1 INTRODUCTION

Everyone knows how to download a pdf file manually from the internet. It does not take much time to download them. What if there is a need for more number of files. For that problem RPA could be the solution. Robotic process automation (or RPA) is a form of business process automation technology based on metaphorical software robots (bots) or on artificial intelligence (AI)/digital workers. The main objective of this paper is to download 100 random pdf files from the internet using excel, csv and datatable automations in UiPath and compare them with the manual way of downloading and finding the most efficient way of downloading the large number of files.

1.1 UiPath Studio

UiPath Studio is a complete software solution that enables you to automate your back office repetitive tasks. It converts tedious tasks into complete UI automation, thus, making your work easier and faster.

1.2 UiPath Robot

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Abstract: Many people download one or two files from the internet and it does not take much time to download them. What if there is a need for more number of files. For that problem RPA could be the solution. Robotic process automation (or RPA) is a form of business process automation technology based on metaphorical software robots (bots) or on artificial intelligence (AI)/digital workers. The main objective of this paper is to download 100 random pdf files from the internet using excel, csv and datatable automations in UiPath and compare them with the manual way of downloading and finding the most efficient way of downloading the large number of files.
UiPath Robot executes the processes built in Studio, as a human would. Robots can work unattended (run without human supervision in any environment, be it virtual or not) or as assistants (a human triggers the process)[8].

2 Requirements
The applications I have used in this project are
1. UiPath Studio Pro 2020.4.3 Community license
2. Mozilla Firefox browser 79.0 (64-bit)
3. Microsoft Office 365
The system specifications
1. Intel core i3-7020U @ 2.30GHz CPU
2. 8 GB RAM
3. Nvidia GeForce MX110 GPU
4. 1 TB HDD
5. Wifi speed 200kbps

3 Manual method
Open the browser and paste the link in the address bar and hit the search button. After the file has opened, click the download button. Choose the destination folder and save the file.

Figure 1. Image showing file manager
4 Datatable method

The activities that are used in this method are Build datatable, For Each Row, Open Browser, Click, Type into and Close tab. First, open a new project and a new sequence in UiPath Studio, then drop ‘build datatable’ activity from the activities panel and create two columns in it. One containing the hyperlinks and another with the names in which the files need to be saved. After that drop ‘for each row’ activity and inside it drop ‘open browser’ activity. Give the variable in which the datatable is stored in ‘for each row’ activity, also give row.item(0).ToString in the input of ‘open browser’ and choose the browser type. Then drop ‘click’ activity. Set informative screenshot as print symbol and using another ‘click’ activity, click print. Now another ‘click’ activity, this time an informative screenshot as save symbol. Using once again ‘click’ activity, choose your destination folder. Use ‘type into’ activity and select the box in which you are going to give the name and the value as row.item(1).ToString. Finally use ‘click’ activity to click save button and drop ‘close tab’ activity for closing tabs.

Figure 2. Image containing the links of the files and the names it has to be saved in the system in the datatable.
5 Excel automation

The activities that are used in this method are Read range from workbook, For Each Row, Open Browser, Click, Type into and Close tab. Open a new project and a new sequence in UiPath Studio, then create an excel sheet with two columns, one containing the hyperlinks and another with the names in which the files need to be saved. Drop ‘Read range’ activity in the workbook from the activities panel and choose your file. After that drop a ‘for each row’ activity inside it drop ‘open browser’ activity. Give the variable in which the datatable is stored in ‘for each row’ activity also give row.item(0).ToString in the input of ‘open browser’ and choose the browser type. Drop ‘click’ activity. Set informative screenshot as print symbol and using another ‘click’ activity, click print. Now another ‘click’ activity, this time an informative screenshot as a save symbol. Again by using ‘click’ activity, choose your destination folder. Use ‘type into’ activity and select the box in which you are going to give the name and the value as row.item(1).ToString. Ultimately use ‘click’ activity to click save button and drop ‘close tab’ activity for closing tabs.

Figure 3. Images a) and b) containing the steps of the datatable automation.

Figure 4. Image containing the links of the files and the names it has to be saved in the system in the excel sheet.
6 CSV automation

The activities that are used in this method are Read csv, For Each Row, Open Browser, Click, Type into and Close tab. Open a new project and a new sequence in UiPath Studio, then create a csv file with two columns. One containing the hyperlinks and another with the names in which the files need to be saved. Drop ‘Read csv’ from the activities panel and choose your file. After that drop ‘for each row’ activity and inside it drop ‘open browser’ activity. Give the variable in which the datatable is stored in ‘for each row’ activity also give row.item(0).ToString in the input of ‘open browser’ and choose the browser type. Drop ‘click’ activity .Set informative screenshot as print symbol and using another ‘click’ activity’,click print. Now another ‘click’ activity ,this time an informative screenshot as save symbol. Using once again ‘click’ activity ,choose your destination folder. Use ‘type into’ activity and select the box in which you are going to give the name and the value as row.item(1).ToString. Finally use ‘click’ activity to click save button and drop ‘close tab’ activity for closing tabs.

Figure 5. Image containing the csv file opened in notepad.

7 Result

We have tried all the four methods and tabulated the result in the table III.E . It found that usage of excel automation for downloading pdf files is more efficient than other three methods.

Every other activity is the same , so, there is only the reading files may vary in speed. The read activity for excel workbook file is faster and effective than other read activities used here.
Figure 6. Time taken by each method to download all the 100 files a) excel automation, b) datatable automation, c) csv automation and d) manual method

Table 1. Result of different downloading methods.

| Method               | No. of files | No. of files skipped | Time taken |
|----------------------|--------------|----------------------|------------|
| Manual Method        | 100          | 0                    | 17 seconds x100 files 1700 seconds OR Approx 28 min |
| Excel automation     | 100          | 0                    | 8 minutes 26 seconds |
| Datatable automation | 100          | 0                    | 9 minutes 31 seconds |
| CSV automation       | 100          | 0                    | 10 minutes 33 seconds |

8 Conclusion

From the above result it is easy to conclude that excel automation is more efficient than the other three methods. All the four methods of downloading were tested in the same computer and connected with the same wifi network. These are some of the areas where RPA is more effective, Operational activities in sales, Procure-to-pay, Portal queries, Data extraction, Reconciliation, Price comparison, Data management and so on[2]. By the use of RPA there will be more accurate outcomes with less labour and less cost.

References

[1] Kosonen, Lotta & Lappi, Olli-Eemeli. 2020 Impacts, benefits, and implementation of RPA and its effect on outsourced work 10.13140/RG.2.2.26625.89440.
[2] Dr. Suryakant,Vinod L Mane and Dr. Preeti Patil 2019 Social Innovation in the Education System by using Robotic Process Automation (Rpa) 2278-3075
[3] Adrian-Mihai, Zaharia-Radulescu, Catalin Liviu Pricop, Darko Shuleski and Anton Cristian Ioan 2017 Rpa And The Future Of Workforce. 11(1), 384-392.

[4] Aguirre S., Rodriguez A., Figueroa-García J., López-Santana E., Villa-Ramírez J., Ferro-Escobar R. (eds) 2017 Automation of a Business Process Using Robotic Process Automation (RPA): A Case Study. 742, 62-74  https://doi.org/10.1007/978-3-319-66963-2_7

[5] Mendling J., Decker G., Hull R., Reijers H. A., and Weber I. 2018 How do Machine Learning, Robotic Process Automation, and Blockchains Affect the Human Factor in Business Process Management 43, DOI:10.17705/1CAIS.04319.  https://doi.org/10.17705/1CAIS.04319

[6] Van der Aalst W.M.P., Bichler M. and Heinzl A. 2018 Robotic Process Automation Bus Inf Syst Eng 60, 269–272, available online:  https://doi.org/10.1007/s12599-018-0542-4

[7] Penttinen Esko, Kaslin Henje and Asatiani Aleksandre 2018 How to Choose between Robotic Process Automation and Back-end System Automation? Research Papers. 66. https://aisel.aisnet.org/ecis2018_rp/66

[8] Alok Mani Tripathi 2018 Learning Robotic Process Automation: Create Software robots and automate business processes with the leading RPA tool –UiPath ISBN 1788396510, 9781788396516