Robotics and Process Automation

Excel Automation

Team Members:

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INTRODUCTION:

OVERWIEW:

In this project, we will build a process to Grade Calculation Excel Automation that works over Microsoft excel 2013 using Blue prism.

This Project includes the knowledge of RPA using Blue Prism in terms of software and a background of automation as a whole.

Microsoft Excel became one of the world's most well known business applications since it assists experts with getting sorted out, investigate, and present data. With Blue Prism, an incredible mechanical interaction computerization (RPA) device, we can be much more useful with Excel. Blue Prism accompanies an Excel VBO document that you can use to rapidly begin robotizing key Excel measures.

PURPOSE:

The purpose for the existence of this project narrows down to the fact that this project allows grade calculation based on the percentage of the student and automates the procedure by fetching the grade as per the percentage of the student and as per the marks obtained the percentage is counted. This Project also includes the opening and closing of the excel sheet as per the procedure specified and automation is provided henceforth.

By the end of this project, we should be able to:

- ***Learn about the components of Blue Prism automation:***
    - ***This objectives speaks about the learning of the components of the blue prism automation procedure and includes the usage of different components and processes to automate any system as per the requirement of the project assigned.***

- ***Using Blue Prism to import MS Excel VBO (Visual Basic for Applications).***
    - ***Blue Prism can be used to import MS Excel VBO, which makes the inclusion of various microsoft applications and much more.***

- ***Studio for fine-tuning processes with unique requirements.***
    - ***This objective is used to read about the processes which can be used, as well as, the unique requirements of the projects are satisfied.***

- ***Working with several stages in process studio.***
    - ***This talks about the various stages involved in the process studio.***

LITERATURE SURVEY:

Existing Problem:

◎ There is no debugging tool and no testing edge to examine whether all cells continue to fill in true to form, for instance after a change.

◎ There is no existing method to calculate the grades as per the percentage scored by the student automatically, for instance, calculating the average score of the student.

◎ While reusing the bookkeeping page for the current month's investigation, the new information were reordered physically into the devoted source column(s). Nonetheless, since the information columns for the current month were normally more than the information lines for the earlier month, the unadulterated duplicate/glue of the information would cover districts of the sheet where macros had not yet been characterized, creating incorrectly unconfirmed aggregates and macros results.

◎ Slow speed in execution, and execution corruption address a difficult issue in adaptability while carrying out proficient information fighting and information the board projects.

◎ There are low coverage of data operations, that is limited number of operations can be made through excel.

◎ *Every time, in order to calculate new values, you need to reopen Excel, perform such manual operations, and recalculate.*

◎ *It appears simple to use toward the starting while moving the initial phases in the realm of information handling. In any case, when more intricate tasks are required, when joint effort would prove to be useful it turns out it isn't so easy to use all things considered.*

Solutions:

◎ *Error control becomes easy in excel automation through blue prism as the error handling is done together with the error occuring stages.*

◎ *High speed in execution, and carry out proficient information fighting and information the board projects.*

◎ *Variety of calculations can be done just by giving out the required expression to the data fields.*

◎ *In order to calculate new values, you need not to reopen Excel, just reperform the process again and it'll calculate the new values.*

◎ *The automation can be used when you want to do your task in an eyeblink of the time without the use of manual labour.*

Proposed Solution:

There are several approaches to automating Excel with RPA:

- *Coding using RPA API and other API tools*
- *Native actions for Excel automation*
- *Object-based automation*

All the above approaches have their pros and cons. Let's illustrate a few:

Coding Using API:

Using RPA API and other API technologies like Apache POI, you may automate Excel using a code-based approach. The key benefits of this method are its extensive automation possibilities and faster execution. However, because this strategy demands coding abilities, an RPA developer will almost certainly be required on the team. As a result, it

may not be appropriate for business users.

Native Excel Actions:

Automation scripts are created using special Excel actions from a library of pre-built actions in this method. The script is produced using a user-friendly drag-and-drop interface with no coding necessary, which is its main advantage. Actions are also carried out in the background in real time. The biggest disadvantage is that automation is confined to a list of ready-to-use actions.

Example: We need to scrape data regarding 1,000 online companies and save it in an Excel file. The best approach is to write the data in Excel with built-in actions in the background.

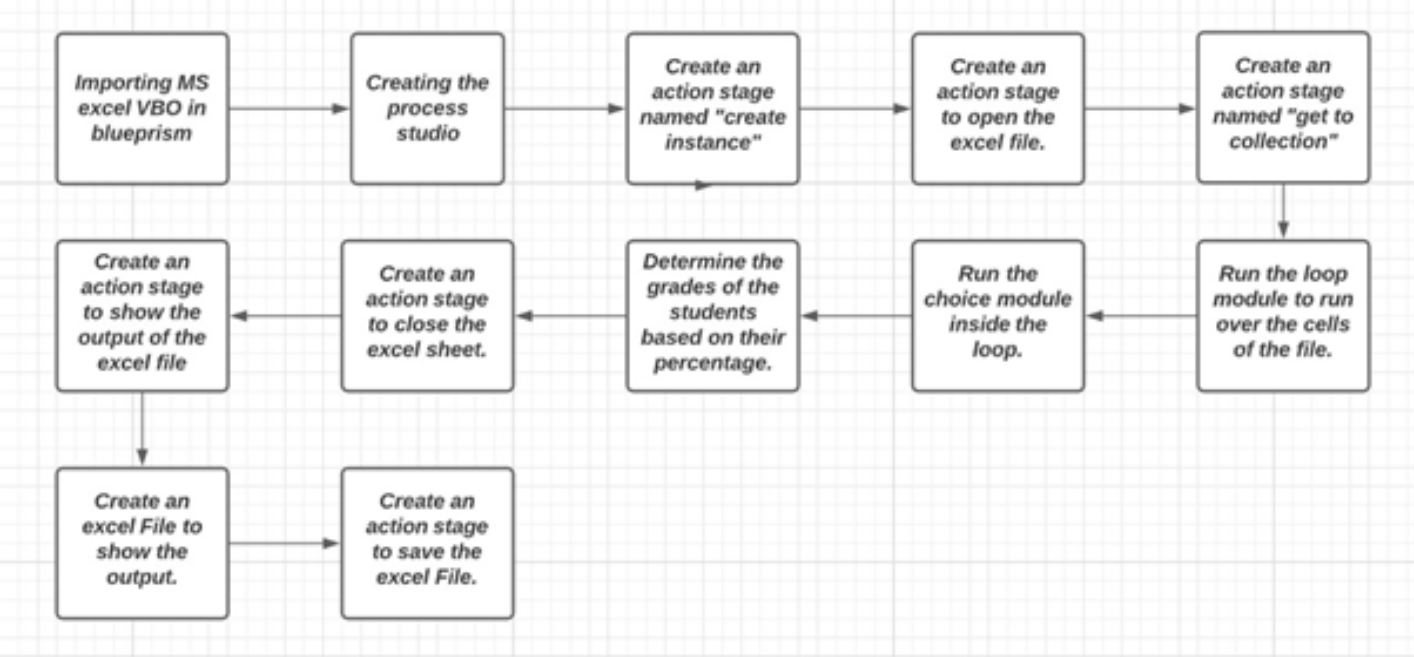
Object-based Approach:

The conventional way to automate all desktop apps is object-based. The bot imitates the behaviours of a human person in this scenario, typing and clicking on buttons and other UI components. It enables you to automate all normal and rule-based Excel tasks that a human can perform.When the bot interacts with the application UI rather than the file directly, as when an API is utilised, the bot's execution time is slower, and the programme must be opened on the screen.

Example: We need to import some data from a CSV file in an XLS file, sort the imported data, apply filters and highlight headers in the table. The best approach is to open the XLS file on the screen and imitate a person's actions in it.

THEORITICAL ANALYSIS:

Block Diagram:



Software/Hardware Designing:

Software Required:

- ***Blue Prism Software, v6.10.2***
- ***MS Excel 2013***

Hardware Required:

The following is the Hardware required to complete this project:

- ***Internet connection to download and activate***
- ***Administration access to install and run Blue Prism***
- ***Minimum 10GB free disk space***
- ***Windows 8.1 or 10 (64-bit version only) OR Cloud: Get started free, *Cloud account required.***

Minimum System Requirements To run Office Excel 2013, your computer needs to meet the following minimum hardware requirements:

- ***500 megahertz (MHz)***
- ***256 megabytes (MB) RAM***
- ***1.5 gigabytes (GB) available space***
- ***1024x768 or higher resolution monitor***

EXPERIMENTAL INVESTIGATIONS:

While working on the flow diagram of the Project, we came across a number of investigations narrowed down in the following points:

- ***Working of the project can either be done in a single excel sheet or by using different excel sheets according to the convenience of the user.***

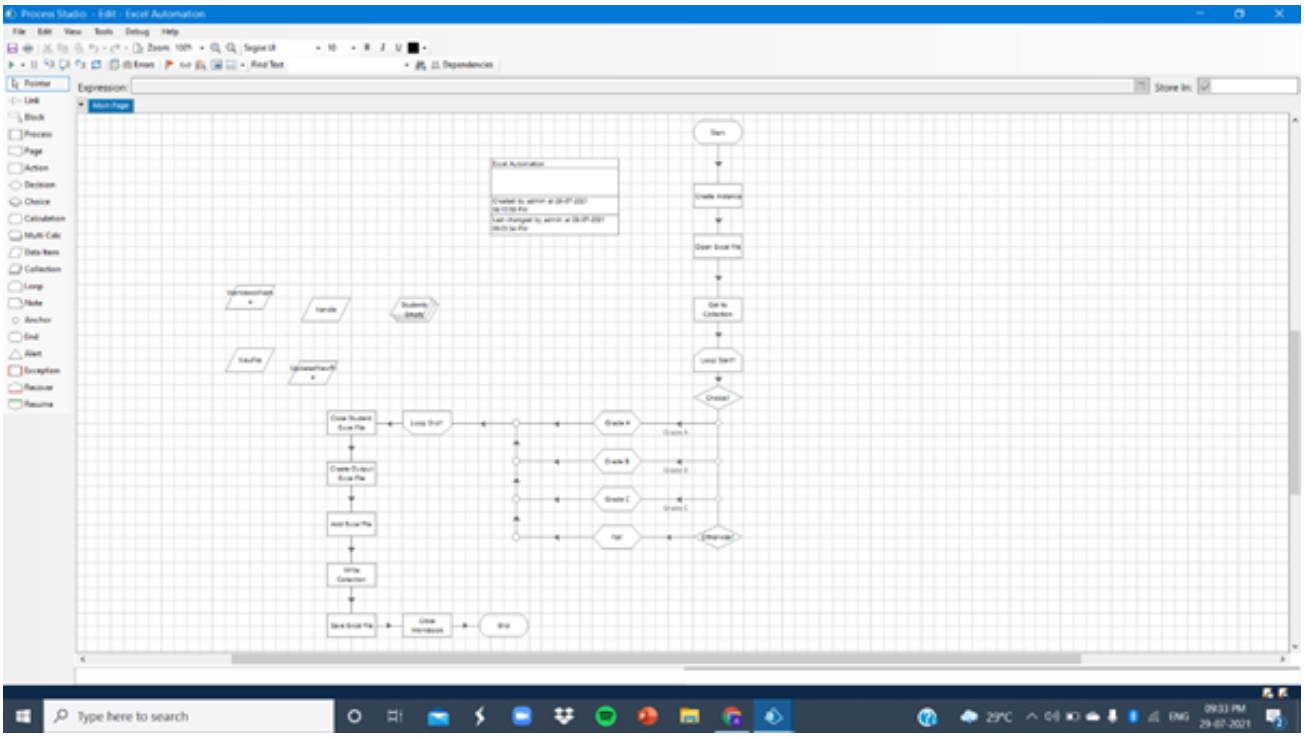
- ***The grades of the students can be displayed by automatically putting the choice tool available in the RPA sostware, Blueprism which can fill in the grades of the students as per the percentage obtained.***

- ***Exception Handling stages can also be added if required.***

- ***Error Handling can be taken care of in Blue Prism by adding stages like recover and resume.***

- ***Validation is captured by action and calculation stages for step by step checking of the process.***

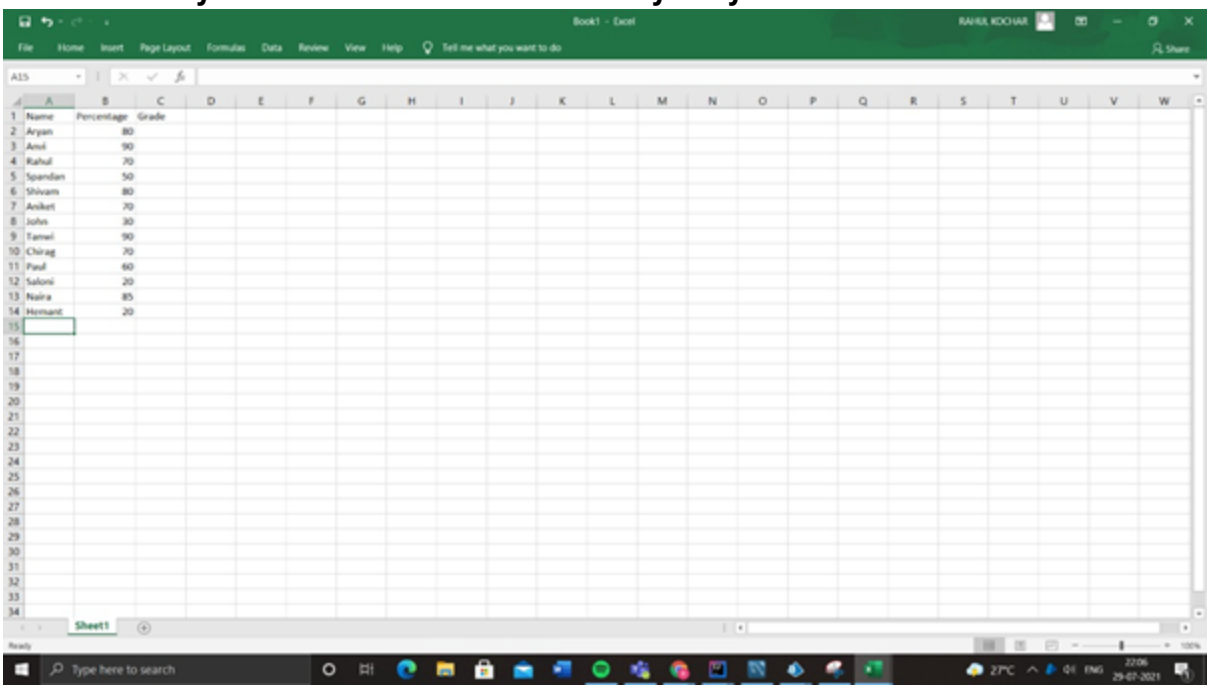
Flow Chart:

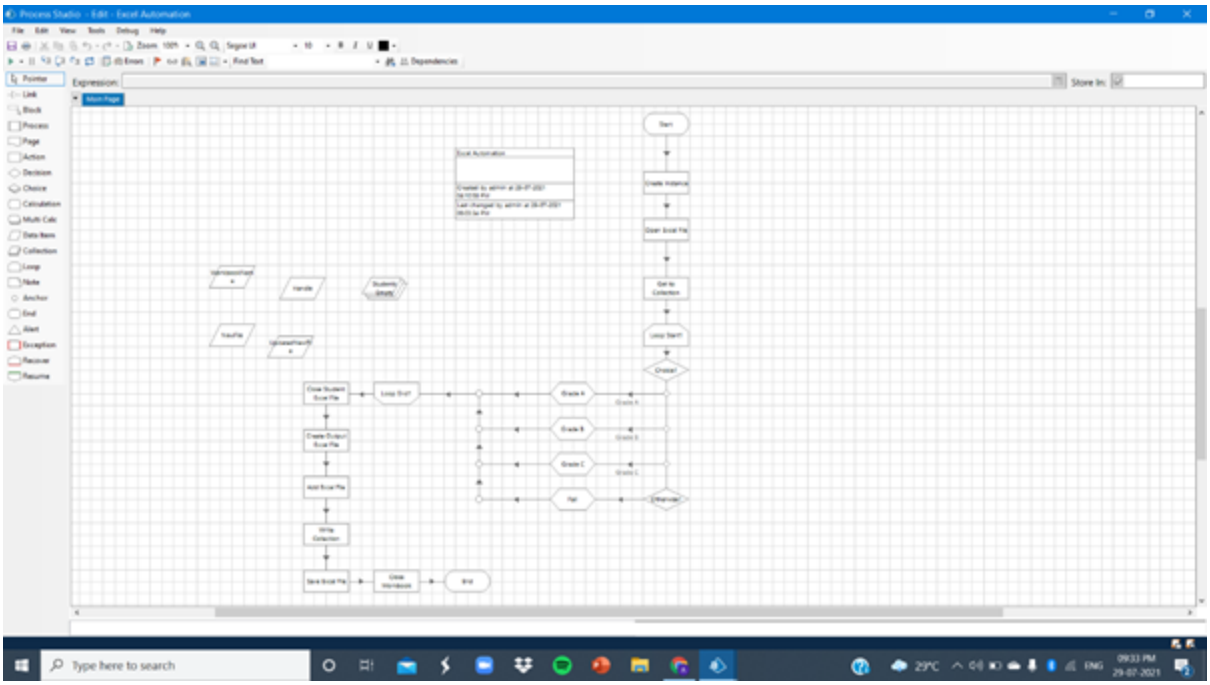


RESULT:

Initial Stage:

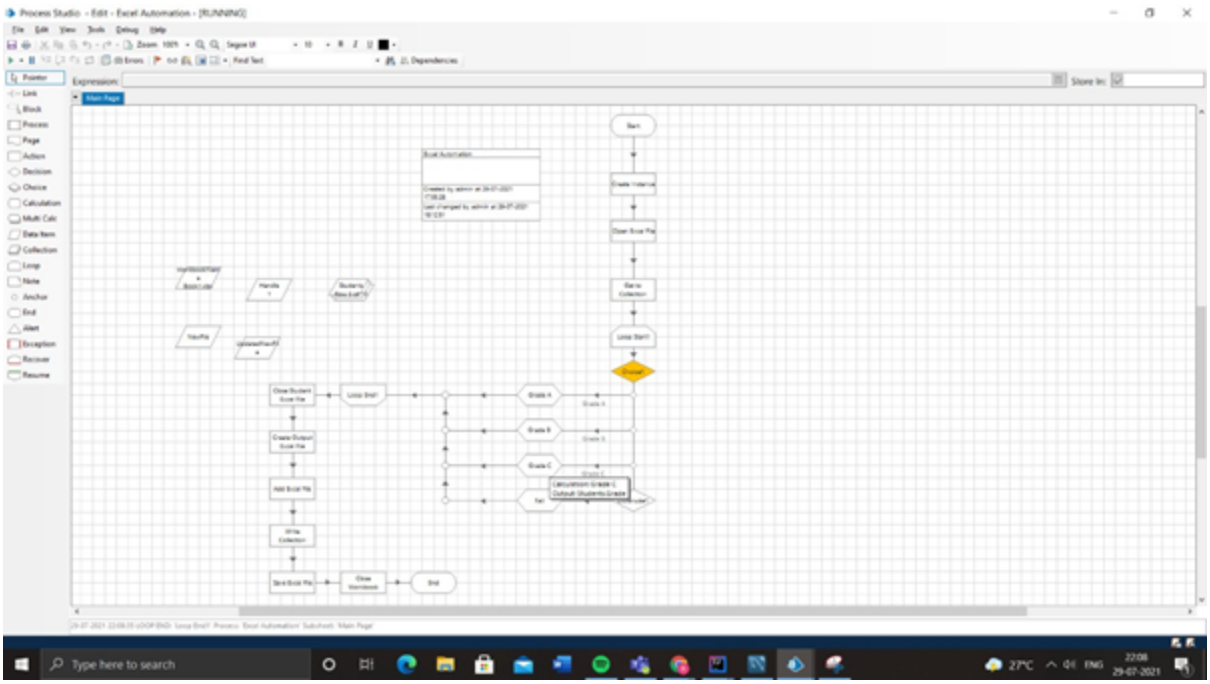
This stage shows the making of the excel sheet and the flow chart, where the name of the student and their percentages have been input from the user. The snapshots of the excel sheet and the flowchart has been added below for reference.





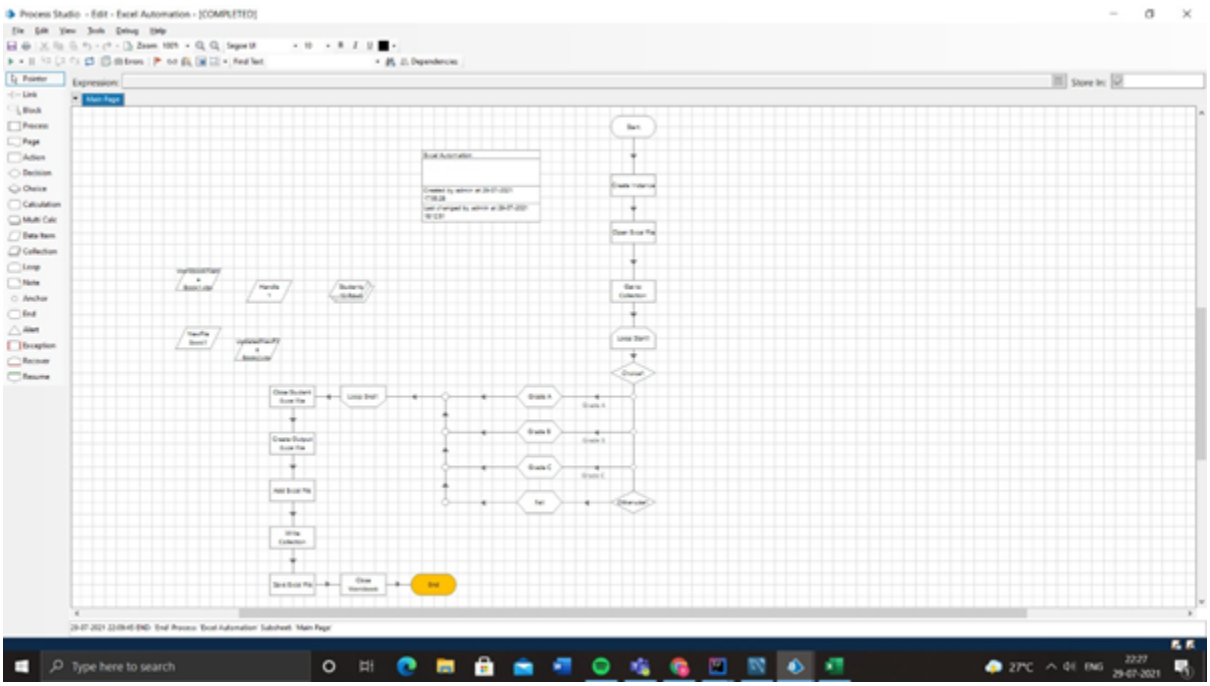
Running Stage:

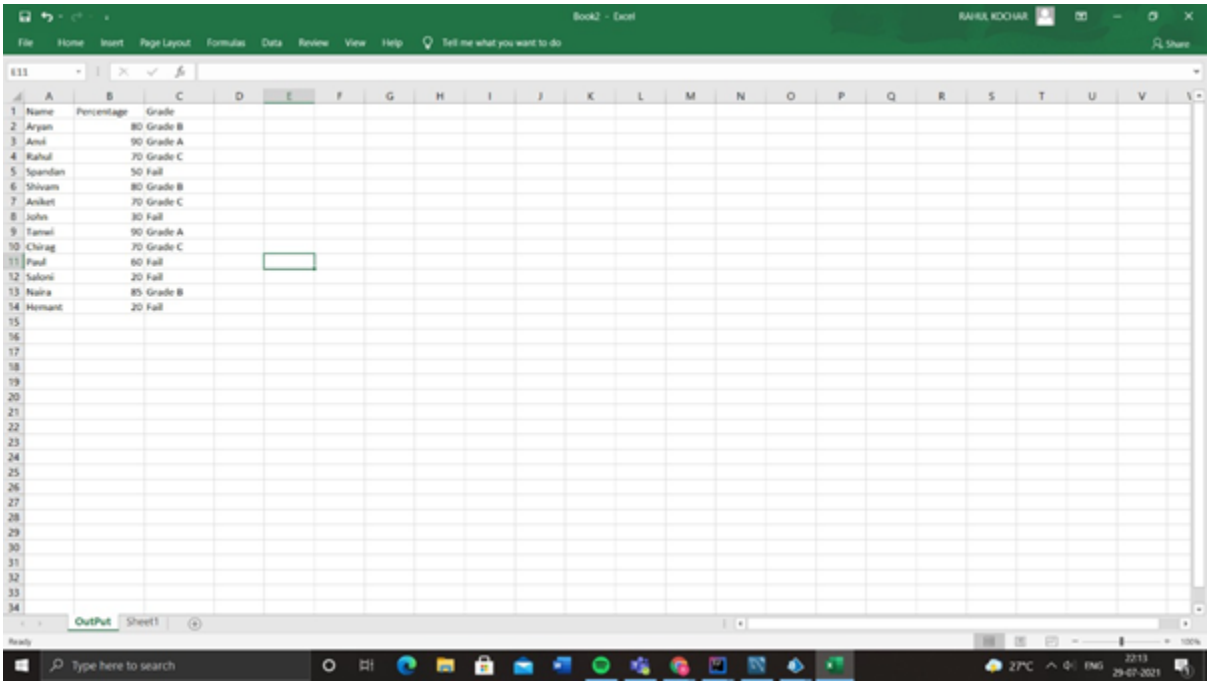
This stage shows the running of the flow chart on clicking the reset and play button. The snapshot of the running flowchart has been placed below.



Final Stage:

After coming to the end stage, the excel sheet comes out to be updated with the grades. The snapshot of the final excel sheet and the process coming to an end has been added below.





	A	B	C
1	Name	Percentage	Grade
2	Aryan	80	Grade B
3	Anvi	90	Grade A
4	Rahul	70	Grade C
5	Spandan	50	Fail
6	Shivam	80	Grade B
7	Aniket	70	Grade C
8	John	30	Fail
9	Tanvi	90	Grade A
10	Chirag	70	Grade C
11	Paul	60	Fail
12	Saloni	20	Fail
13	Naira	85	Grade B
14	Hemant	20	Fail

ADVANTAGES & DISADVANTAGES:

Advantages:

Automate Excel without having Excel installed
We can automate Excel procedures and activities in no time, while also making sure that everything is regularly up to date. The best part is you don't even need Excel to be installed on the system.

Free yourself for higher-value tasks
Save considerable time, and use it more profitable by working on activities and tasks that generate more value.

Increase productivity and efficiency
Robots make zero mistakes while working 24/7. They outperform employees when it comes to repetitive, boring tasks.

Ensure accuracy and speed
Manual labor is inevitably error prone and now you can easily avoid it, since mistakes can prove to be very costly.

Integrate with other applications
Migrate and integrate data with enterprise applications and databases.

Automate without programming
Automate the most sophisticated tasks with no coding.

DISADVANTAGES:

It can take longer to write, test, and debug a script than it does to use worksheet functionality. When you change data from one worksheet to another, insert a column, delete rows, and so on, VBA does not adjust in the same way that equations do.

If you don't use good comments in your code, you'll have a hard time understanding your own work when you go back to it weeks or months later.

Many users don't know what VBA is or don't know how to utilise it. So, if the VBA-happy developer leaves to pursue other goals in a different nation, the users

will have an additional obstacle in modifying or repairing the document.
If the user inputs a lot of data into the excel sheet, the loop module runs for a longer time, hence, time constrainst comes into play here.

If the list is updated, there is no way to resume the work from the running stage, the user has to re-run the program entirely.

VBA is an ever-changing target. Microsoft, as you may be aware, is constantly updating Excel. Even though Microsoft puts a lot of effort into version compatibility, you can find that the VBA code you wrote doesn't work with older versions or future versions of Excel.

APPLICATIONS:

Reading and writing data
Data extraction and migration
Sorting data and deleting duplicate rows
Comparing columns
Integrating with other applications and databases
Retrieving and creating workbooks
Running analysis reports
Filling in forms with data from Excel spreadsheets

CONCLUSION:

Excel sheet is a very flexible instrument to perform analyses and what-if scenarios. You use formulas in cells with one or more input cells to calculate the various situations. With excel automation manual calculations can be minimized and user control becomes more and more efficient. Numbers, text, and formulas can be put together and presented in a fancy and attractive manner so it could be easy to understand the meaning behind the numbers.
Here we have calculated the grades of the student based on the percentage without the use of any programming language with much more efficiency than the manual operation on the excel sheet.

FUTURE SCOPE:

As seen in the project disadvantages and advantages of using RPA and the entire project overview, RPA has high future scope and it has the capability of roboticizing the entire world. Hence, it's future scope knows no bounds,however, the robotic engineers are not much to empower the entire world, but that's just a thing for this generation, which may or may not extend further in the upcoming era.

It is considered to supplant the information passage and the information rekeying occupations with its computerized devices and procedures. Likewise, dreary positions of information collecting, designing assignments that utilization a bunch of rules to follow the interaction can be effectively performed utilizing RPA Pretty much every kind of PC supported interaction that utilizes a bunch of conventions for its tasks can be performed utilizing RPA.

Further with the headways of the instruments and procedures of advanced mechanics science, it is normal that during some mark of time RPA will actually want to play out that load of tasks that a human does today. The development in the field of RPA is certain shot and accordingly will give higher innovative possibilities towards altogether diminishing the danger of off base administrative revealing's alongside ad libbed examination and higher information precision.

Explaination of the process and the testimonial: Excel Automation