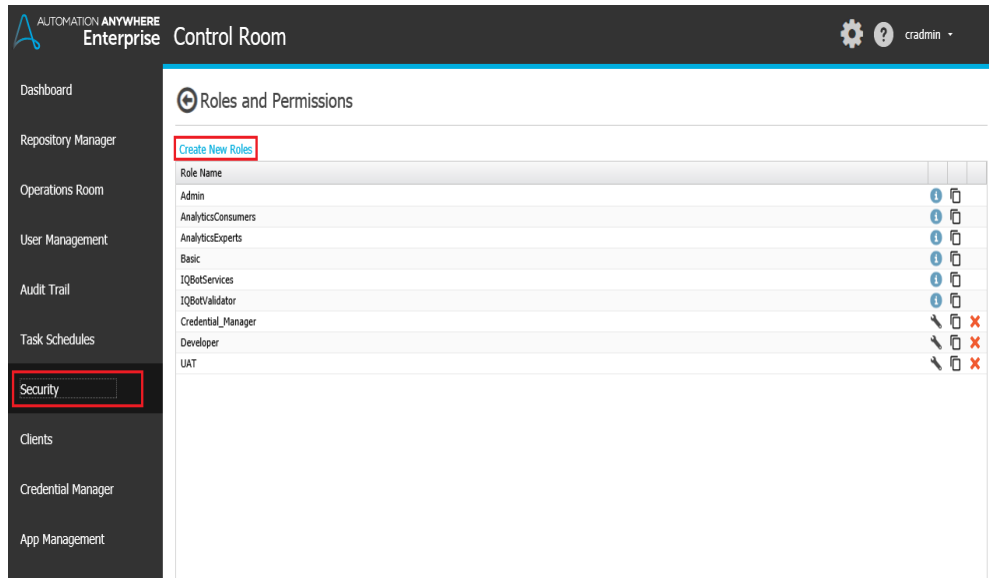


FIGURE 9.21: SECURITY TAB

- b) To create new roles administrator have to enter “Role Name” and assign the activities for that role. To assign activities administrator have to check the respective boxes and click on save button.

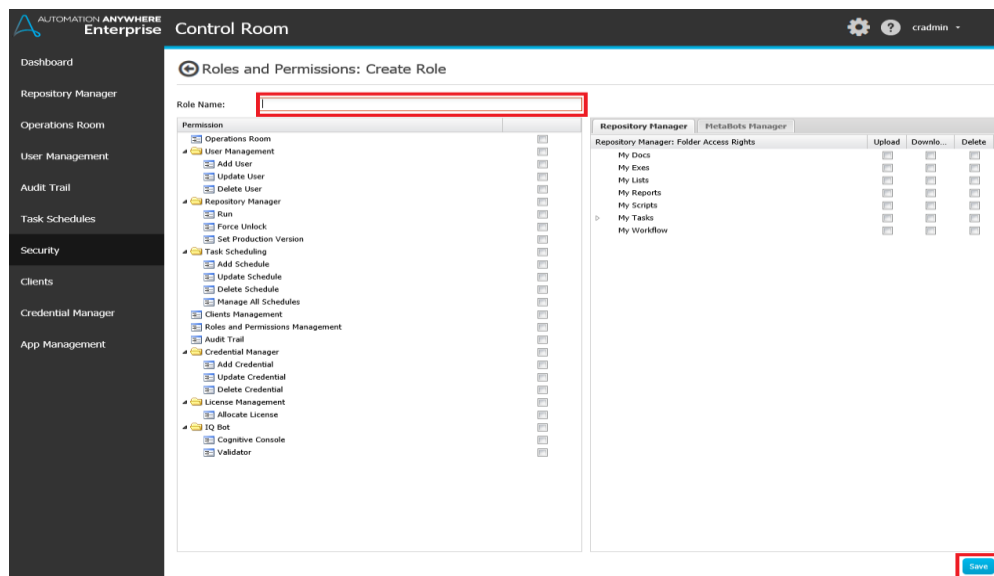



FIGURE 9.22: CREATE ROLES

9.7 LICENSE MANAAGEMENT

To install/update new AA license, administrator have to click on  button, and then click on “License Management”. Click on Install New License to upload the file.

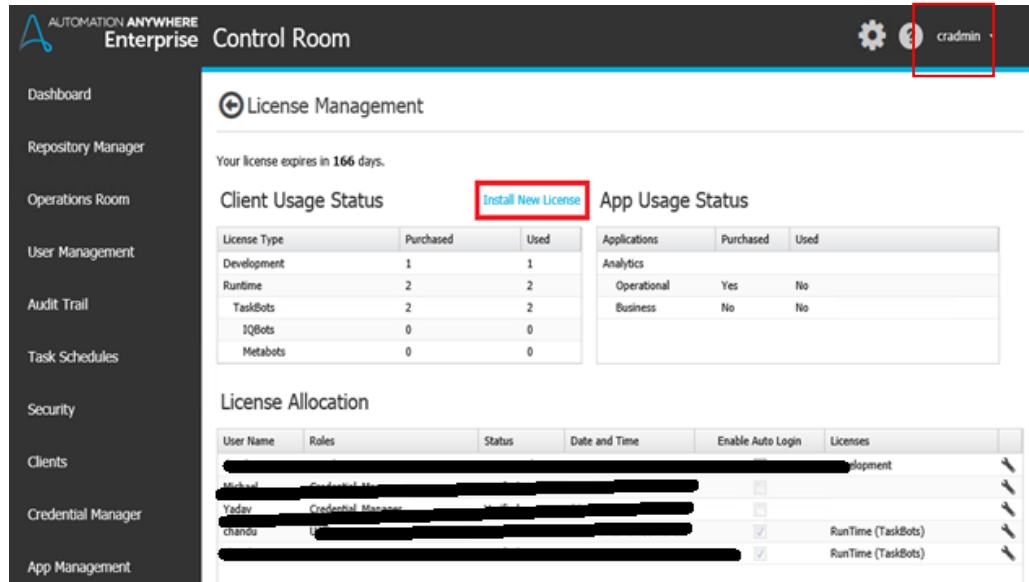


FIGURE 9.23: INSTALLING NEW LICENSE

Click on “Browse” to upload the license file and click on “Upload License” to activate the license.

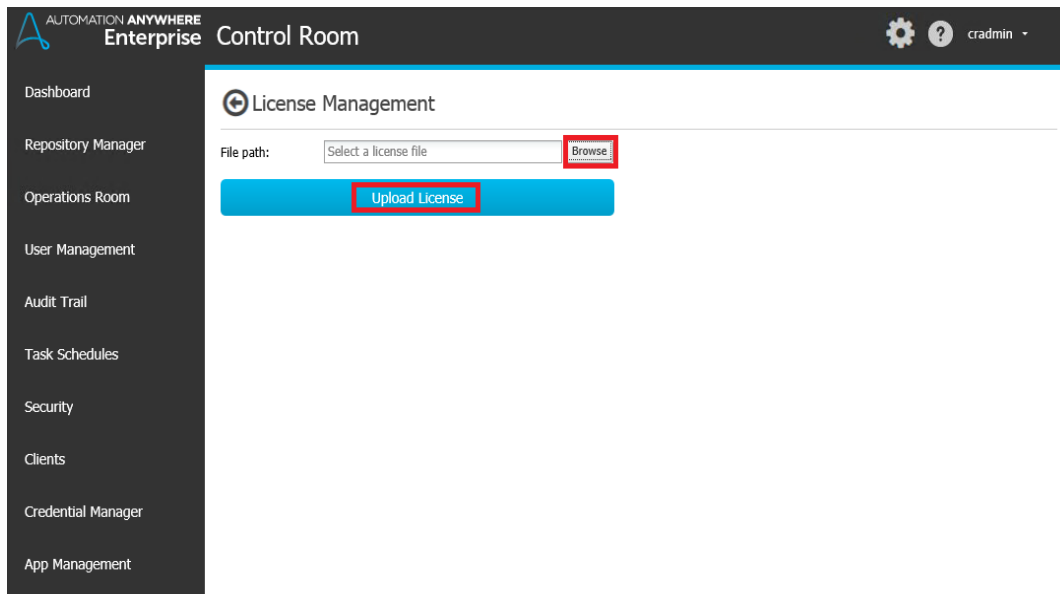



FIGURE 9.24: UPLOAD LICENSE ICON

9.8 EMAIL SETTING

This option is used to configure email settings through control room for sending/receiving mails.

- 1) To enable or disable email settings administrator need to click on  button and then click “Control Room Settings”.

Then select “Outgoing Mail Server Configuration”. Select Enable for email configuration.

Now fill appropriate details like “from”, “Host”, “port” then click “Save changes”.

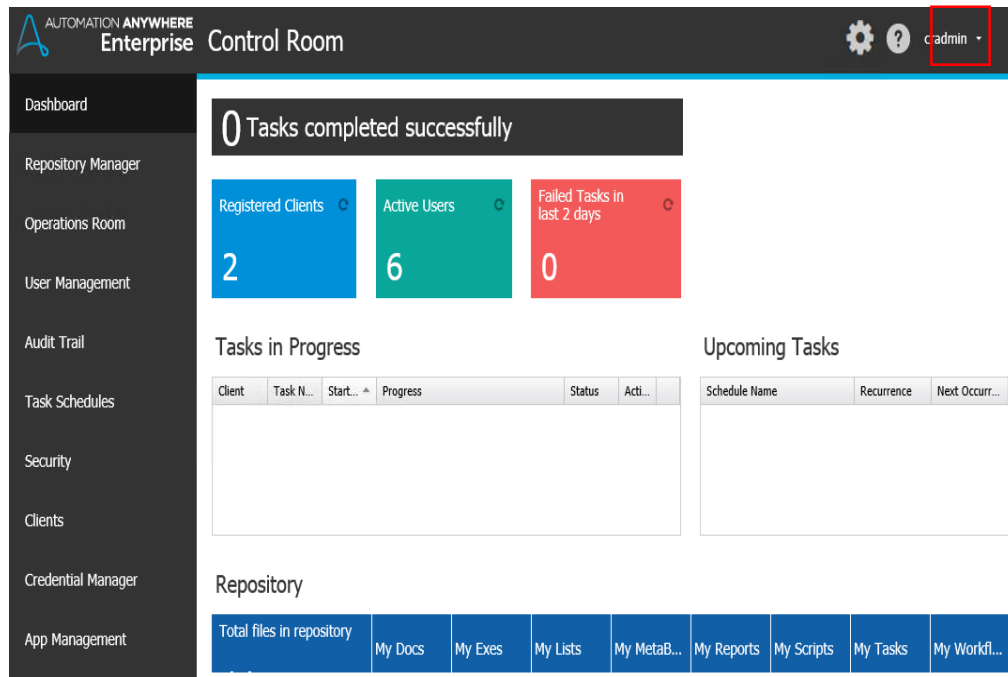


FIGURE 9.25: CONTROL ROOM SETTING’S ICON

Outgoing Mail Server Configuration

Email Configuration:

☒ Enable
☐ Disable

From:

Host: Port:
(e.g. my.myISP.com or LocalSMTPServer)

☒ My server uses secure connection (SSL/TLS)

☒ My server requires authentication

Username:
(e.g. abc@myISP.com)

Password:

FIGURE 9.26: SAVE CHANGES

9.9 SCHEDULE TASK

For scheduling the task, the administrator needs to select “Task Schedules” from the left panel and click “Create Schedule”.

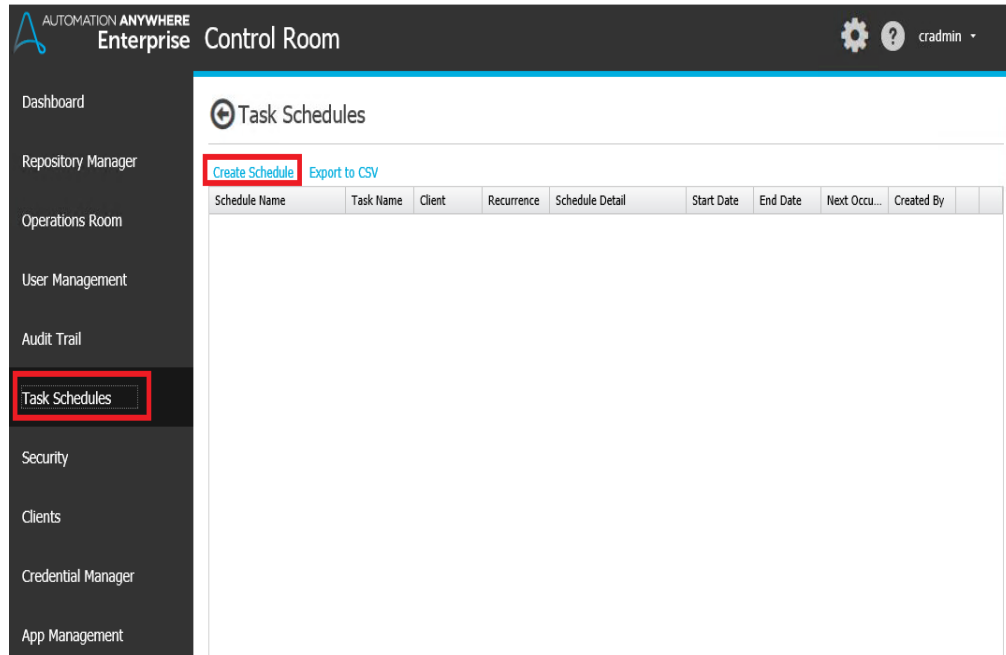


FIGURE 9.27: CREATE SCHEDULE

Select the task from the “Repository” panel, check the box with appropriate task as required and then click “Actions” and click “Schedule” to scheduling the tasks.

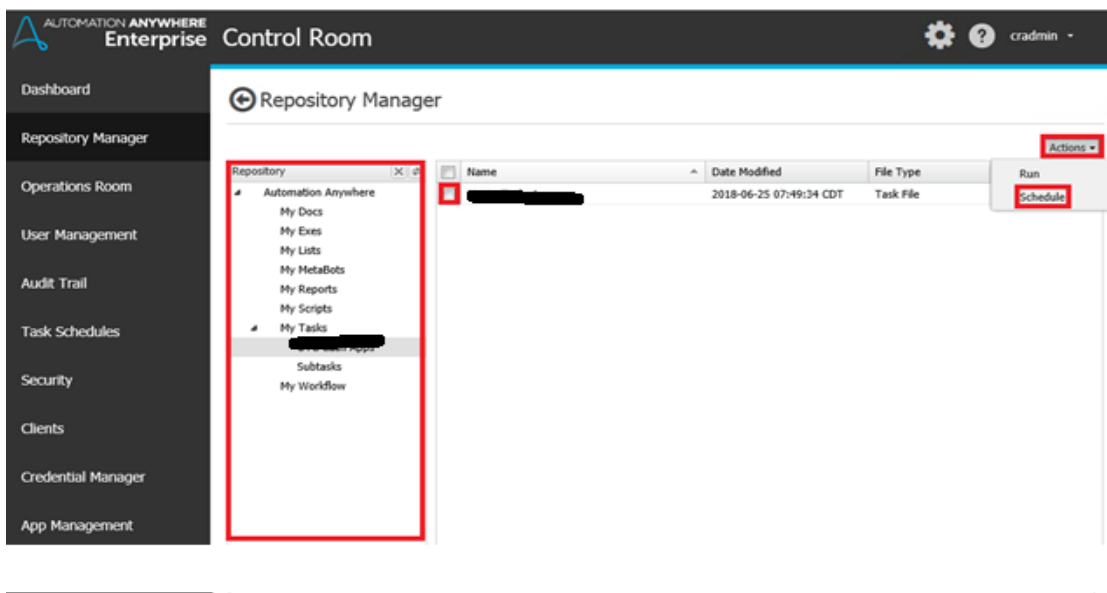


FIGURE 9.28: REPOSITORY

Administrator need to add the data to fields and then select the “bot runner” and click on save button to schedule the tasks.

FIGURE 9.29: BOT RUNNER

9.9 AUDIT TRAIL

The admin can view Audit log from this screen which gives various details like Level, Activity Type, source, users, computer, Date & Time, status and description. This log can be exported into CSV format

Level	Activity Type	Source	User	Computer	Date and Time	Status	Description
Informational	Email Setting	Control...	[Redacted]	[Redacted]	2018-07-18 04:...	Success	Email setting disabled
Informational	Login	Control...	[Redacted]	[Redacted]	2018-07-18 04:...	Success	Login successfully
Informational	Login	Control...	[Redacted]	[Redacted]	2018-07-18 02:...	Success	Login successfully
Informational	Login	Control...	[Redacted]	[Redacted]	2018-07-18 02:...	Success	Login successfully
Informational	Logout	Control...	[Redacted]	[Redacted]	2018-07-17 09:...	Success	Logout successfully
Informational	Login	Control...	[Redacted]	[Redacted]	2018-07-17 08:...	Success	Login successfully
Informational	Login	Control...	[Redacted]	[Redacted]	2018-07-17 07:...	Success	Login successfully
Informational	Login	Control...	[Redacted]	[Redacted]	2018-07-17 06:...	Success	Login successfully
Informational	Add User	Control...	[Redacted]	[Redacted]	2018-07-17 05:...	Success	User successfully added successfully
Informational	Client Login	Client	[Redacted]	[Redacted]	2018-07-17 04:...	Success	User logged in from the client successfully
Informational	Update User	Control...	[Redacted]	[Redacted]	2018-07-17 04:...	Success	User successfully updated successfully
Error	Client Login	Client	[Redacted]	[Redacted]	2018-07-17 04:...	Failed	Invalid credentials.
Error	Client Login	Client	[Redacted]	[Redacted]	2018-07-17 04:...	Failed	Invalid credentials.
Informational	Add Role	Control...	[Redacted]	[Redacted]	2018-07-17 04:...	Success	User successfully added successfully
Informational	Add Role	Control...	[Redacted]	[Redacted]	2018-07-17 04:...	Success	User successfully added successfully
Informational	Delete User	Control...	[Redacted]	[Redacted]	2018-07-17 04:...	Success	User successfully deleted successfully

FIGURE 9.30: AUDIT TRAIL

CHAPTER 10

Main Task / Sub Task / Reusable Task: -

10.1 Main Task:

From the beginning that is Opening of GSocial page to Access Jira are handled in the Main task.

1. Open Jira Link.
2. Go to project.
3. Check whether project is available or not.
4. Select the project.
5. Click on advance.
6. Filter your query using jql.
7. Export csv (All Fields).
8. Place it in a shared folder.
9. End Process.

10.2 Sub Task:

Here Sub task is checking whether Jira link is working or not:

1. If Jira link is working: The bot will go to the project.
2. If Jira link is not working: The bot will send a mail with a screenshot, then end the process.

Next subtask is to check whether project is available or not

1. If project is available: Select the project.
2. If project is not available: End the process.

10.3 Reusable Sub Task:

The step that Checks the Project is available or not and Jira link is working or not is handled under Reusable Sub Task.

Project Learning

From this project I learnt about RPA SDLC Life cycle. Earlier the tasks were done manually, but after development of robotic process automation, this work was made much simpler. The bots do the tedious tasks which if done manually would literally consume a lot of amount of time. I learnt about the four phases- Analysis of Bot, Bot Development, Testing, and Support & Maintenance. Then I learnt about Jira tool, its features and how to extract reports from Jira. I learnt how to perform jql query operation and extraction of reports and placing them in a shared folder.

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