

Robotic Process Automation with Selenium

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Abstract: RPA is defined as the practice of using software robots to interface with Software-as-a-Service applications and IT systems in order to automate rule-based manual tasks related to repetitive and transactional procedures. The robot mimics a user's behaviors while interacting with a system's user interface. RPA services allow data security, improved business efficiency, and effectiveness across a number of business applications without changing the infrastructure or systems that are already in place. Robotic process automation (RPA) is a form of technology utilized in areas including artificial intelligence, machine learning, and automation engineering. Instead of using the most valuable human resources on repetitive activities, it might be considered a low-risk approach to automating business operations.

Keywords: Selenium Tool, Types of RPA, Issues in RPA, Advantages & Disadvantages, Solution in RPA.

I. INTRODUCTION

RPA is described as the art of interacting with Software-as-a-Service applications and IT systems utilising software robots to automate rule-based manual operations associated with repetitive and transactional processes. The robot imitates an employee's interactions with a system's user interface. Without altering existing systems or infrastructure, RPA services enable data security, increased business efficiency, and effectiveness across a variety of business applications. Robotic Process Automation (RPA) is a type of technology used in fields such as Machine Learning, Automation Engineering, and Artificial Intelligence. It can be seen of as a low-risk method of automating company processes rather than employing the most precious human resources on tasks that are done repeatedly.

II. SELENIUM TOOL

One of the most popular open source Web UI (User Interface) automation testing tools is Selenium. Jason Huggins created it at first in 2004 as a tool for Thought Works' internal use. Selenium offers automation across numerous platforms, programming languages, and browsers. On operating systems including Windows, Linux, Solaris, and Macintosh, Selenium can be simply implemented. Additionally, it supports mobile operating systems including iOS, Windows Mobile, and Android. Through the use of drivers tailored to each language, Selenium supports a wide range of programming languages. C#, Java, Perl, PHP, Python, and Ruby are among the languages that Selenium supports. Selenium Web driver is currently most often used with Java and C#. Any of the supported programming languages can be used to create a Selenium test script, which can then be executed directly in the majority of current web browsers. Internet Explorer, Mozilla Firefox, Google Chrome, and Safari are supported browsers by Selenium. In order to enable continuous testing, Selenium can be connected with other automation test tools like Maven, Jenkins, & Docker. For maintaining test cases and producing reports, it can also be connected with tools like TestNG and JUnit.

III. TYPES OF RPA

3.1 SIMPLE RPA

RPA bots have a far greater level of digital literacy than human beings do. Think of RPA bots as a digital workforce that can interact with any system or application. Copy-and-paste, site data scraping, computations, file opening and movement, email parsing, programmer logins, API connections, and unstructured data extraction are just a few of the operations that bots may perform. Additionally, as bots can adapt to any interface or workflow, there is no need to change the existing corporate systems, apps, or procedures in order to automate them.

3.2 COGNITIVE RPA

Cognitive automation, according to Deloitte, is a class of AI systems that mimics human behavior: Speech recognition, natural language processing, and RPA are cognitive technologies that automate perceptual and judgment-based tasks that

were traditionally the purview of humans. Based on its analysis, an artificial intelligence system advises a clinician on the best course of action. IBM builds on that description and claims that cognitive computing differs from AI in terms of application. In cognitive computing, the computer provides information to help the clinician make judgments.

ISSUES IN ROBOTICS PROCESS AUTOMATION

3.3 LACK OF NECESSARY BUSINESS SUPPORT

Business use cases must include all necessary workflow diagrams, potential workarounds for failure scenarios, business rules for various types of data the Bot will process, and technical exceptions that the operations team will encounter while manually processing data in order for an RPA project to be successful. It would be difficult for RPA projects to generate a thorough Process Design Document during the user acceptance testing if the company is not genuinely motivated to offer the necessary assistance. Businesses are required to offer insightful input about the execution of the Bot in these tests.

3.4 UNABLE TO AUTOMATE WHOLE USE CASES

Not all of the stages in some processes can be directly automated using rule-based RPA systems. It would be necessary to integrate OCR engines with machine learning techniques. These new technological components will, however, cost more and need a different skill set, which may not provide company executives the outcomes they were hoping for.

3.5 BUSINESS CONTINUITY PLANS THAT ARE NOT CLEARLY SPECIFIED

Once the Bots are put in production, there should be little to no maintenance needed to maintain smooth delivery, according to the expectation established for RPA projects. However, in practice, it does need upkeep in terms of identifying fresh, unhandled scenarios during Bot execution, problems encountered in production environments, defining Bot execution schedules based on demands from numerous business units operating from various time zones, and developing mitigation strategies during significant failures.

3.6 PROCESS PROBLEM

RPA technologies have limited tracking features, making it challenging to identify who built which bot and what datasets and programs those bots used. Therefore, it becomes hard to forecast which processes would cease working next when RPA tools are quickly introduced at scale throughout the firm.

IV. ADVANTAGES OF RPA

RPA has various benefits, some of which are listed below:

1. By automating the work with the use of robotic process automation, the user may cut costs.
2. Using the virtual workforce does not mandate that the user replace the current systems.
3. By removing human mistakes caused by fatigue, ignorance, and other factors, RPA lowers the rate of errors. Lower operational risk is offered by it.
4. When RPA is implemented, high-value personnel may be returned to the front lines to ensure the success of the client.
5. In order to deploy AI and RPA, many businesses are required to develop explicit governance protocols.
6. RPA is a technology that can "remove the robot out of the humans," according to number six. RPA lessens burden by allowing enough time to focus on the task that adds value. These jobs with added value impact both the client and the company.
7. We can make RPA product & it will handled by different BOT users.

V. DISADVANTAGES OF RPA

1. The task's automation raises unemployment. RPA has the ability to eliminate repetitive task occupations since it is lowering the requirement for human labour. Labor is more plentiful on the market as a result of unemployment.
2. The difficulty of RPA installation is getting simpler every day. A recent research found that 30 to 50 percent of

RPA projects initially fail.

3. Robotic Process Automation lacks creative thinking.
4. The RPA system or project requires routine reconfiguration.
5. In comparison to other technologies, it is an expensive technology.

VI. SOLUTION IN ROBOTICS PROCESS AUTOMATION

Selenium: A tool for automating the browser is called Selenium. It is a framework used for web application testing. This overarching project has the ability to automate web browsers. It supports a variety of web browsers, including Chrome, Firefox, and others. Python, JavaScript, and a select few additional languages support Selenium. Selenium provides mobile device testing when used with Appium.

Based On	SELENIUM
Types of Automation	Selenium supports programmable automation
Cost	Selenium is completely open-source so it's free.
Dependency	Selenium is used to test only web applications. It is not compatible with desktop or mobile applications.
Component Used	Selenium used WEB-DERIVERS to automate any task
Level of Automation	Selenium automates only functional, regression and performance testing
Will Automate	Web applications
Coding-Knowledge	Fundamental knowledge is required
Use-Case	Can test the current webpage

VII.CONCLUSION

Thanks to its cutting-edge technology, RPA will have a number of benefits, including improved quality, speedier production, cheaper costs, and more customer satisfaction. These advantages cannot be ignored. It is a helpful tool that provides individuals creative tasks to perform, despite the concerns of many businesspeople that it would eliminate a substantial percentage of the labor force. Additionally, they are free to work on interesting and original initiatives. You have the exceptional ability to plan upgrades to your automation solution before they happen when you already have an RPA product in place and are using it. Due to its seamless integration into the existing system environment, robotic process automation is easy to adopt and can automate initial jobs quickly. This makes it an excellent method for introducing or developing

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