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MS EXCEL AUTOMATION

USING ROBOTIC PROCESS AUTOMATION (RPA)

PROJECT SUPERVISOR:- DR. J. Albert Mayan

Submitted by – Bhimireddy Cotton

Register no. - 39110160

COURSE CERTIFICATE

INTRODUCTION

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

· Robotic Process Automation (RPA) is a type of automation technology currently transforming the way businesses operate.

- Excel automation streamlines your use of the application by automatically performing tasks.

· Generally in order to calculate grades we use manual formulas in excel. We also need to enter the marks manually each time. Our goal through this project is to automate this whole process with the help of RPA technology and blueprism We can avoid doing the rote and recurring task of calculating grade for each student based on their marks repeatedly and save time with the help of this project.

In almost every organization, the responsibility of performing various strategic tasks such as management of the recruitment process, termination process, payroll management etc. lies within the Human resource department.

Some of it may include Employee_ monitoring at different levels, payroll management, Employee_ benefits, training, and development, etc. In-order to make this work a lot easier, organizations across the world are investing in HR automation in-order to find out and perform the best human capital decision.

However, every organization are now looking for more advanced methods of automation, which may help them to manage various complex processes such as, Data storage, Data control and modifications, Effective communication process enhancement, better connectivity with all departments easily and swiftly which would also be useful for the long-term goals of the organization.

Information Technology has now considered as a potential tool that managers use, both generally, and in human resource functions, to increase the capabilities of the organization.

OBJECTIVES

- Gain insights into building blocks of Blue Prism automation.
- Importing MS Excel VBO (Visual Basic for Applications) in Blue Prism.
- Tuning Process Studio with specific needs.
- Working with different stages in the Process studio.
- Build a Grade calculation using MS Excel Automation that works over Microsoft excel.

PURPOSE

- Manage Employee Information Efficiently.
- Define the emoluments, deductions, leave etc.
- In order to overcome the problem mentioned above,we will use RPA technology to automate the process of grade calculation.With the help of Digital Workers in Blueprism software our whole process of calculating
- Manage your own Security.

REQUIREMENTS

Pre-requirements for Blue Prism

· Creates and supports a digital workforce of industrial strength and enterprise scale.

· Does not require IT skills to implement

· Can be implemented in sprints of 4 to 8 weeks (Start to finish)

· Is very low cost compared to the TCO of alternative solutions

· Provides tremendous payback with self-funding returns and an ROI that has been as high as 80%

· Can be managed within IT infrastructure and processes

Installation of Blue Prism

The following are the installation requirements for Blue Prism –

- Windows 10 (Preferred) OS, 64 bit
- Blue prism installation Software, 64 bit
- Blue Prism License File
- SQL Server Express Edition, 64

Software Requirements

- Operating system: Windows XP/Vista or any main stream OS
- Installation and Setup Guide for Blue Prism
- Installation and Setup Guide for MS Excel
- Blue prism Version: 6.10.1
- Blue prism License File
- Blue prism installation Software 64 bit
- MS Excel
- Windows 7/8/10

Hardware Requirements

· Internet connection to download and activate
· Administration access to install and run Blue Prism
· Minimum 10GB free disk space
· Windows 8.1 or 10.

- 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

Project Flow

- Importing Blue Prism MS Excel VBO (Visual Basic for Applications)
- Binding Process Studio with MS Excel VBO.
- Opening MS Excel Workbook.
- Specifying Blue Prism Stages to work on MS Excel Workbook in Blue Prism.
- Tuning Process Flow with Blue Prism Actions.
- Closing MS Excel Workbook.

FLOW AND IMPLEMENTATION

Idea:

Need to find a new one --"Generally, in the industries monitoring the machine status continuously and maintaining the records of the entire data plays a very important role as that helps the officials to analyze the production factors. This also helps in resolving some of the problems like machine failures, production delays, etc.

ACTIVITIES

Milestone 1: Configure the Process Studio

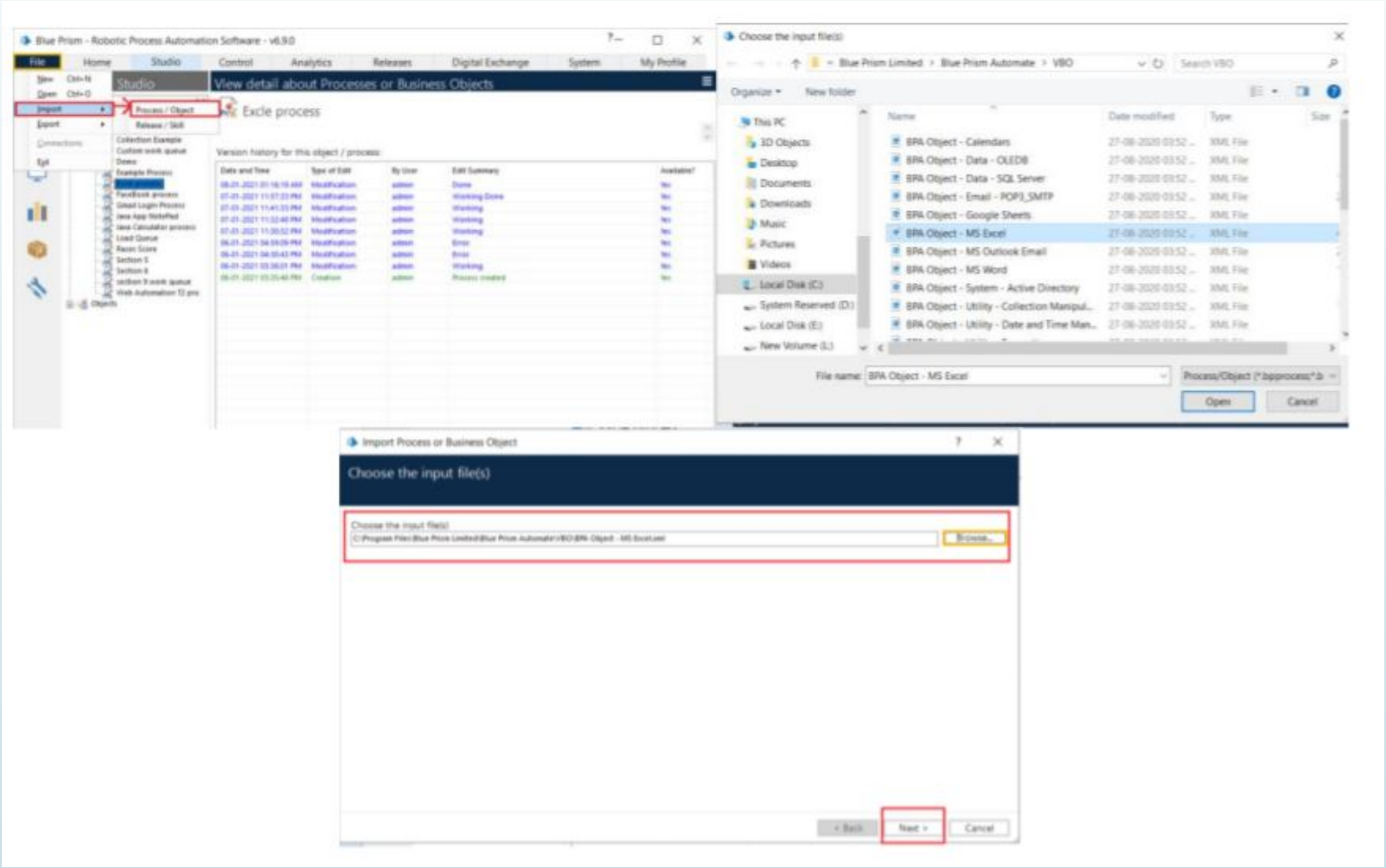
Let us create the Process Object bind with MS Excel VBO.

Object studio is mainly used to develop the objects. Inside the object, we have different types of actions as follows:

1. Application Modular to Spy the Elements
2. Initialize page and clean up page.

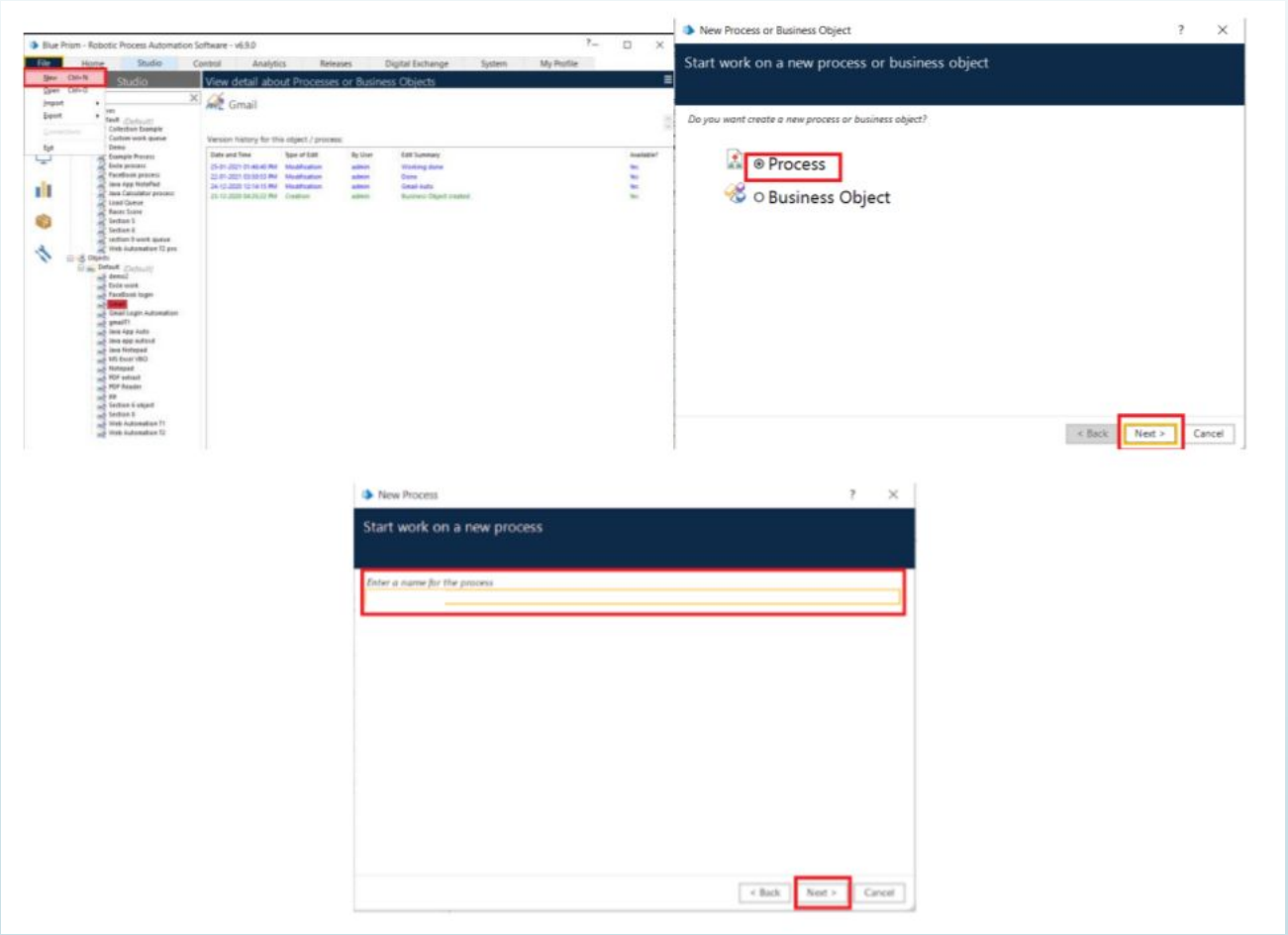
Activity 1: MS Excel VBO (Import VBO file)

File -> Import -> Browse -> (C:\Program Files\Blue Prism Limited\Blue Prism Automate\VBO\BPA Object-MS Excel). Click Finish.

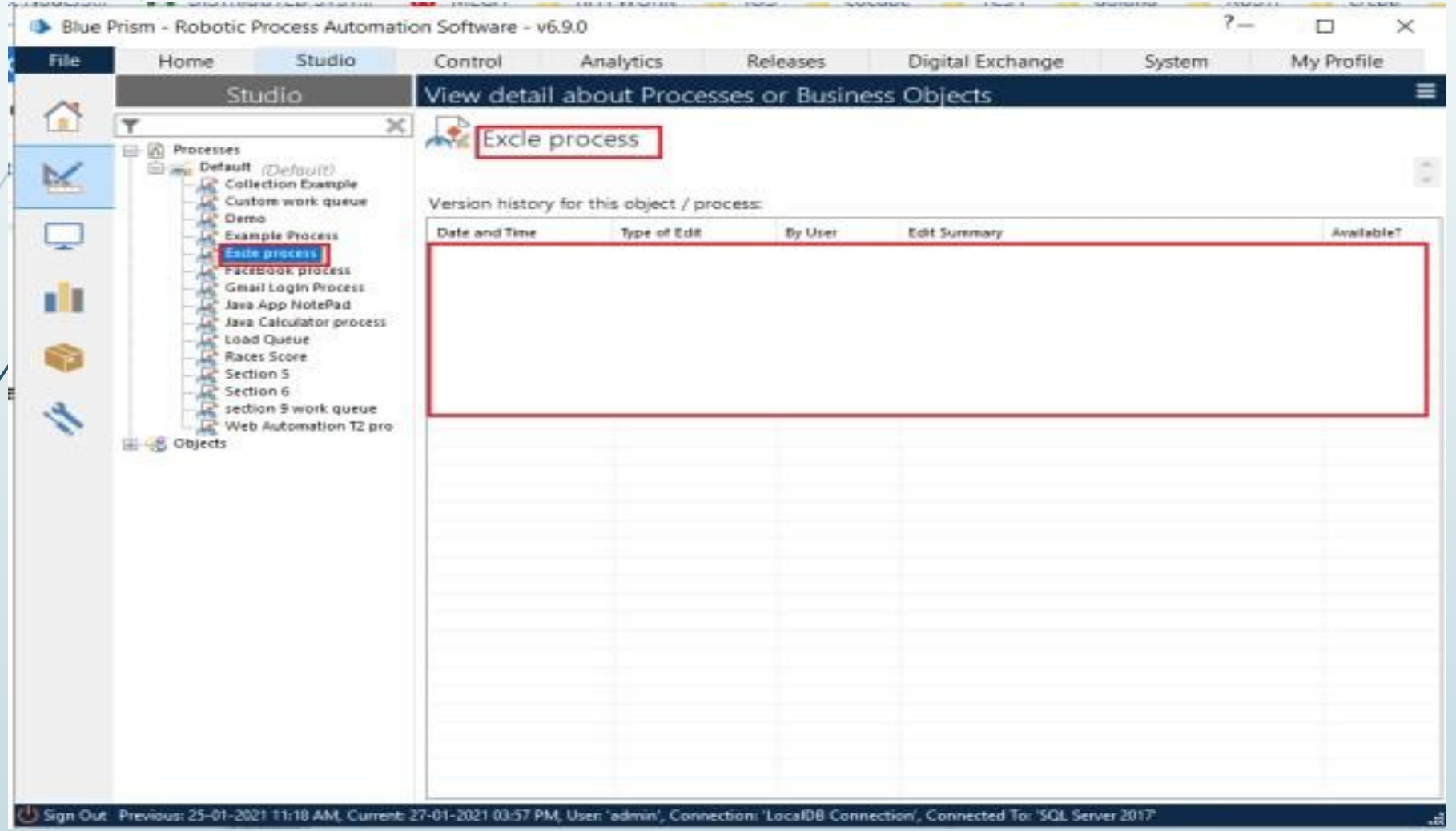


Activity 2: Creating the Process Object from Object Studio

Process studio has only the Main page. We can call from the process studio. We use the Process studio for developing and testing.



Open Created Process Model (Gmail Log In Process)

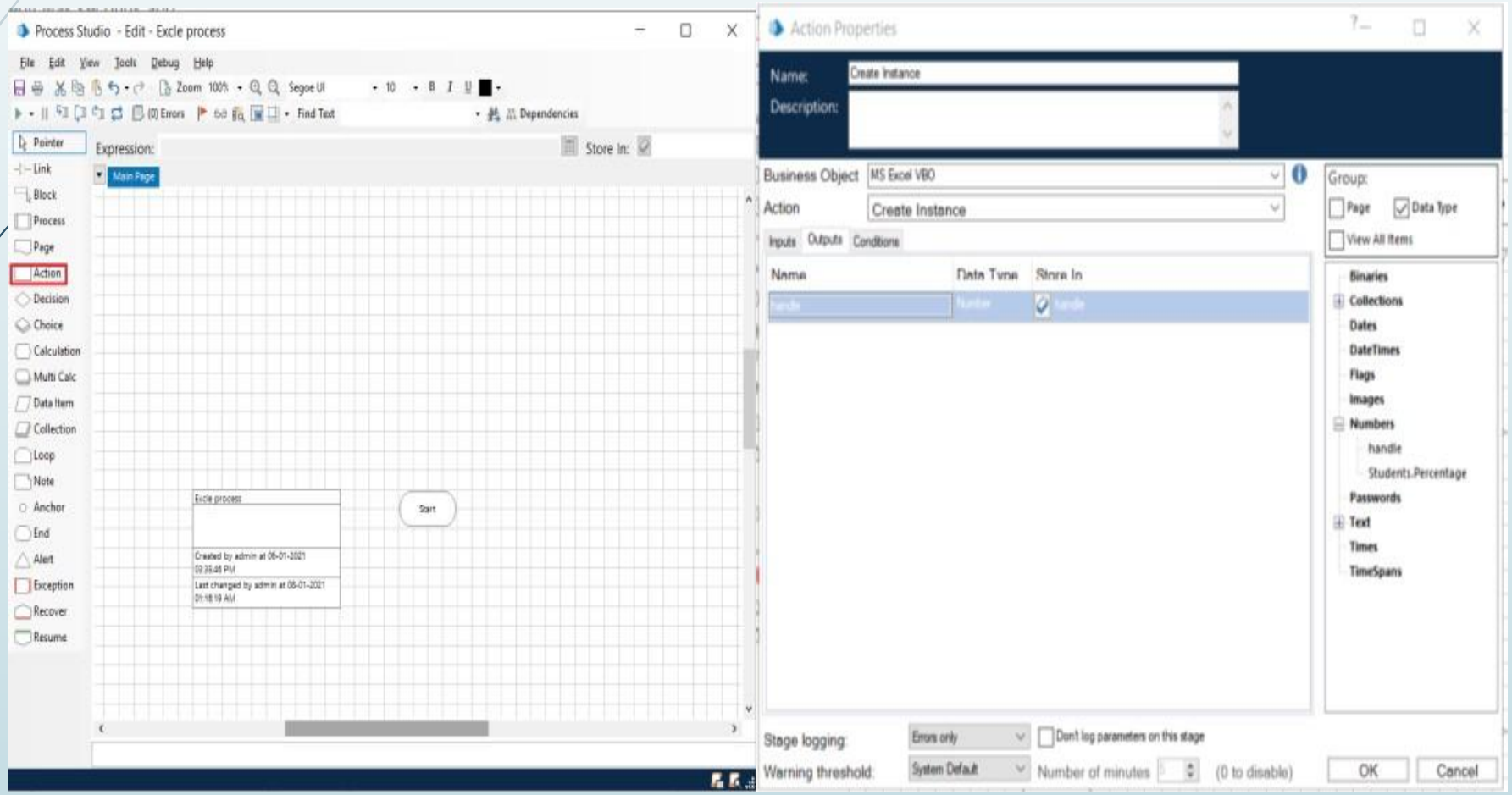


1. Create Action Stage as “Create Instance” (Business Object = MS Excel VBO; Action = Create Instance).

a. Click on the Outputs tab

I. Create Data Item, type = number, name = “handle”. Drag it into the store in column.

II. Click on ok.

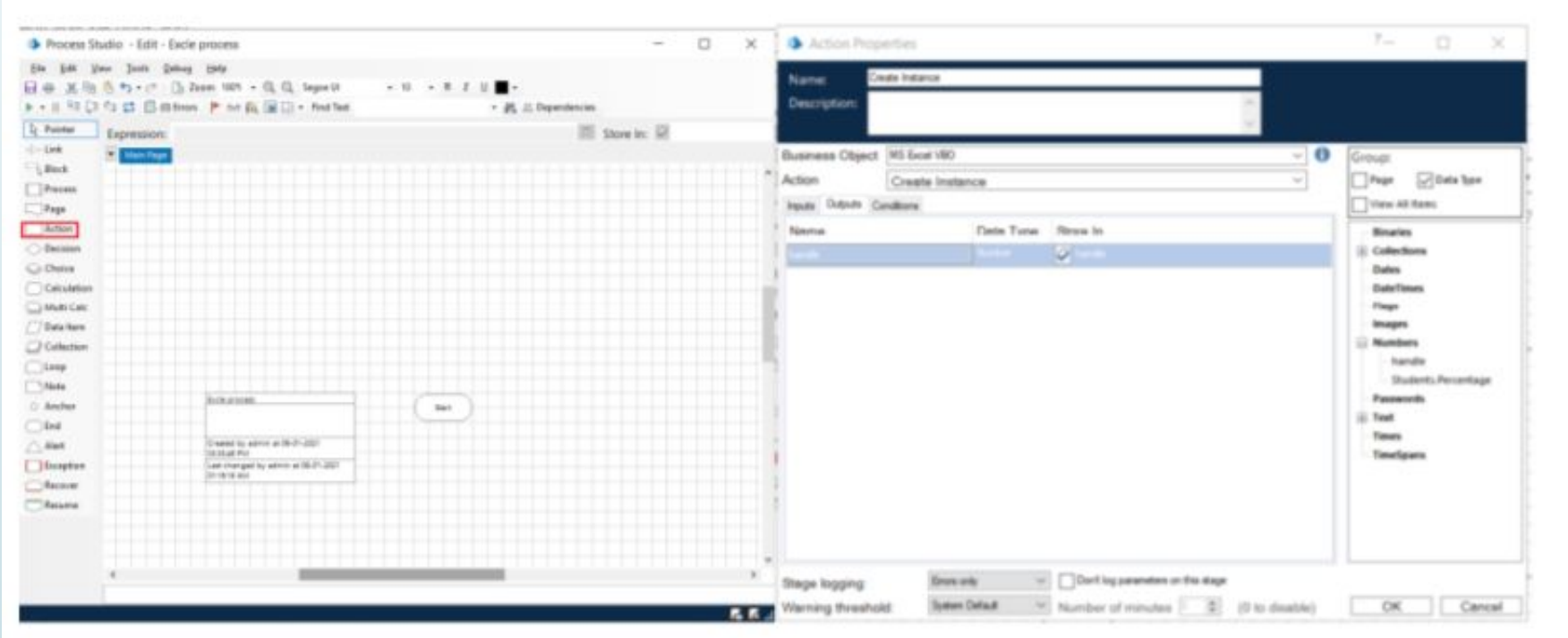


2. Create Action Stage as “Open Excel file” (Business Object = MS Excel VBO; Action = Open Workbook).

a. Click on the Inputs tab

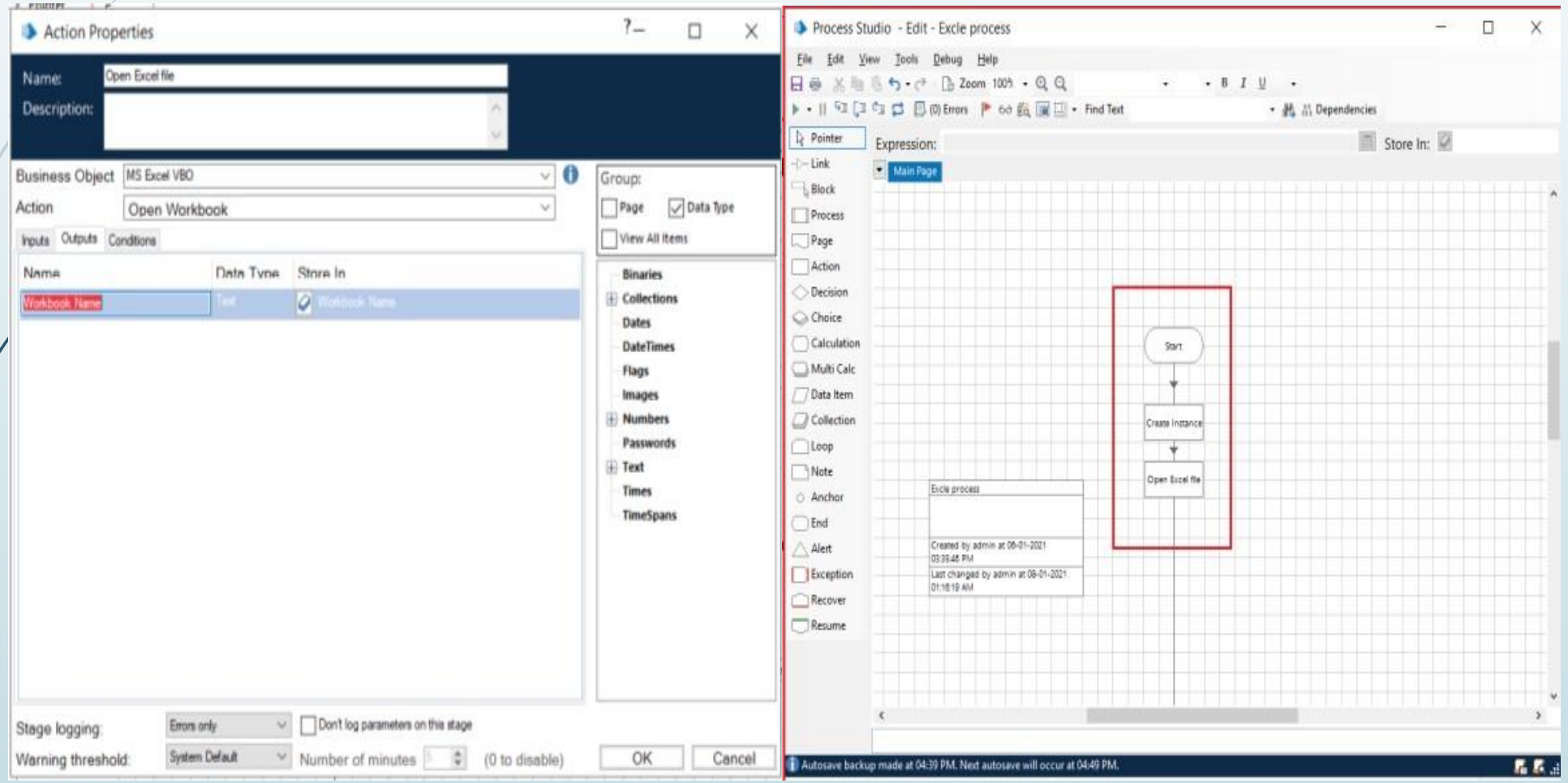
i. Drag “handle” data item into handle Value column.

ii. Set file path of excel file in File Name Value column



2(2) Click on the Outputs tab

i. Create Data Item, type = Text, name = “Work Book Name”. Drag it into the Store In column. Click on OK.



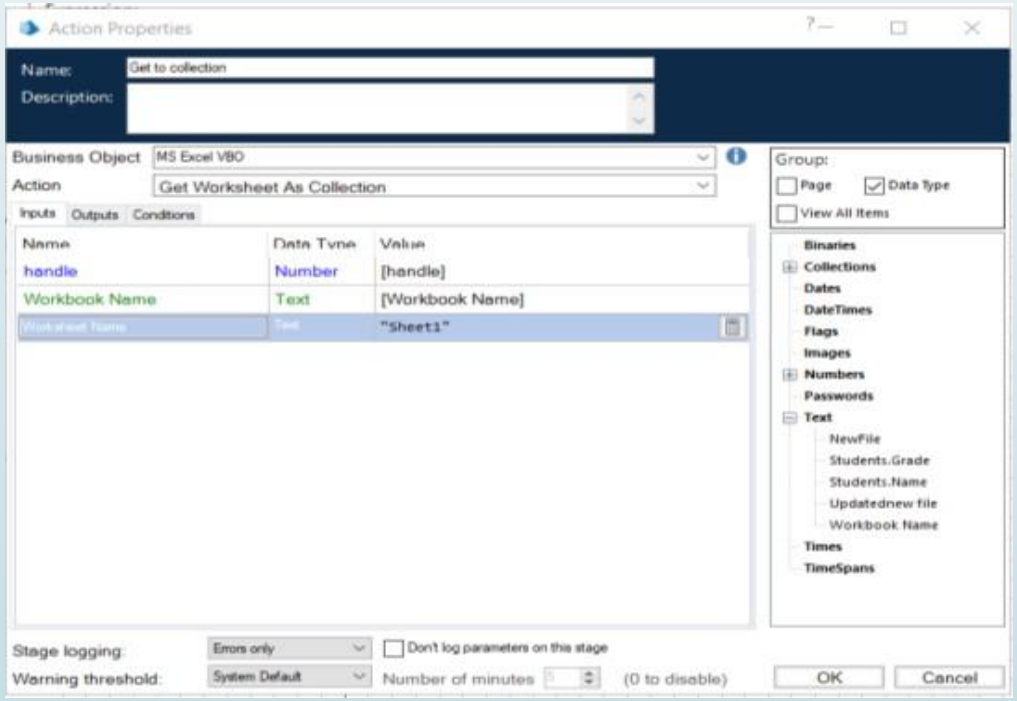
3.Create Action as “Get to collection” (Business Object = MS Excel VBO; Action = Get WorkBook As Collection).

a. Click on the Inputs tab

i. Drag “handle” data item into handle Value column.

ii. Drage “Workbook Name” data item into the Workbook Name Value column.

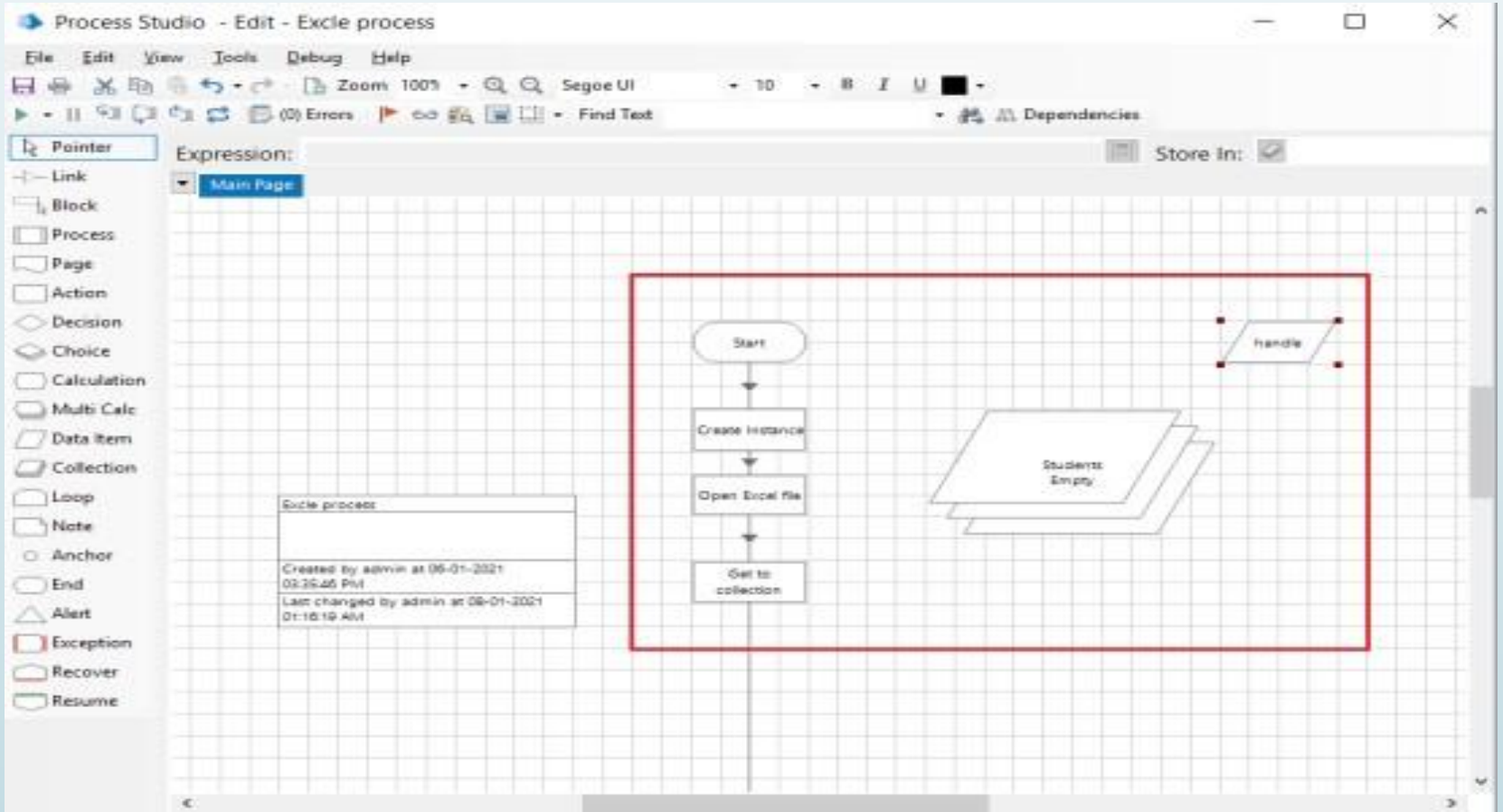
iii. Write Worksheet Name name as “Sheet1”.



3(b). Click on the Outputs tab

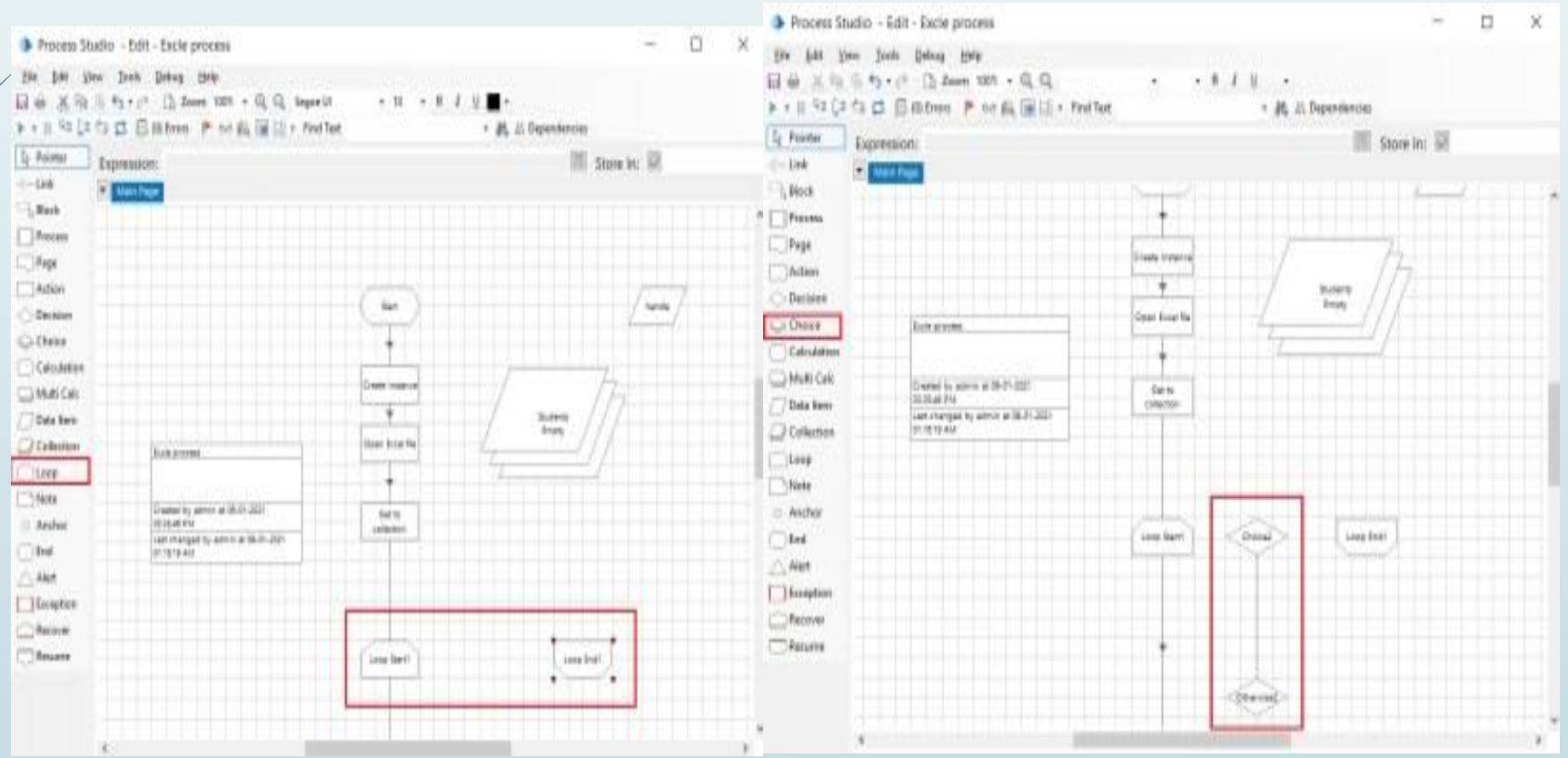
i. Create Collection as “Students”, with the following fields.

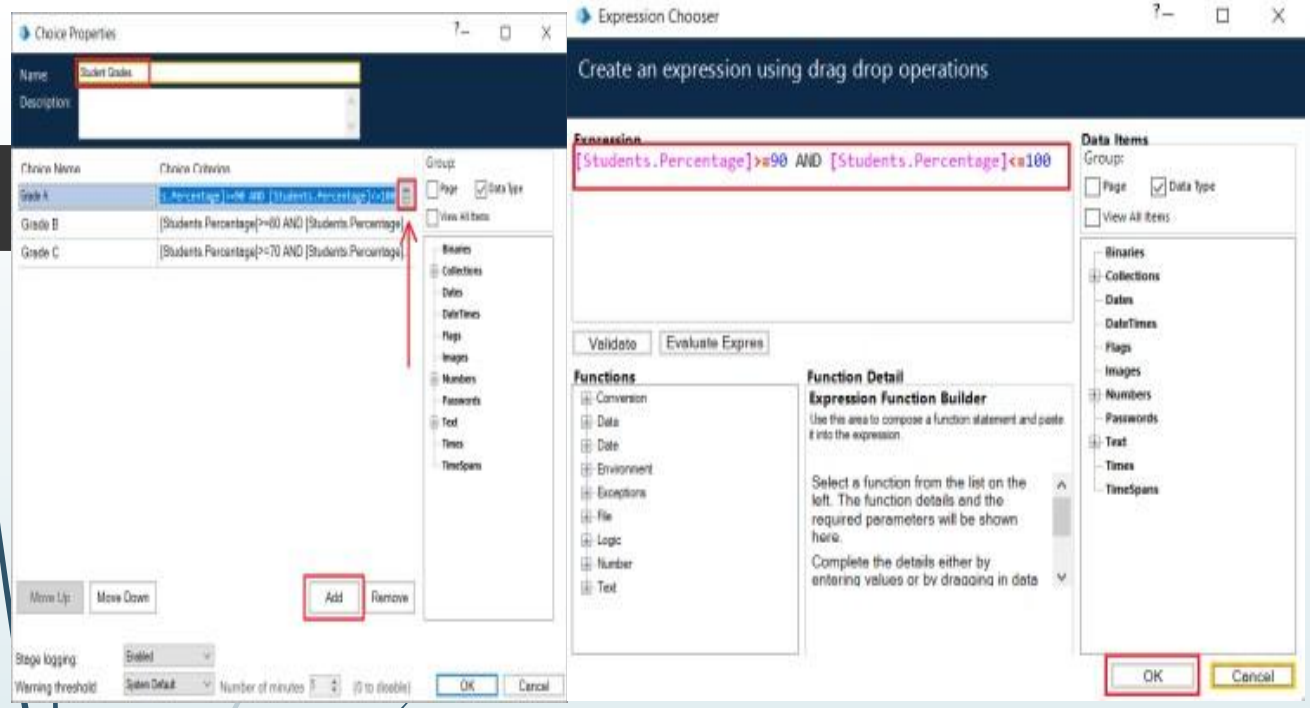
ii. Use Add Button to add fields in collection.

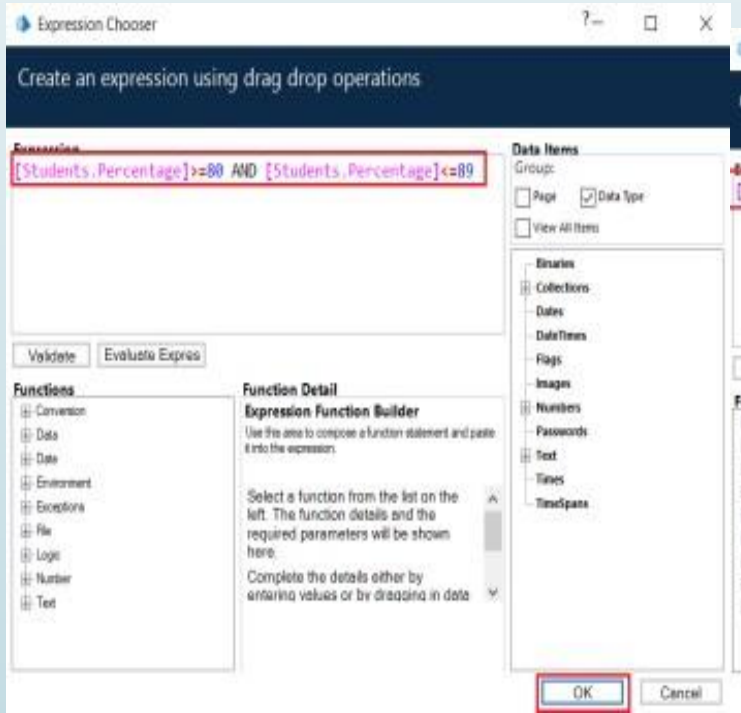


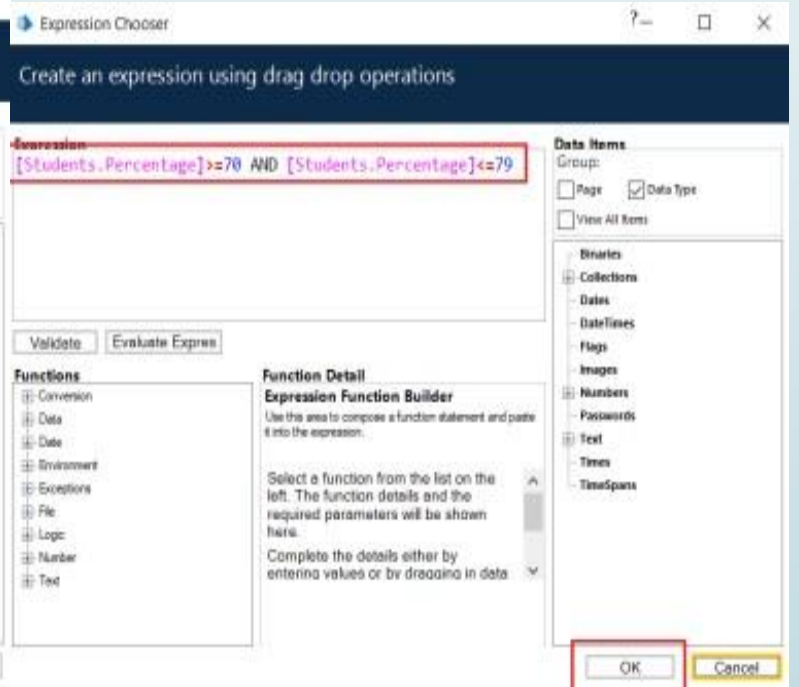
4. Drage Loop module, drage Choice module. Connect loop start with choice start. Open Choice Properties and create the following fields.

a. [students.percentage]>=70 AND [students.percentage]<=79
b. [students.percentage]>=80 AND [students.percentage]<=89
c. [students.percentage]>=90 AND [students.percentage]<=100



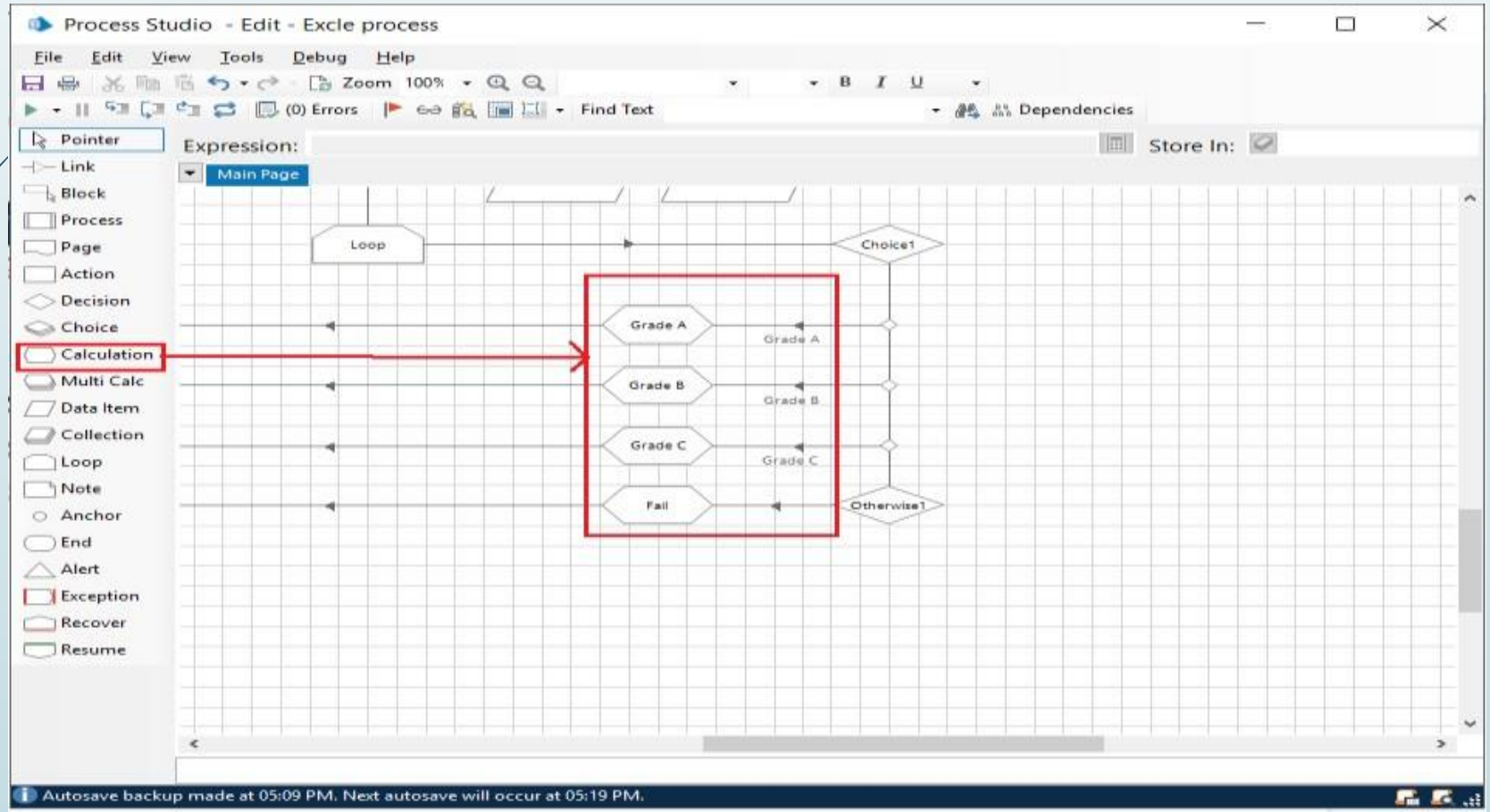

Choice Properties
Name
Student Grades
Description
Choice Name
Choice Criterion
Grade A
Grade B
[Students.Percentage]>=80 AND [Students.Percentage]<=89
Grade C
[Students.Percentage]>=70 AND [Students.Percentage]<=79
Group:
Page
Data Type
View All Items
Binaries
Collections
Dates
DateTimes
Flags
Images
Numbers
Passwords
Text
Times
TimeSpans
Move Up
Move Down
Add
Remove
Stage logging
Enabled
Warning threshold
System Default
Number of minutes
(0 to disable)
OK
Cancel
Expression Chooser
Create an expression using drag drop operations
Expression
[Students.Percentage]>=90 AND [Students.Percentage]<=100
Validate
Evaluate Expres
Functions
Conversion
Data
Date
Environment
Exceptions
File
Logic
Number
Text
Function Detail
Expression Function Builder
Use this area to compose a function statement and paste it into the expression.
Select a function from the list on the left. The function details and the required parameters will be shown here.
Complete the details either by entering values or by dragging in data
Data Items
OK
Cancel

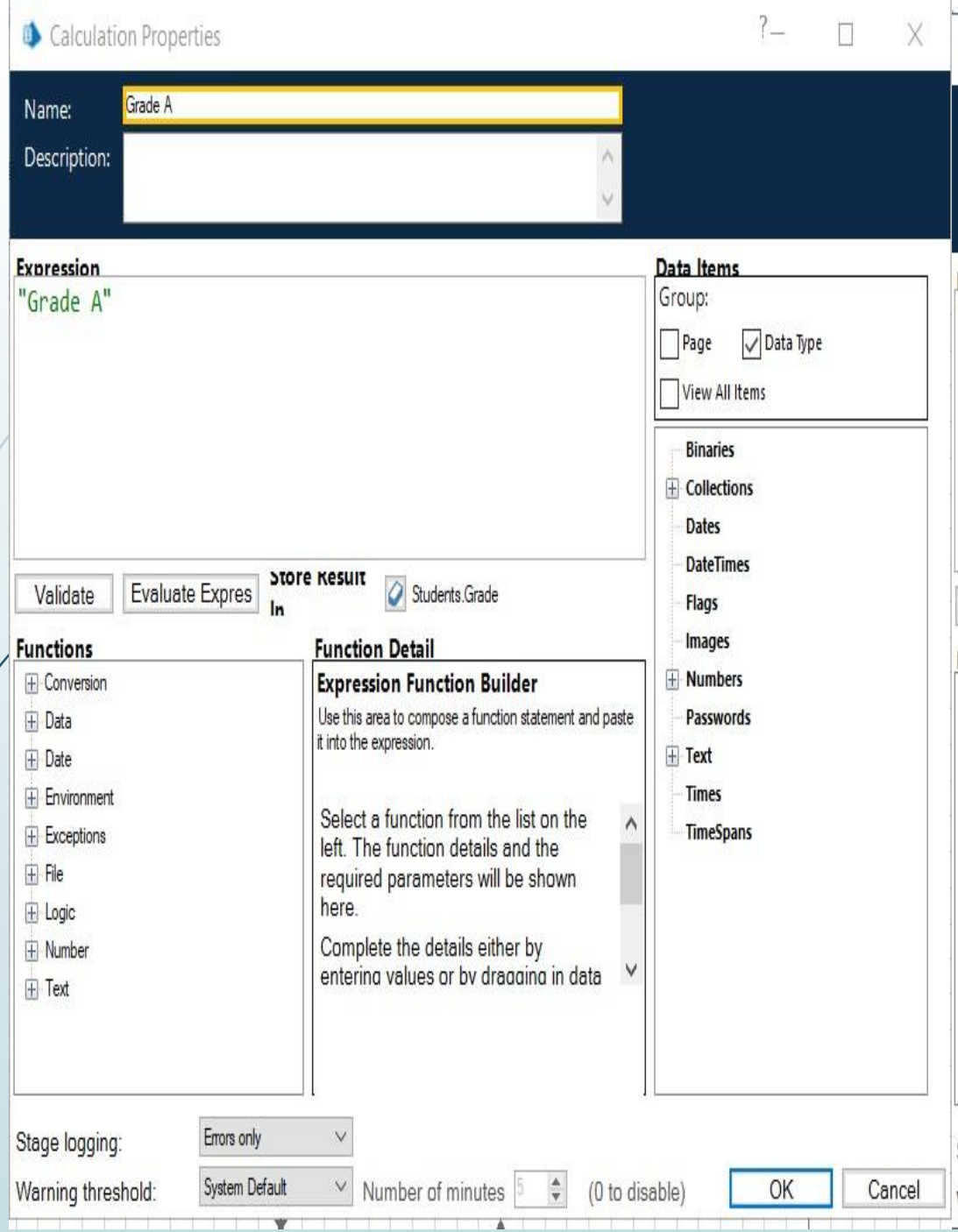

Expression Chooser
Create an expression using drag drop operations
Expression
[Students.Percentage]>=80 AND [Students.Percentage]<=89
Validate
Evaluate Expres
Functions
Conversion
Data
Date
Environment
Exceptions
File
Logic
Number
Text
Function Detail
Expression Function Builder
Use this area to compose a function statement and paste it into the expression.
Select a function from the list on the left. The function details and the required parameters will be shown here.
Complete the details either by entering values or by dragging in data
Data Items
Group:
Page
Data Type
View All Items
Binaries
Collections
Dates
DateTimes
Flags
Images
Numbers
Passwords
Text
Times
TimeSpans
OK
Cancel

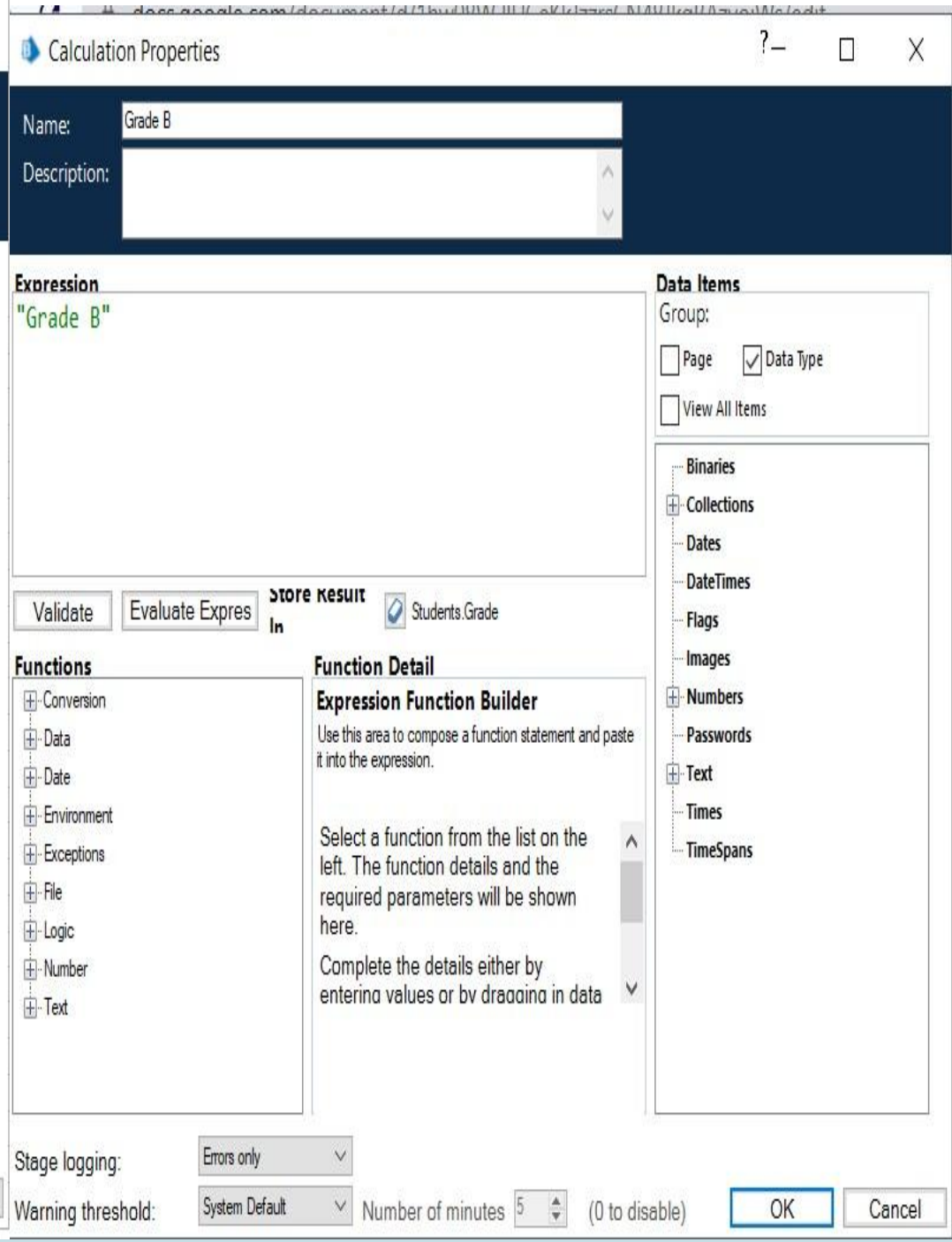

Expression Chooser
Create an expression using drag drop operations
Expression
[Students.Percentage]>=70 AND [Students.Percentage]<=79
Validate
Evaluate Expres
Functions
Conversion
Data
Date
Environment
Exceptions
File
Logic
Number
Text
Function Detail
Expression Function Builder
Use this area to compose a function statement and paste it into the expression.
Select a function from the list on the left. The function details and the required parameters will be shown here.
Complete the details either by entering values or by dragging in data
Data Items
Group:
Page
Data Type
View All Items
Binaries
Collections
Dates
DateTimes
Flags
Images
Numbers
Passwords
Text
Times
TimeSpans
OK
Cancel

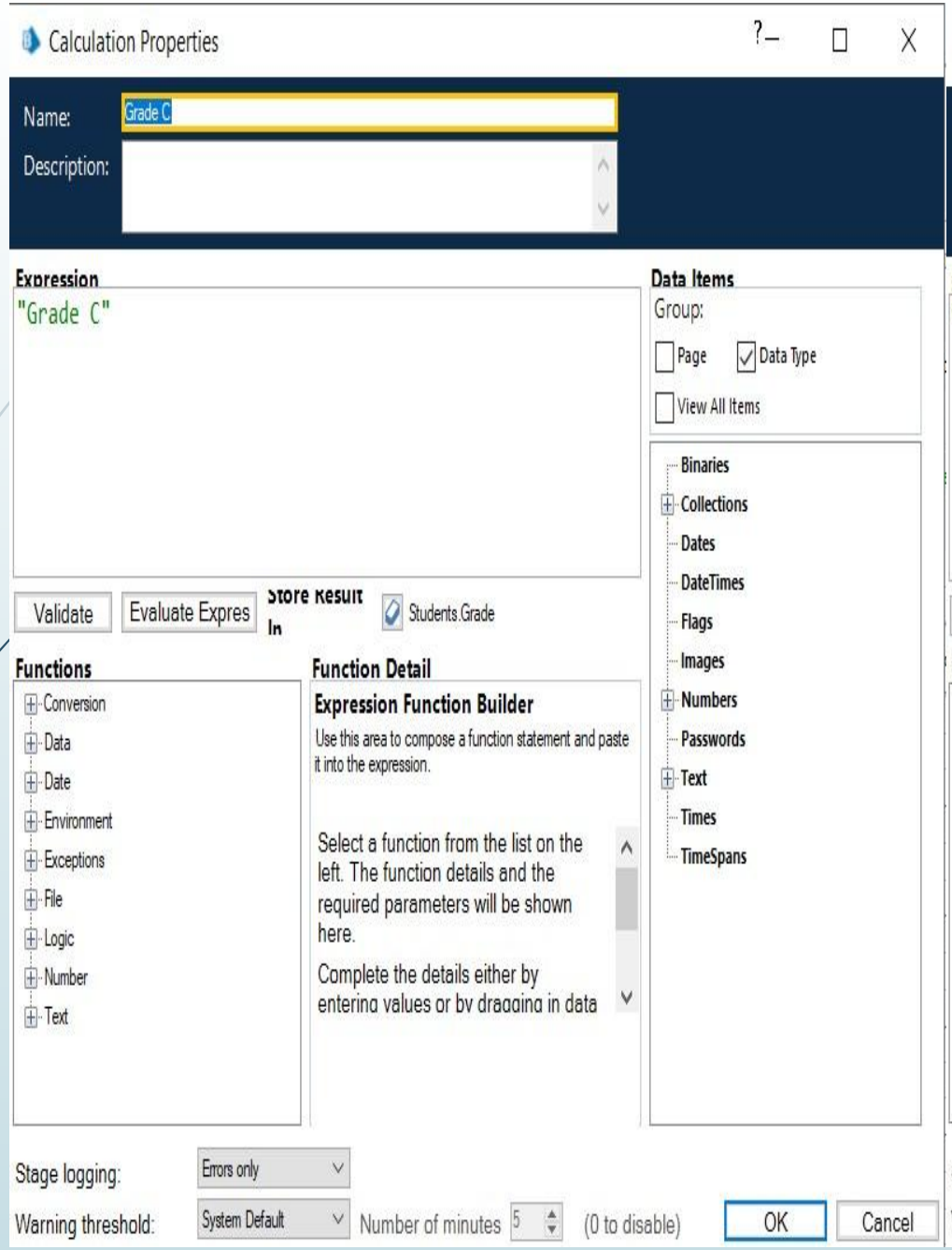
3. **5.** Create 4 Calculation modules.
   a. 1st Calculation module name as “Grade A”. Write an expression as “Grade A”. Stores result in Students. Grade (Collection data item)
   b. Repeat for rest “Grade B”, “Grade C” and “Fail”.

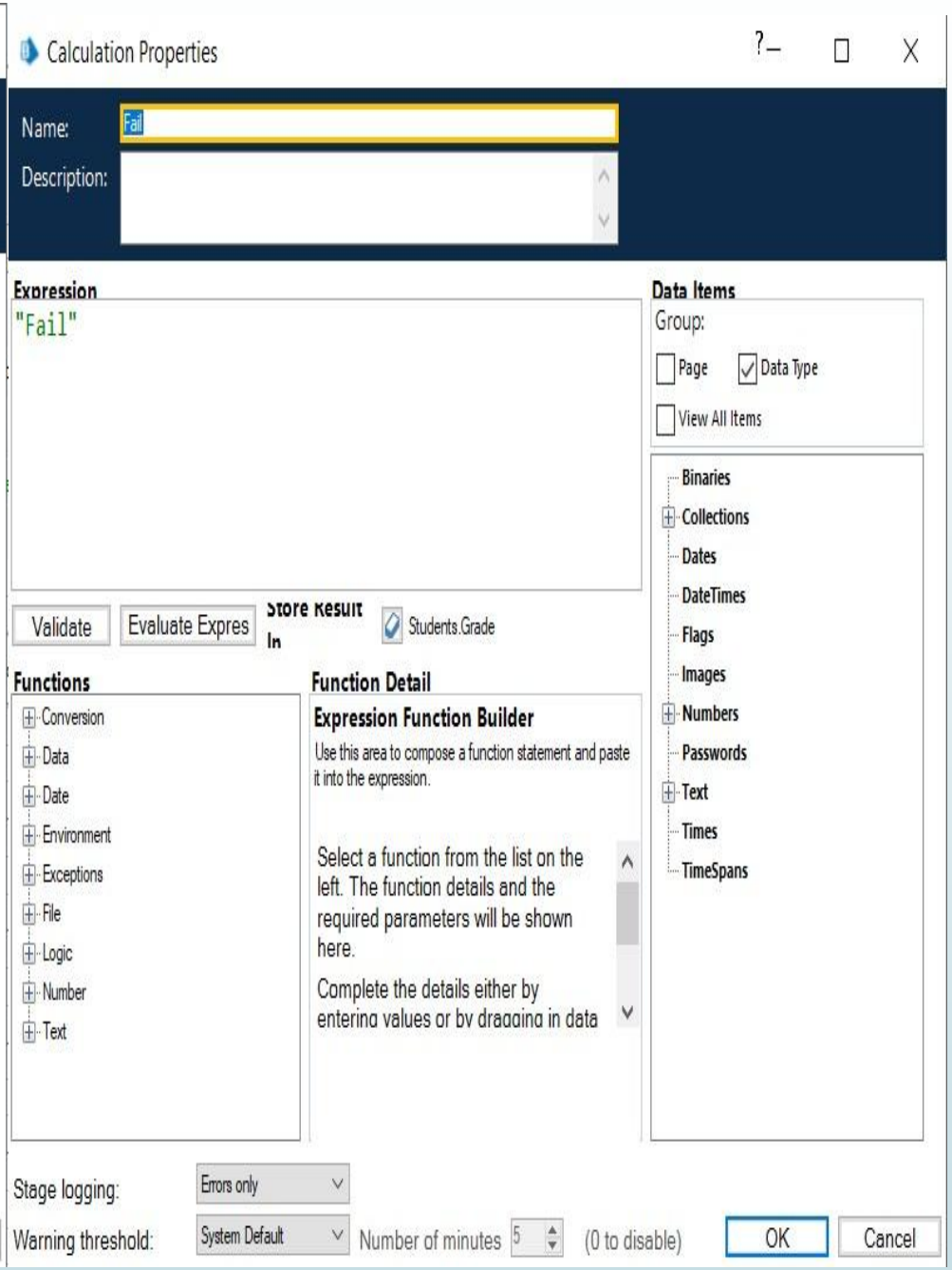
a. Do proper connection as below.




Calculation Properties
Name:
Grade A
Description:
Expression
"Grade A"
Data Items
Group:
Page
Data Type
View All Items
Binaries
Collections
Dates
DateTimes
Flags
Images
Numbers
Passwords
Text
Times
TimeSpans
Validate
Evaluate Expres
Store Result In
Students.Grade
Functions
Conversion
Data
Date
Environment
Exceptions
File
Logic
Number
Text
Function Detail
Expression Function Builder
Use this area to compose a function statement and paste it into the expression.
Select a function from the list on the left. The function details and the required parameters will be shown here.
Complete the details either by
Stage logging:
Errors only
Warning threshold:
System Default
Number of minutes
5
(0 to disable)
OK
Cancel


Calculation Properties
Name:
Grade B
Description:
Expression
"Grade B"
Data Items
Group:
Page
Data Type
View All Items
Binaries
Collections
Dates
DateTimes
Flags
Images
Numbers
Passwords
Text
Times
TimeSpans
Validate
Evaluate Expres
Store Result In
Students.Grade
Functions
Conversion
Data
Date
Environment
Exceptions
File
Logic
Number
Text
Function Detail
Expression Function Builder
Use this area to compose a function statement and paste it into the expression.
Select a function from the list on the left. The function details and the required parameters will be shown here.
Complete the details either by
Stage logging:
Errors only
Warning threshold:
System Default
Number of minutes
5
(0 to disable)
OK
Cancel


Calculation Properties
Name:
Grade C
Description:
Expression
"Grade C"
Validate
Evaluate Expres
Store Result In
Students.Grade
Functions
Conversion
Data
Date
Environment
Exceptions
File
Logic
Number
Text
Function Detail
Expression Function Builder
Use this area to compose a function statement and paste it into the expression.
Select a function from the list on the left. The function details and the required parameters will be shown here.
Complete the details either by entering values or by dragging in data
Data Items
Group:
Page
Data Type
View All Items
Binaries
Collections
Dates
DateTimes
Flags
Images
Numbers
Passwords
Text
Times
TimeSpans
Stage logging:
Errors only
Warning threshold:
System Default
Number of minutes
5
(0 to disable)
OK
Cancel


Calculation Properties
Name:
Fail
Description:
Expression
"Fail"
Validate
Evaluate Expres
Store Result In
Students.Grade
Functions
Conversion
Data
Date
Environment
Exceptions
File
Logic
Number
Text
Function Detail
Expression Function Builder
Use this area to compose a function statement and paste it into the expression.
Select a function from the list on the left. The function details and the required parameters will be shown here.
Complete the details either by entering values or by dragging in data
Data Items
Group:
Page
Data Type
View All Items
Binaries
Collections
Dates
DateTimes
Flags
Images
Numbers
Passwords
Text
Times
TimeSpans
Stage logging:
Errors only
Warning threshold:
System Default
Number of minutes
5
(0 to disable)
OK
Cancel

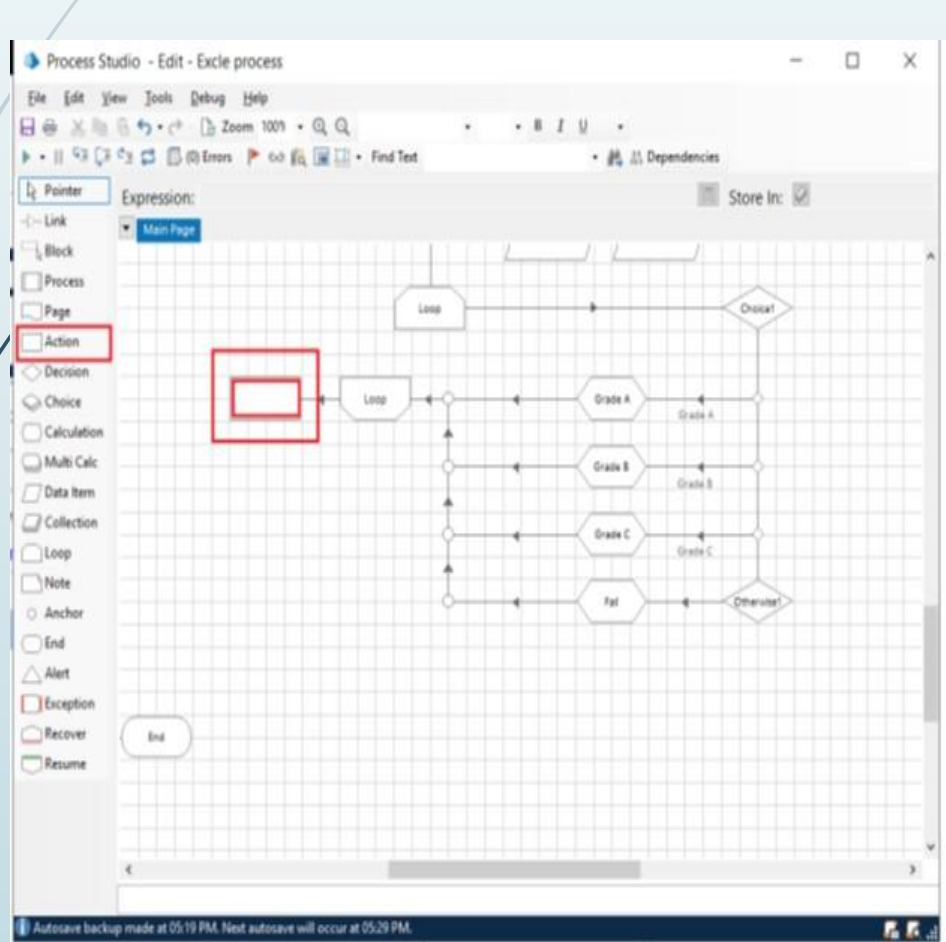
6.Create Action Stage as “Close Student excel file (Business Object = MS Excel VBO; Action = Close WorkBook).

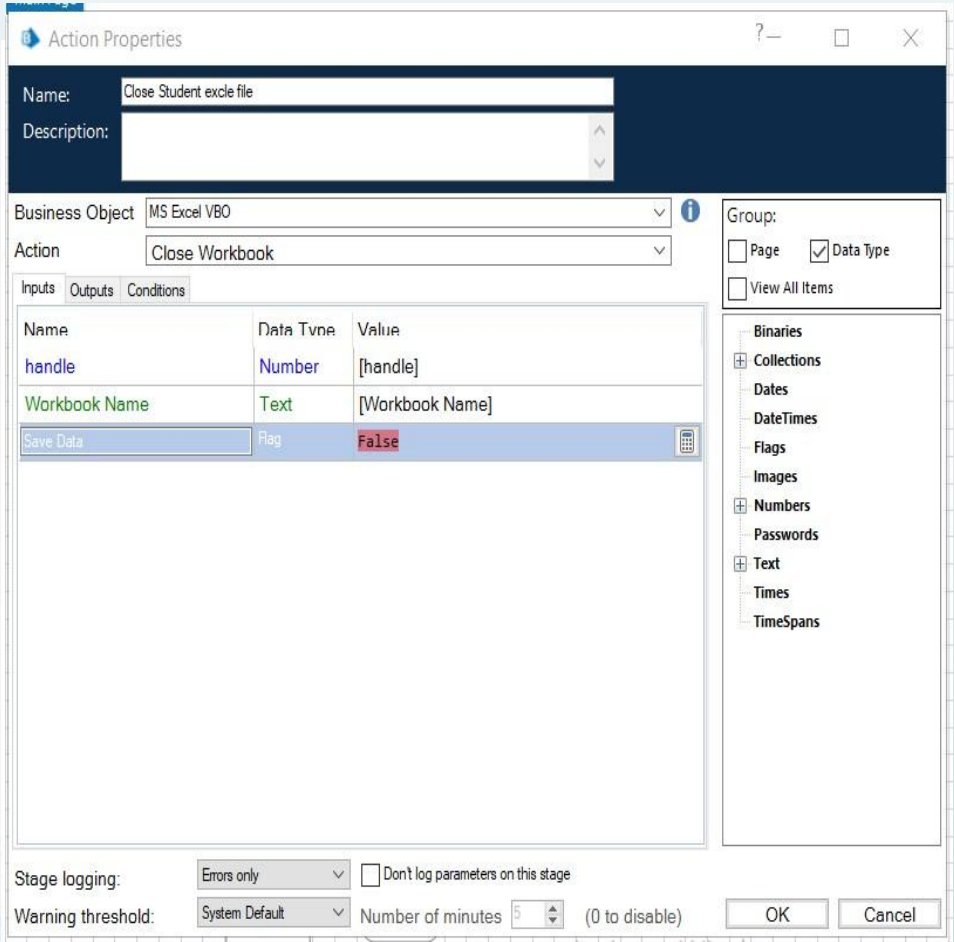
a. Click on the Inputs tab

1.Drag “handle” data item into handle Value column.

2.Drag “Workbook Name” data item into the Workbook Name Value column.

3.Save Data as “False”.

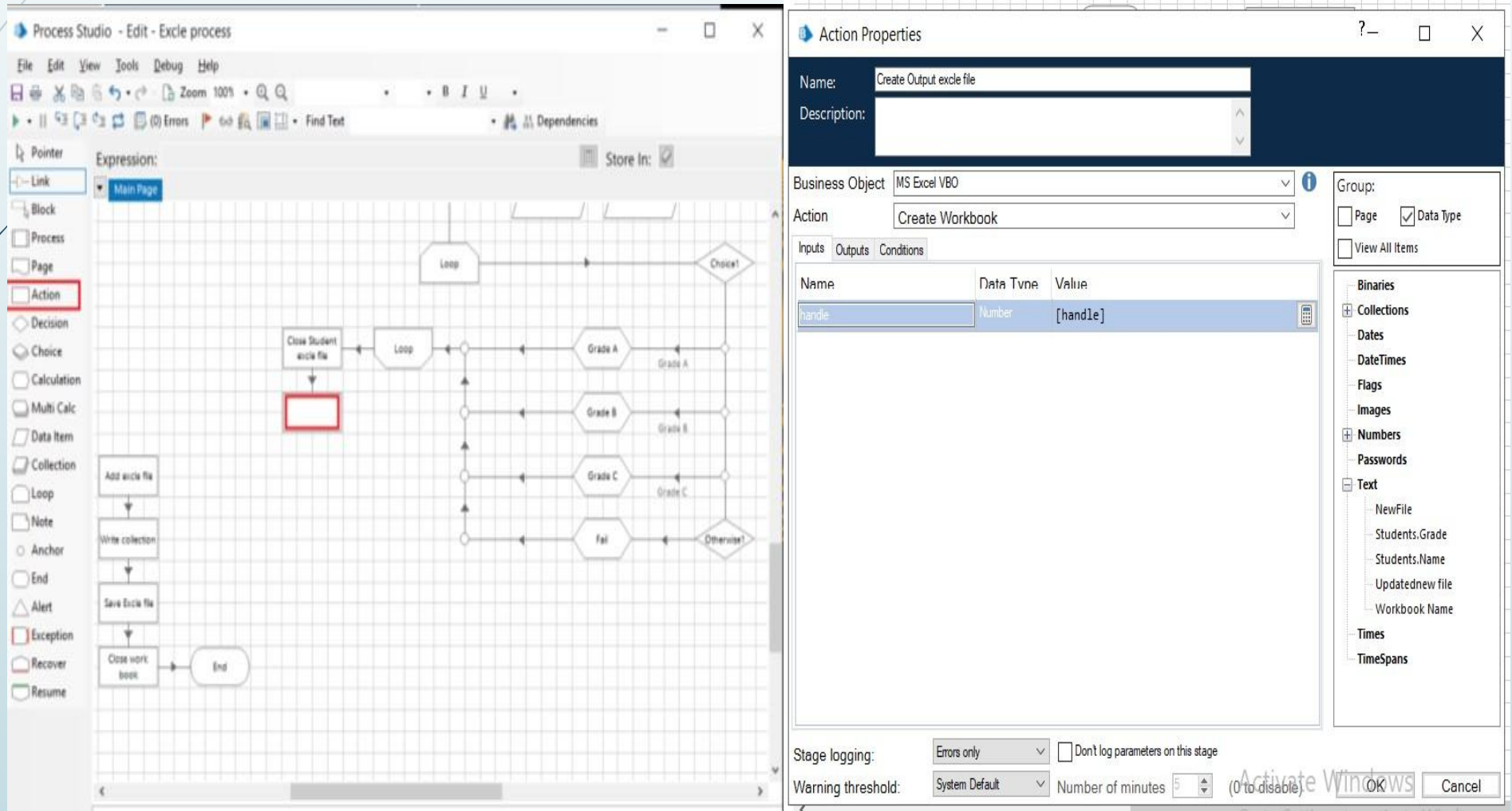




7.Create Action as “Create Output excel file” (Business Object = MS Excel VBO; Action = Create WorkBook).

a. Click on the Inputs tab.

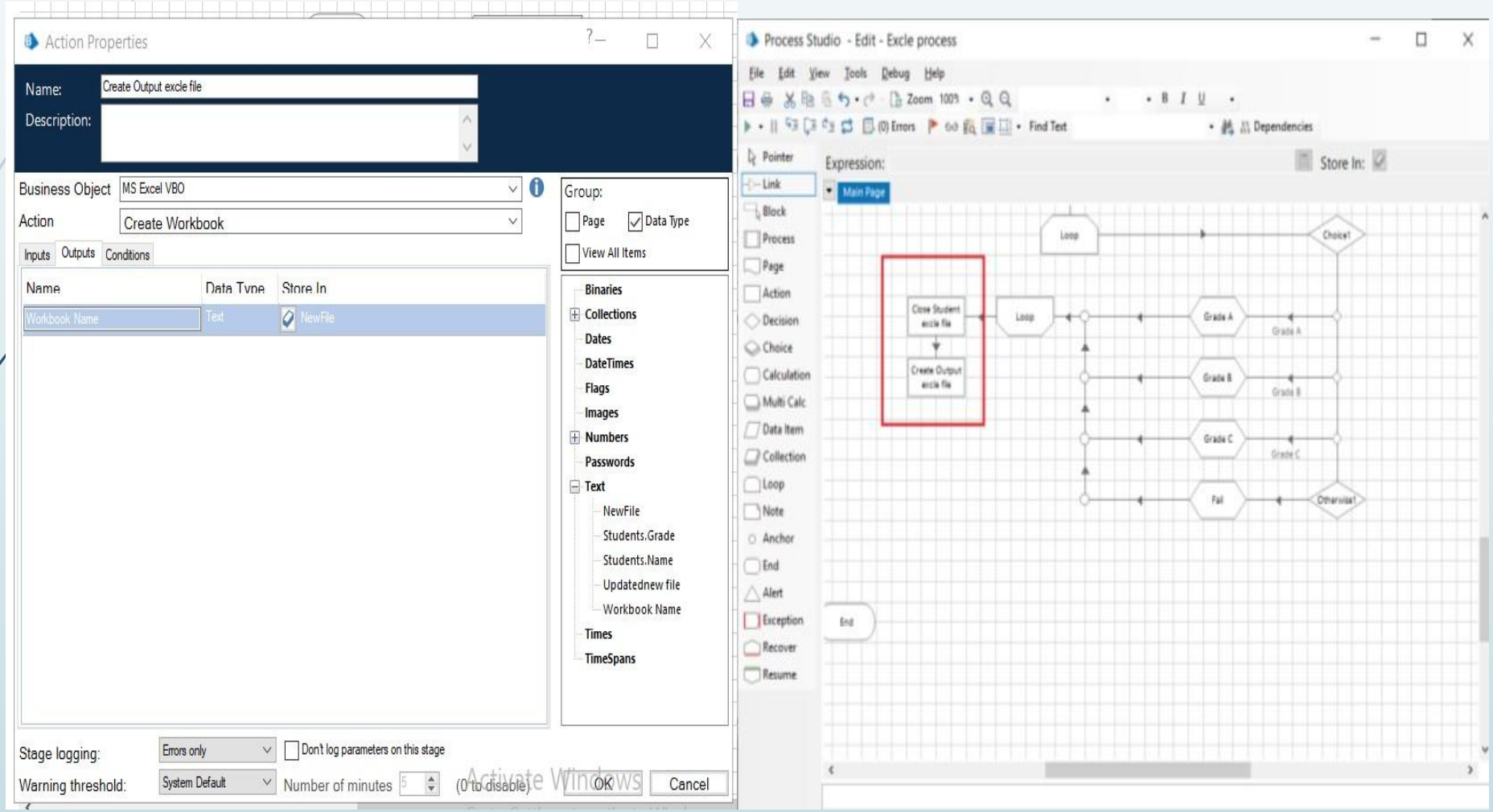
i. Drag “handle” data item into handle Value column.



7b. Click on the Outputs tab

i. Create Data Item, type = Text, name =”NewFile".
ii. Drag it into the Workbook Name Store In column.

Click on ok



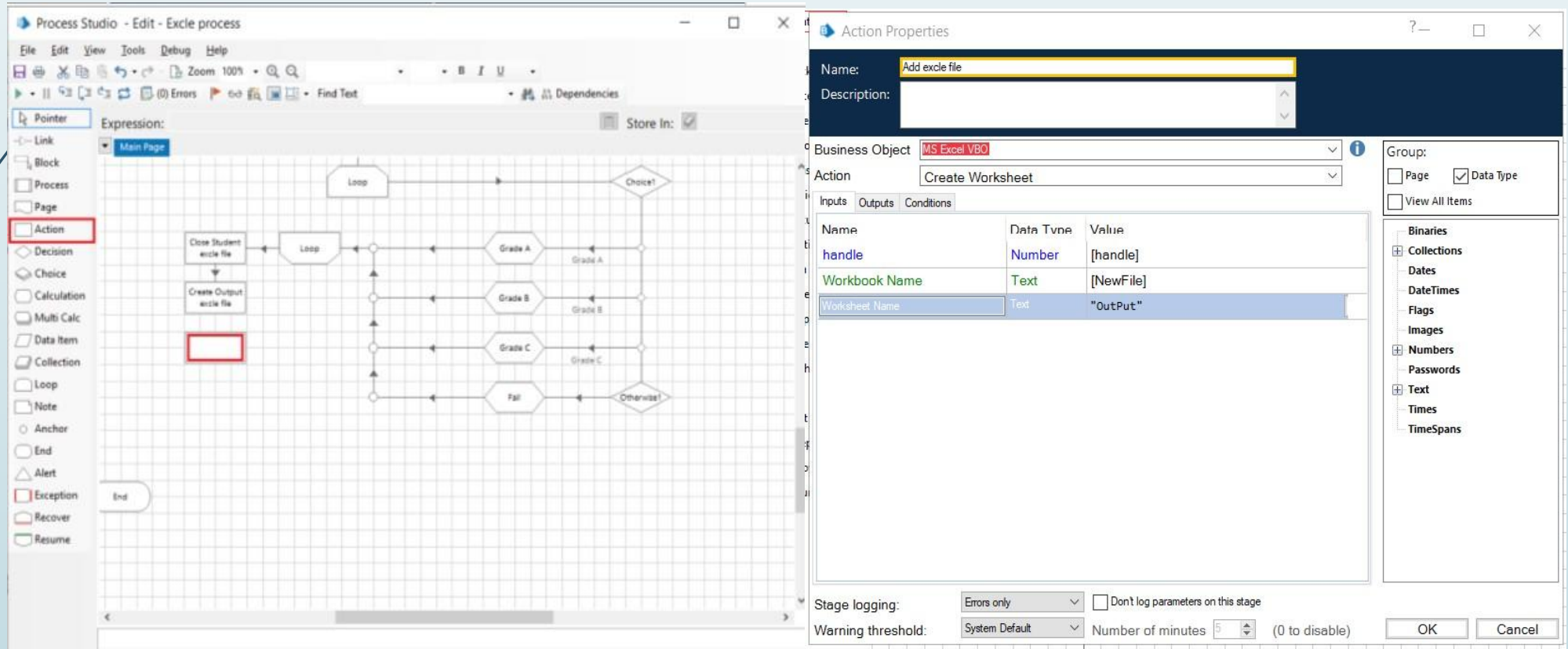
8.Create Action as “Add Excel file” (Business Object = MS Excel VBO; Action = Create Worksheet).

a. Click on the Inputs tab

i. Drag “handle” data item into handle Value column.

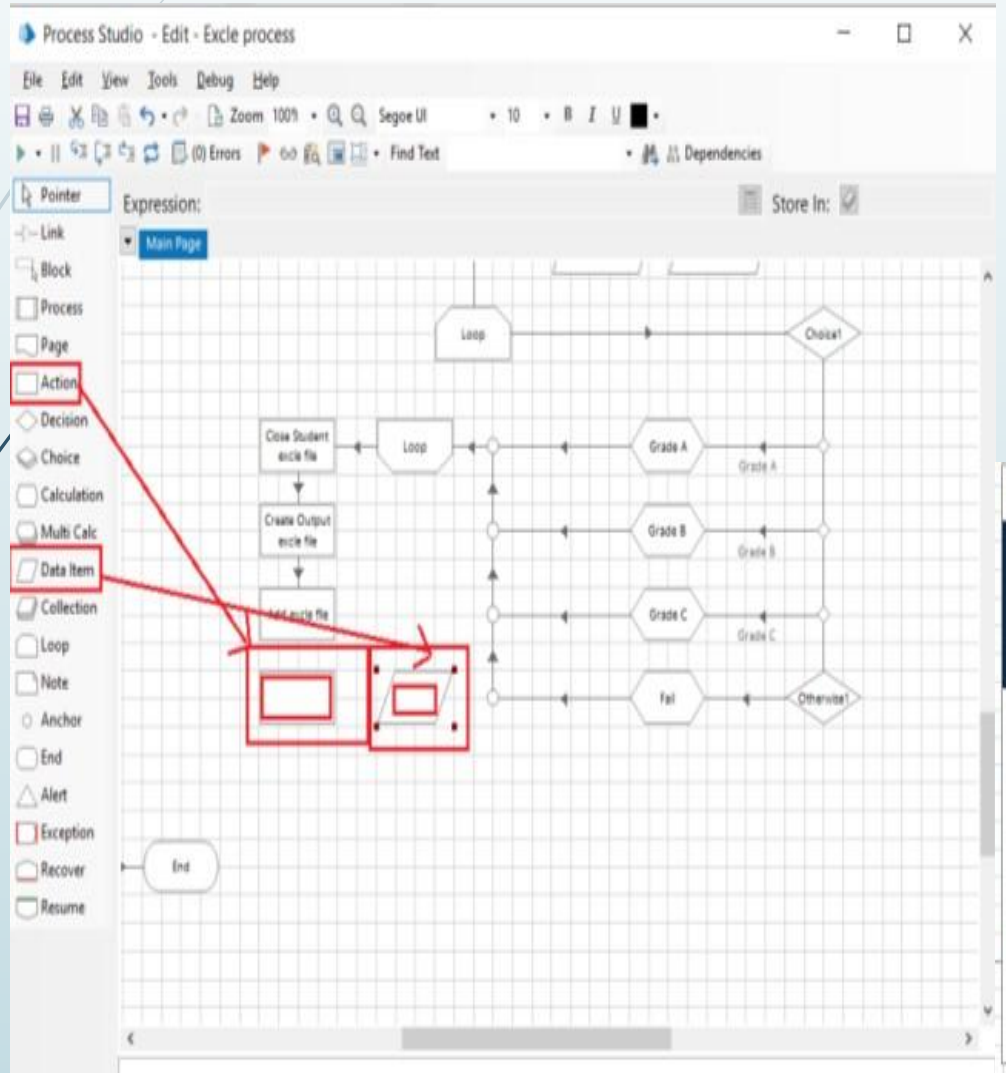
ii. Drage “NewFile” data item into the Workbook Name Value column.

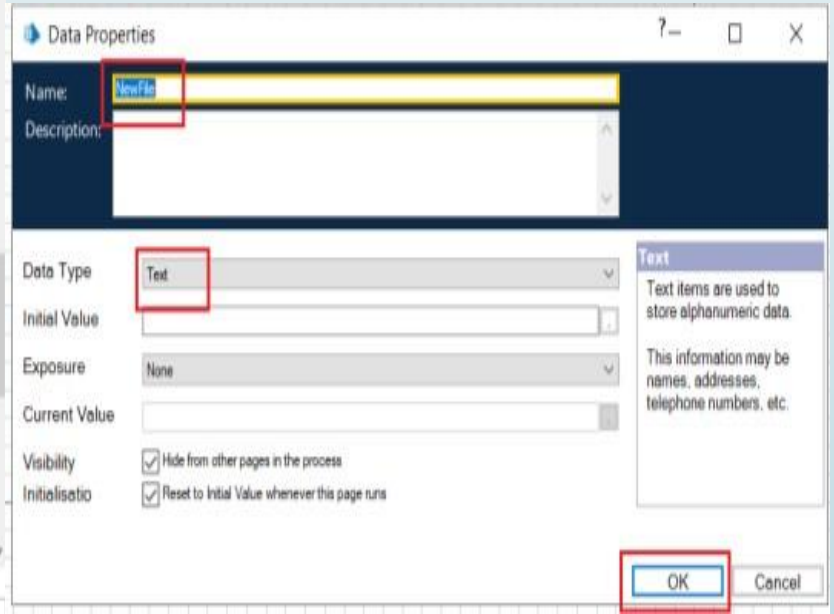
ii. iii. Write Worksheet Name name as “OutPut”.



9.Create Action Stage as “Write collection” (Business Object = MS Excel VBO; Action = Write Collection).

a. Create Data Item as “NewFile”, with type = Text.





9(b)Click on the Inputs tab

i. Drag “handle” data item into handle Value column.

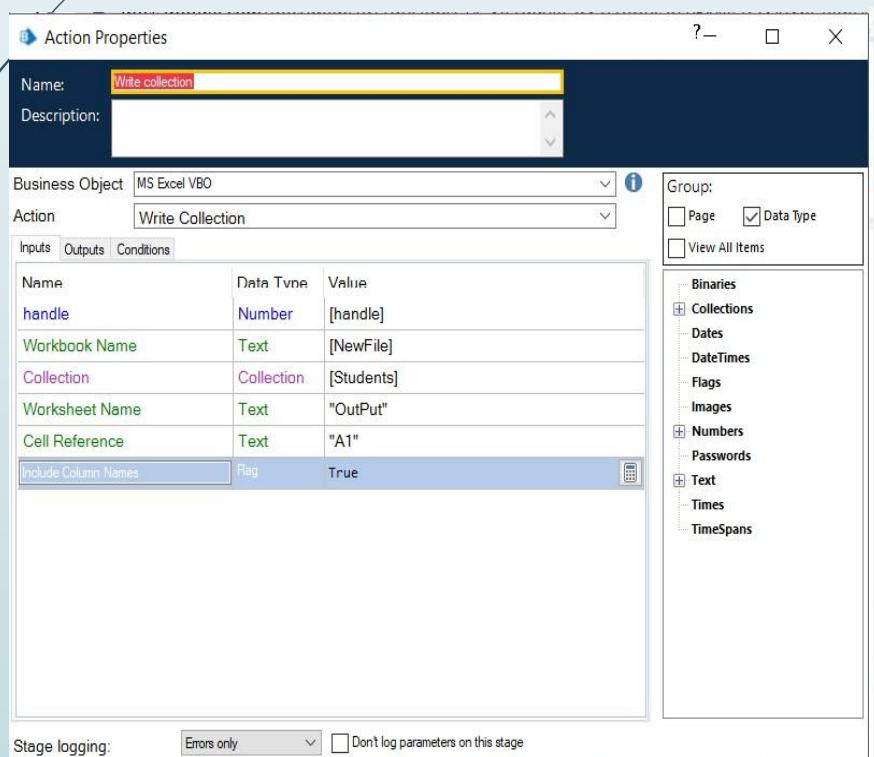
ii. Drage “NewFile” data item into the Workbook Name Value column.

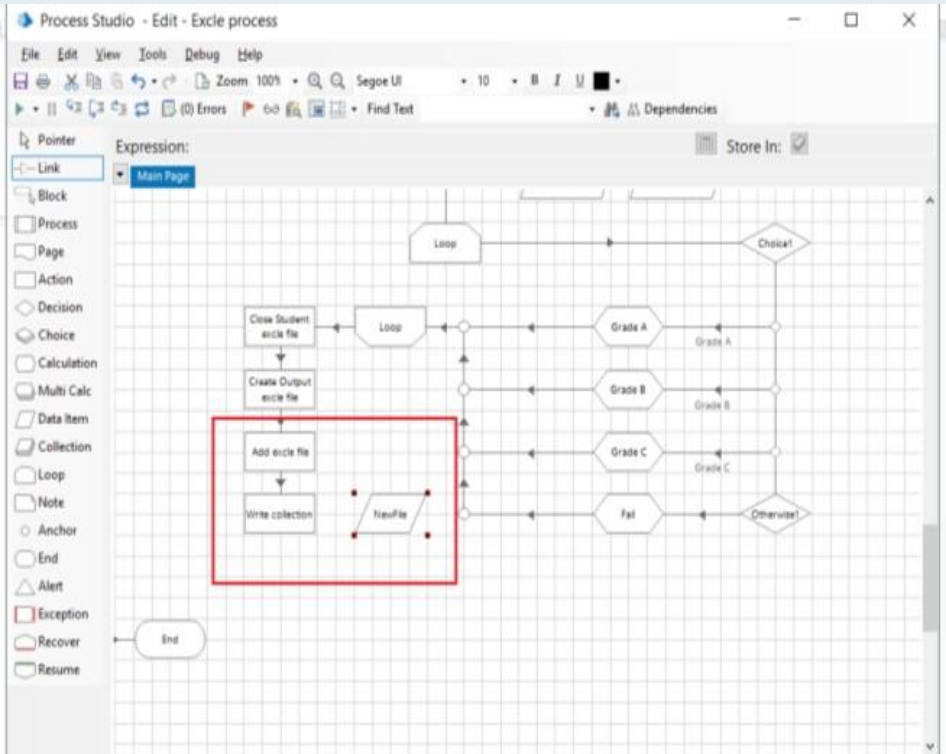
iii. Drage “Student” Collection into the Collection Value column

iv. Write Worksheet Name name as “OutPut”.

v. Write Cell Reference as “A1”.

vi.Set Include Column Names as True.





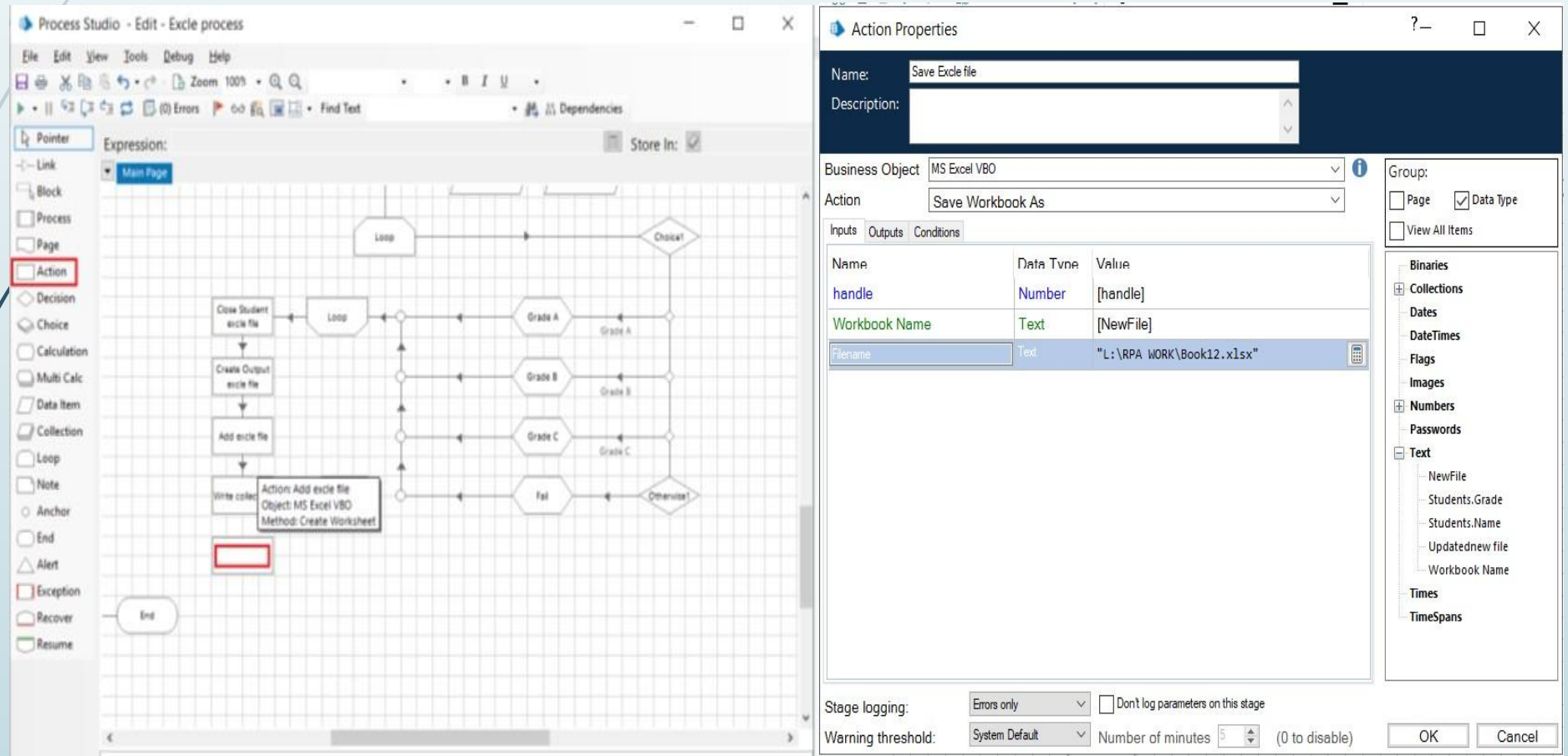
10.Create Action Stage as “Save Excel file” (Business Object = MS Excel VBO; Action = Save Workbook As).

a. Click on the Inputs tab.

i.Drag “handle” data item into handle Value column.

. ii. Drage “NewFile” data item into the Workbook Name Value column.

iii.Write Filename as the path where files want to store

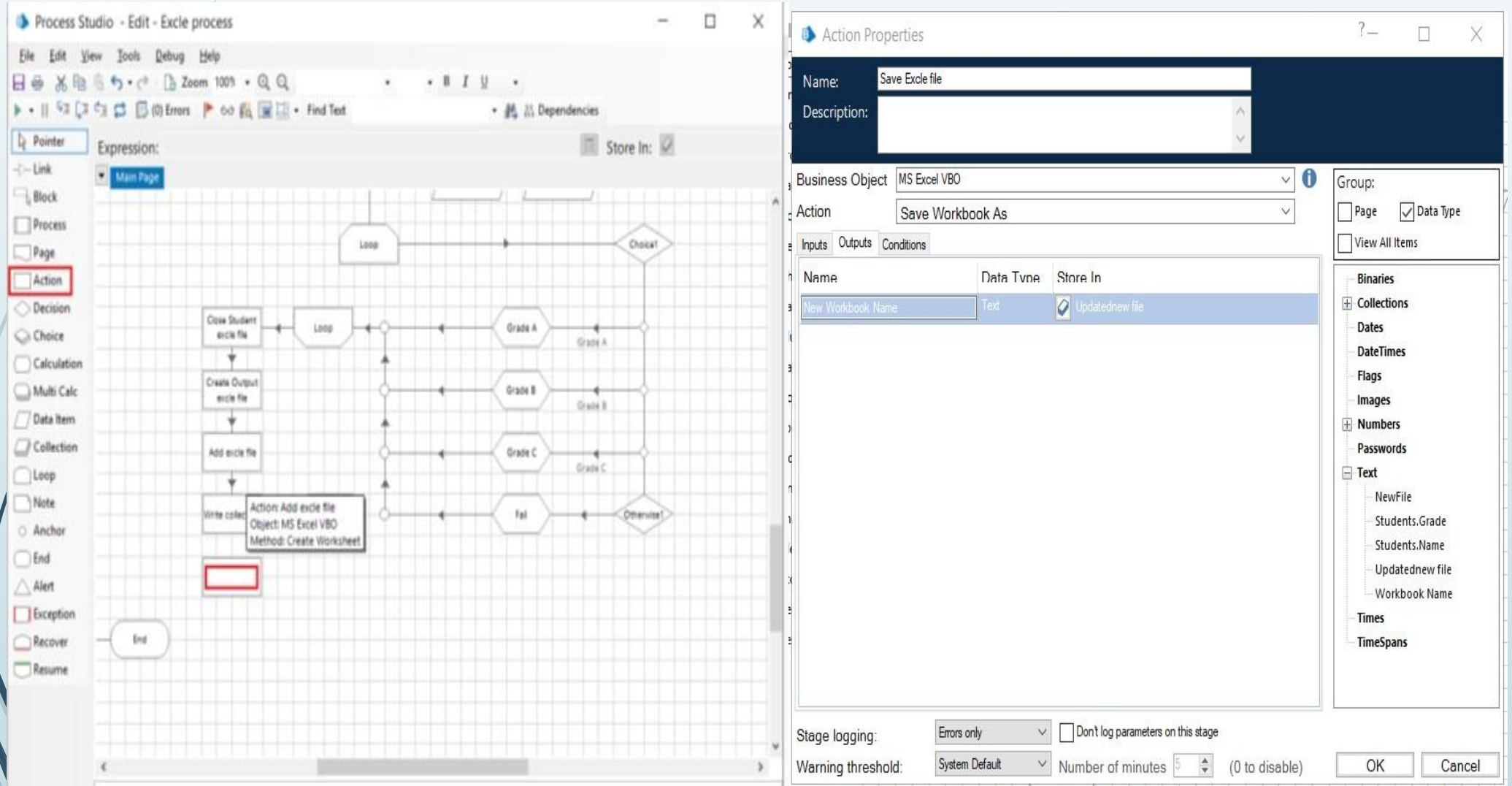


10b. Click on the Output tab

i. Create Data Item, type = Text, name =”Updated New file”.

ii. ii.Drag it into the New Workbook Name Store In column.

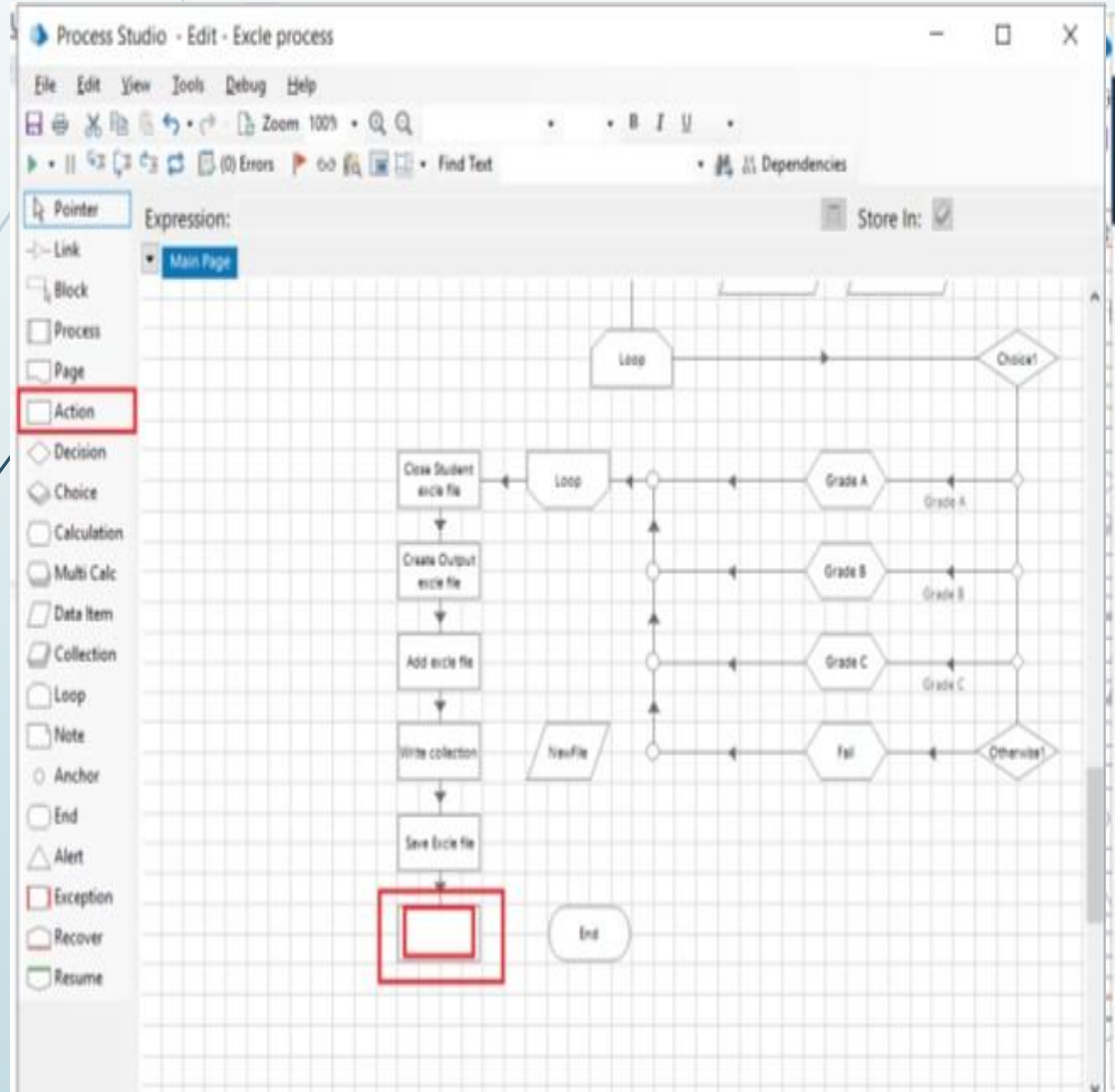
iii. Click on ok.

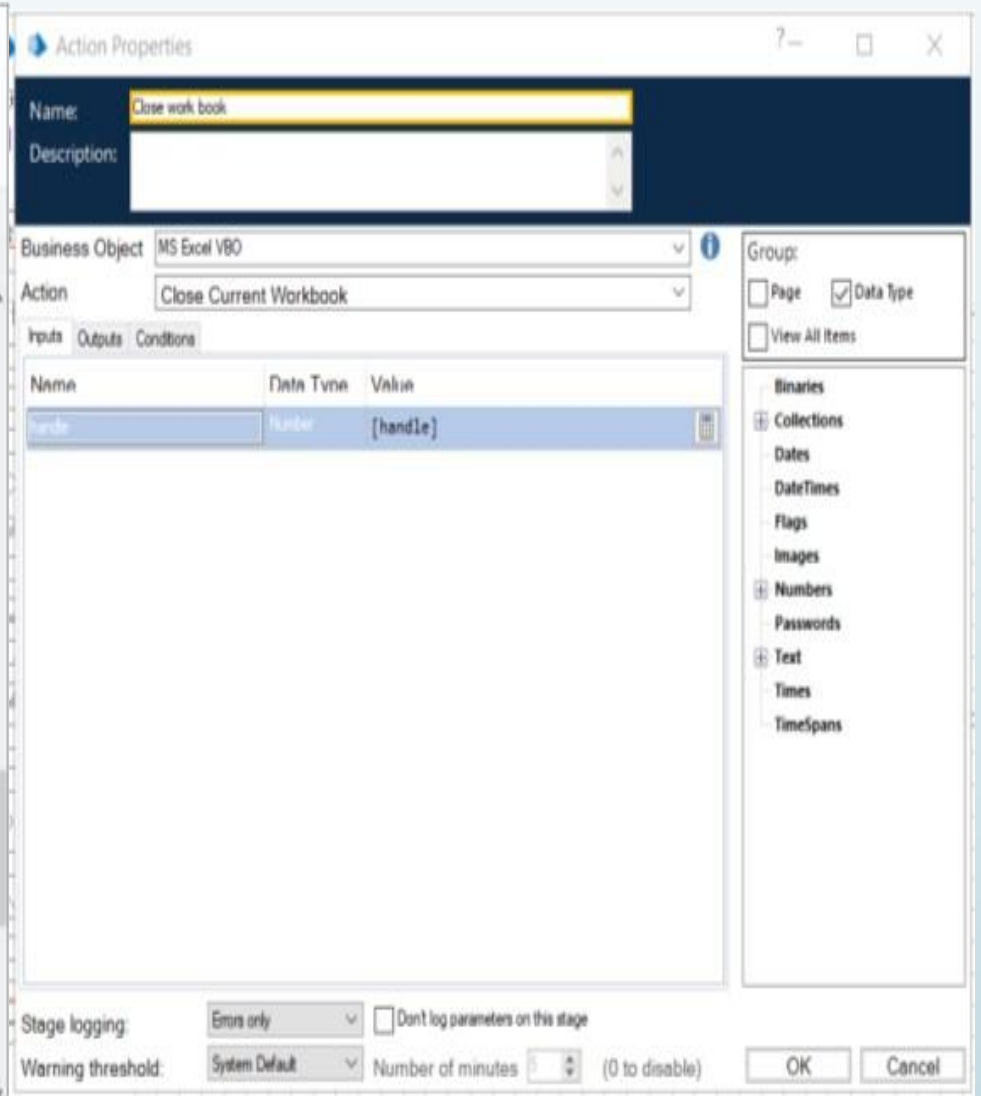


11.Create Action Stage as “Close workbook” (Business Object = MS Excel VBO; Action = Close Current WorkBook).

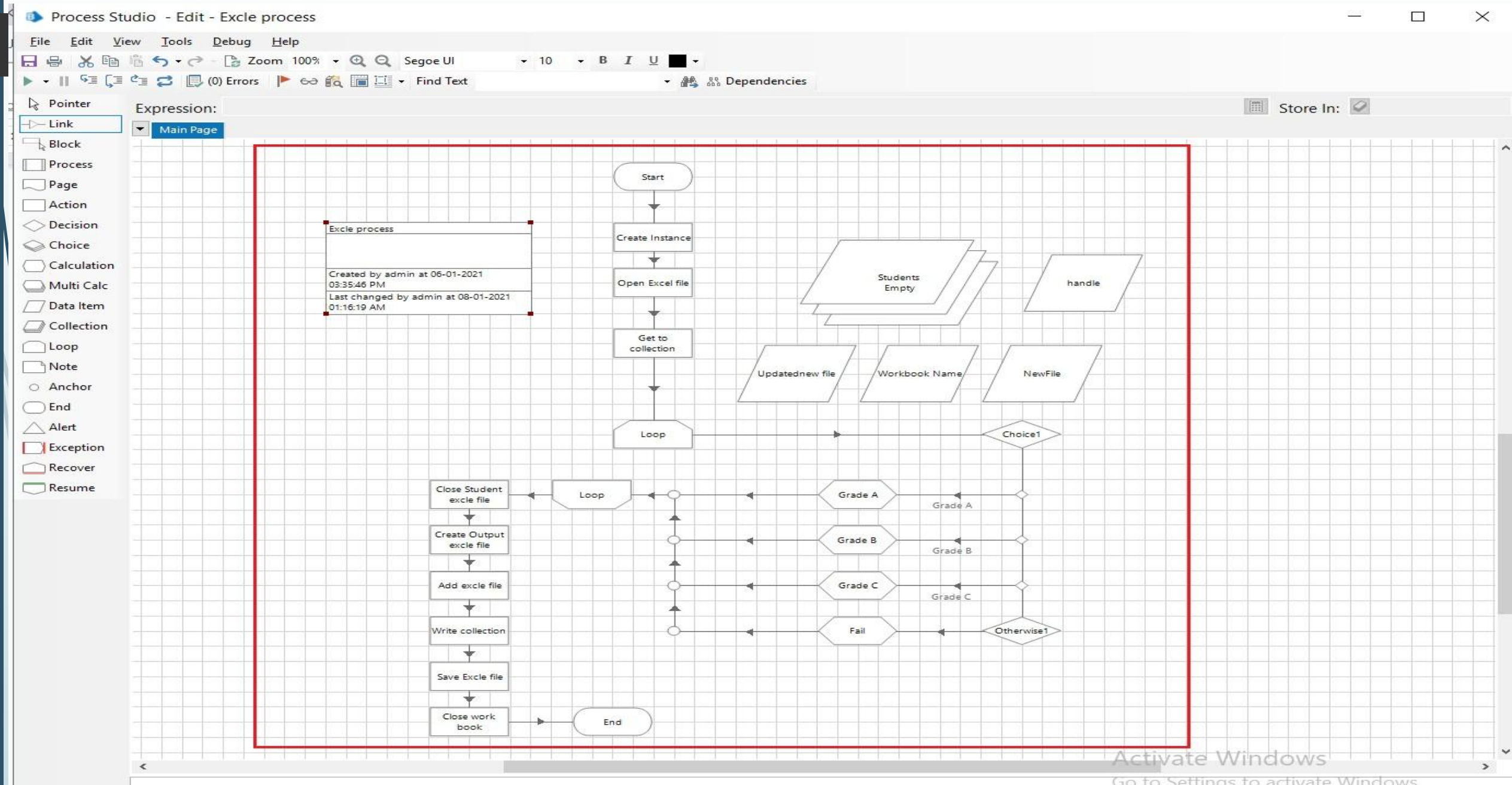
a. Click on the Inputs tab

b. Drag “handle” data item into handle Value column

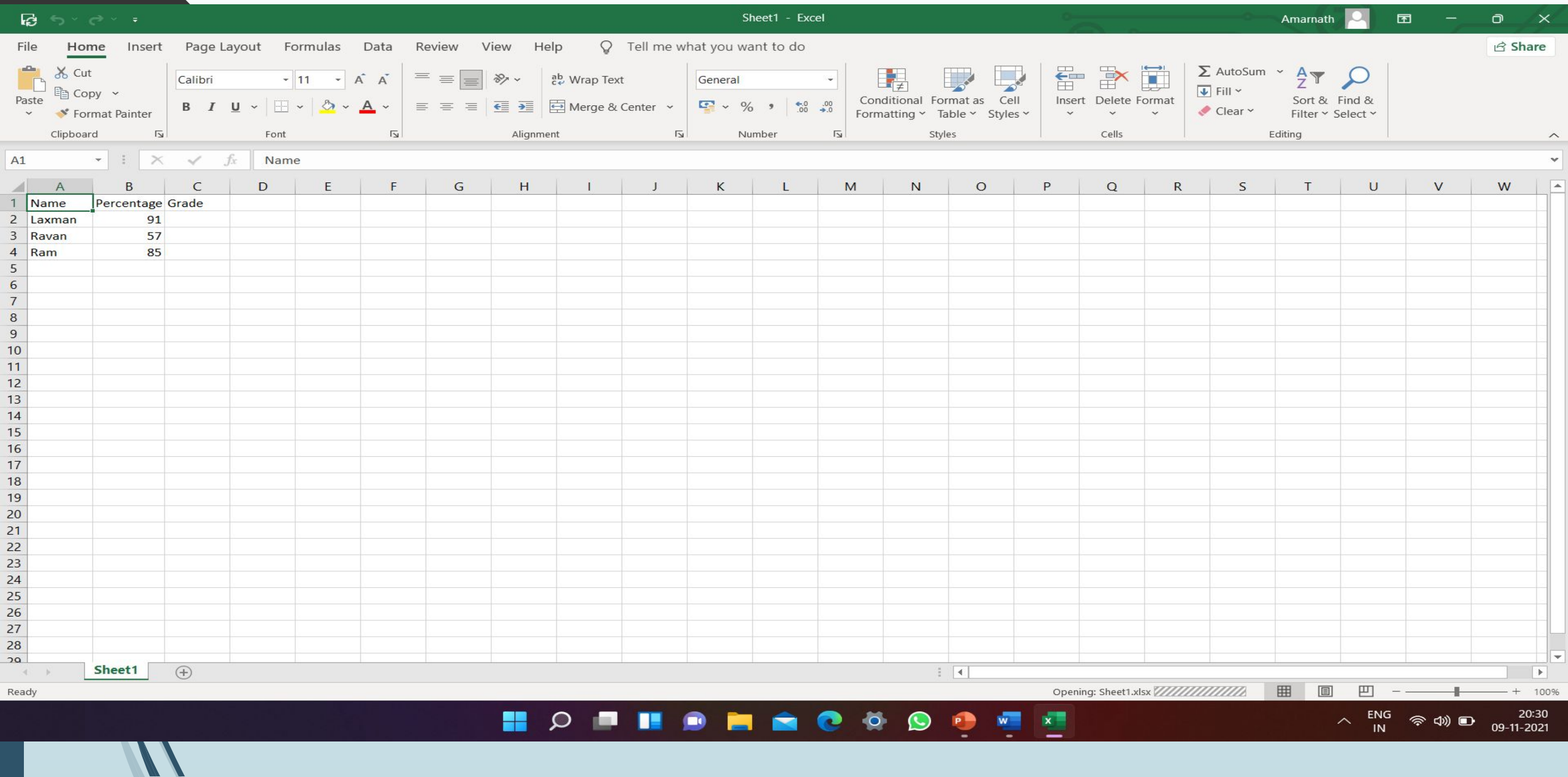




c.connections Do as follows



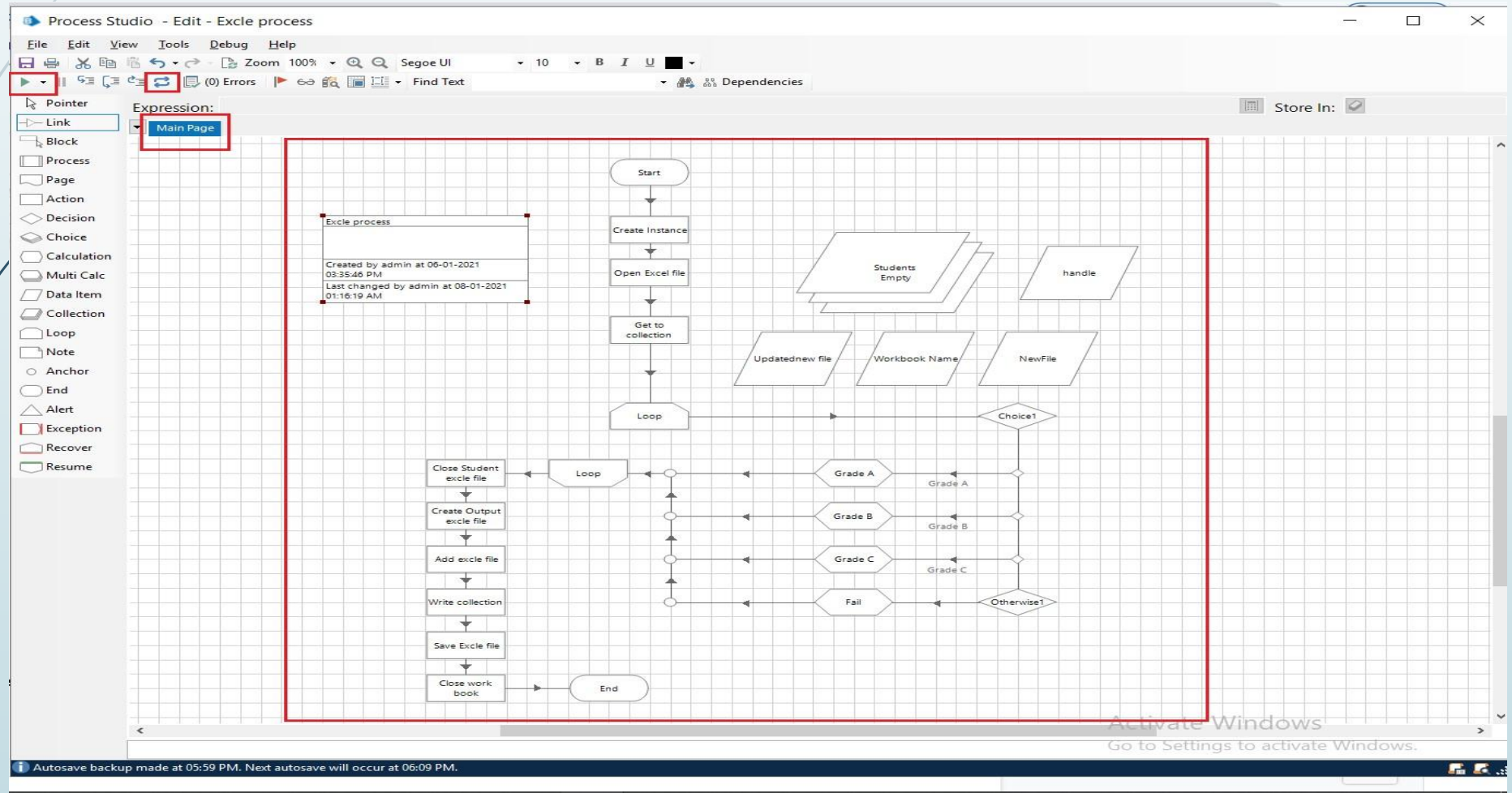
d.Input Excel file data.

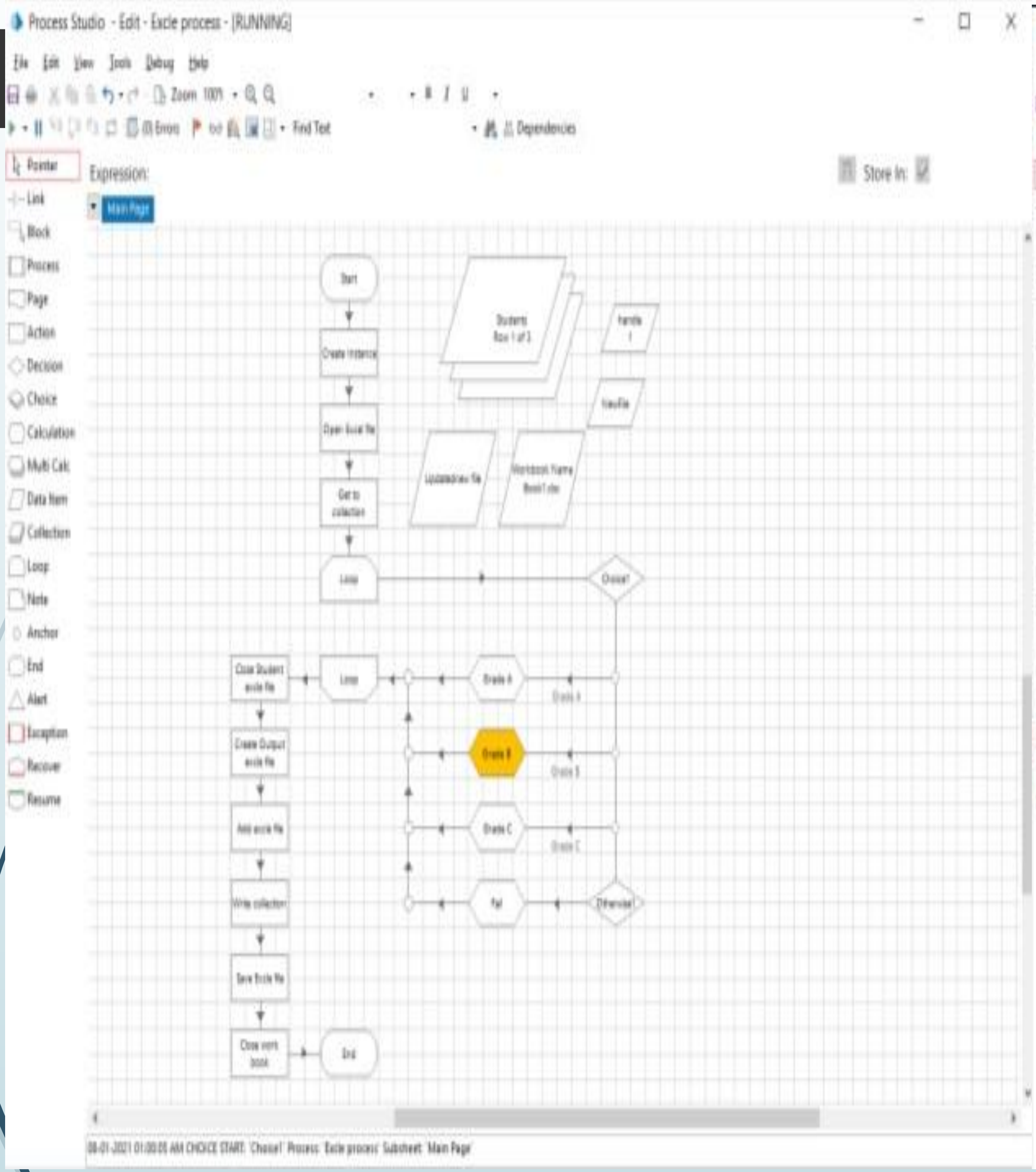


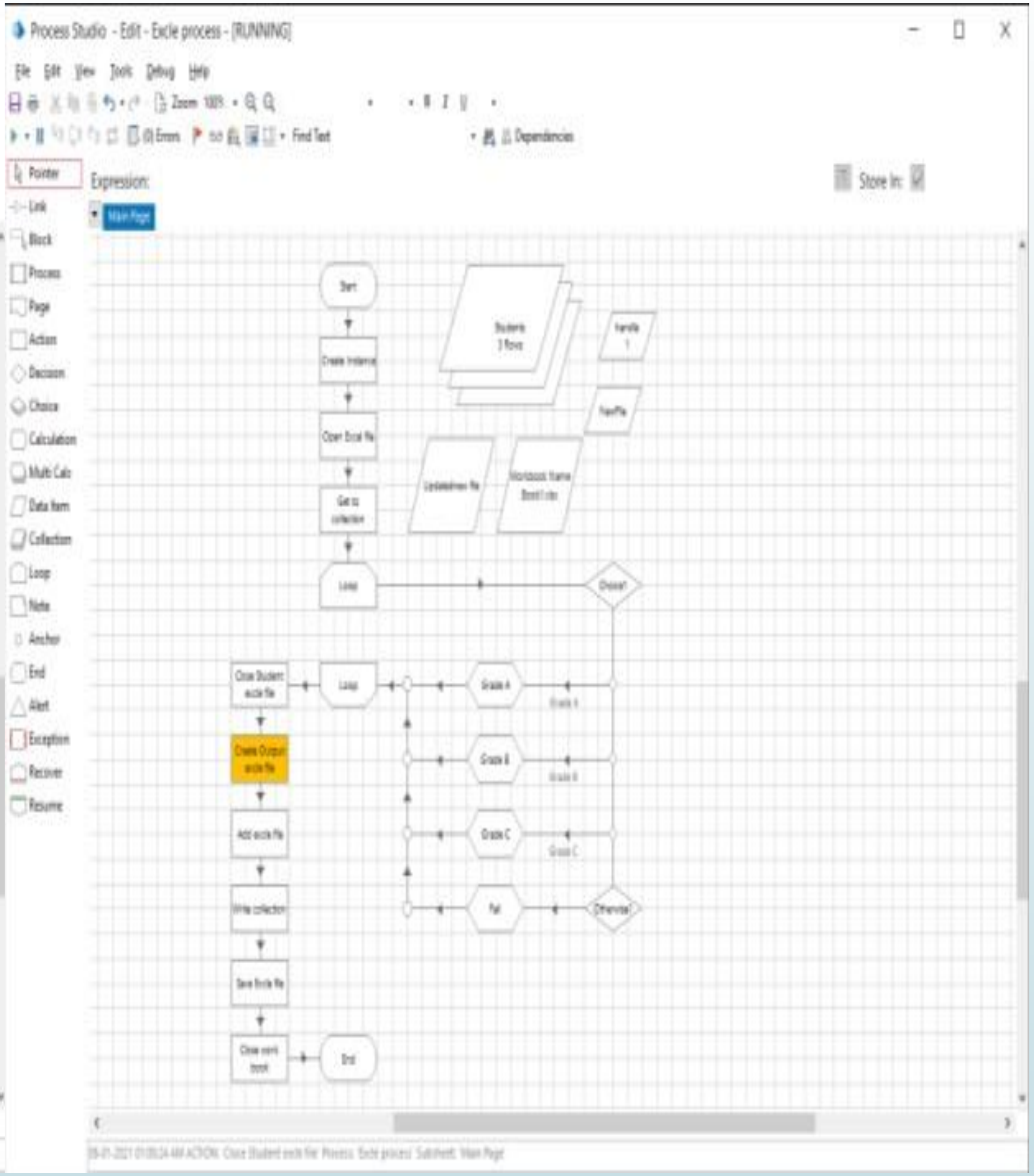
Activity 3: Testing the Process Object from Object Studio

Click on the Main Page, click on the Green play button to run the ‘Excel Process’ Process object. It shows COMPLETED when there is no error or no failure in the object.

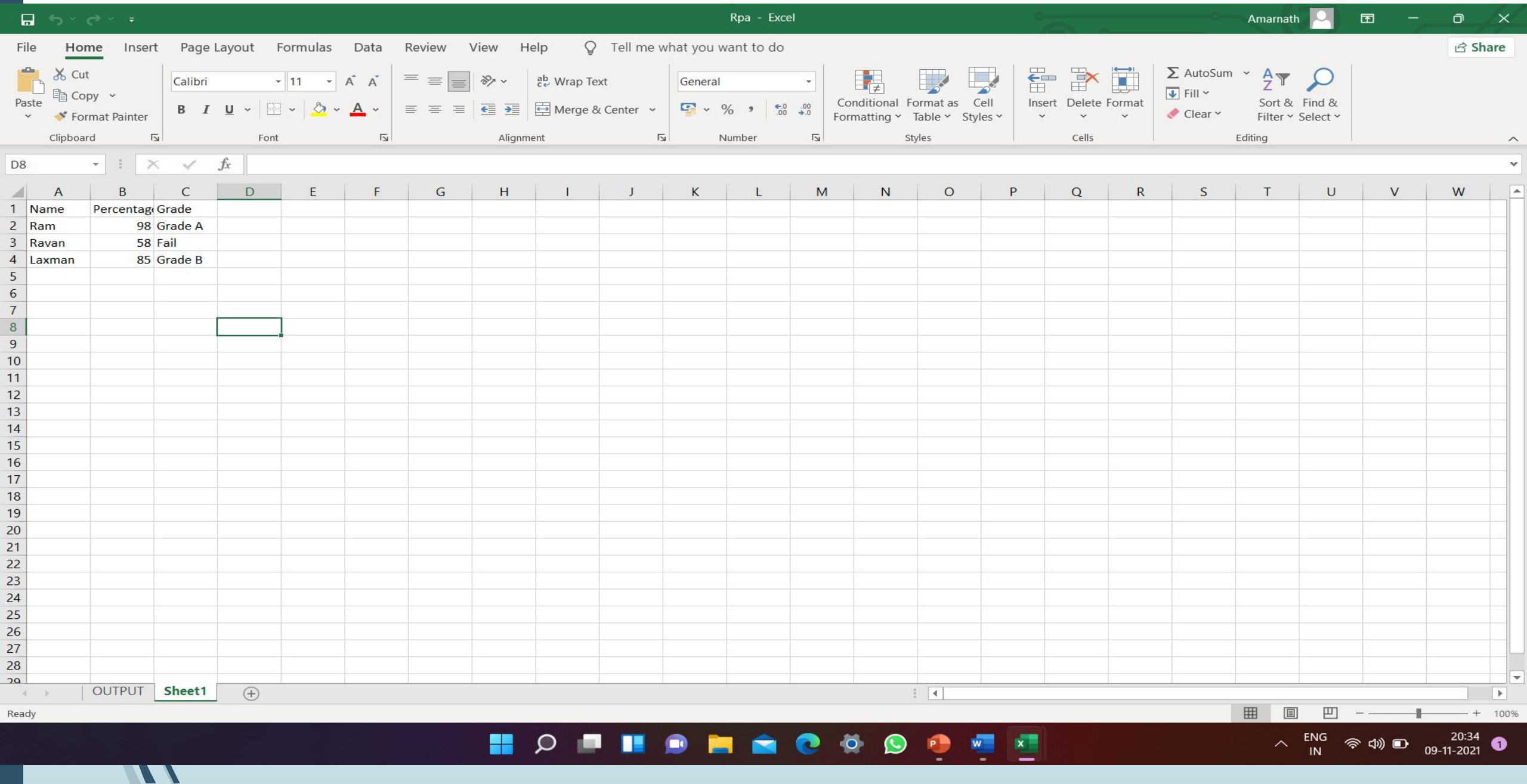
Click on the Main Page, click on the Reset button to reset the cache for rerun the process object as fresh.




Process Studio - Edit - Excle process - [RUNNING]
File Edit View Tools Debug Help
Expression:
Store In:
Main Page
Pointer
Link
Block
Process
Page
Action
Decision
Choice
Calculation
Multi Calc
Data Item
Collection
Loop
Note
Anchor
End
Alert
Exception
Recover
Resume


Process Studio - Edit - Excle process - [RUNNING]
File Edit View Tools Debug Help
Expression:
Store In:
Main Page

OutPut Excel file.



CONCLUSION

Thus, due to the various benefits of RPA, its utilization is gradually increasing in the market worldwide. Most of the organization are already implementing the RPA technology, as it optimizes the cost and fress the others resources. It is a cost-effective technique and also has nonfinancial benefits such as it consists of more accurate and consistent processes, which are less prone to errors. Nowadays, most of the organizations are using RPA for testing the particular application and eliminating the old testing tools due to its limitations.

FUTURE ENHANCEMENTS

The technology is advancing rapidly in almost all the fields, not in a minute but in every second. With this quick development in technology, tremendous growth has been observed in the global automation industry. The usage of automation techniques is in continuous growth and it is anticipated for the predictable future. The robotic process automation is one of the revolutions in the automation industry, and its expected to increase higher potential terms of utilization and staff implementation in the upcoming year.

BIBLIOGRAPHY AND REFERENCES

Websites:

i. https://ieeexplore.ieee.org/Xplore

ii. www.uipath.com

Research paper:

Robotic Process Automation: A Scientific and Industrial Systematic Mapping Study

By J. G. Enríquez;A. Jiménez-Ramírez;F. J. Domínguez-Mayo;J. A. García-García