

Lab Guide

Using Task Mining for Discovery, Monitoring, and Analysis of User Interactions on Desktops

Part 2 of 2

V 1.14.1

Lab Version 1.0

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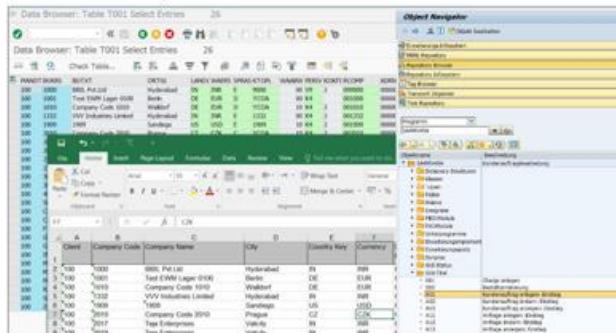
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1 Introduction

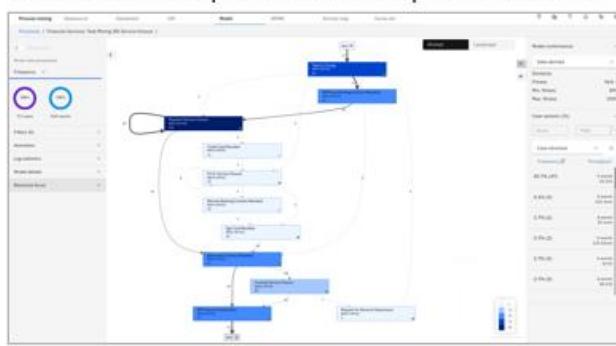
1.1 Task Mining in IBM Process Mining

Task Mining is the discovery, monitoring, and analysis of user interaction data on desktops through the recording of frontend activities.

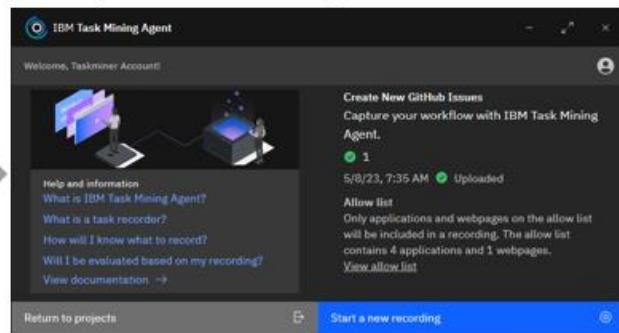
User desktop



Visualize desktop activities to improve business



Desktop session recordings



Logs extracted from desktop session recordings

1. Process_1_Business_Activity_Start Time/End Time/User/Role/Type	2. Application/Closure/Closure_Letter/Recap/Working_Institute/Client_Status
2. 2.001+0B Service-Payment 104/07/2016/08/07/2016 UTR00008	0 0 Account C Client Rec 1 Client 1 2003-05-19 Complete 1 3046
3. 2.001+0B Service-Payment 104/07/2016/08/07/2016 BACK-OFF-Check	0 0 Account C Client Rec 1 Client 1 2003-05-19 Complete 1 3046
4. 2.001+0B Service-Payment 104/07/2016/08/07/2016 BACK-OFF-Check	0 0 Account C Client Rec 1 Client 1 2003-05-19 Complete 1 3046
5. 2.001+0B Service-Payment 104/07/2016/08/07/2016 BACK-OFF-Check	0 0 Account C Client Rec 1 Client 1 2003-05-19 Complete 1 3046
6. 2.001+0B Service-Payment 104/07/2016/08/07/2016 BACK-OFF-Check	0 0 Account C Client Rec 1 Client 1 2003-05-19 Complete 1 3046
7. 2.001+0B Service-Payment 104/07/2016/08/07/2016 BACK-OFF-Check	0 0 Account C Client Rec 1 Client 1 2003-05-19 Complete 1 3046
8. 2.001+0B Service-Payment 104/07/2016/08/07/2016 BACK-OFF-Check	0 0 Account C Client Rec 1 Client 1 2003-05-19 Complete 1 3046
9. 2.001+0B Service-Payment 104/07/2016/08/07/2016 BACK-OFF-Check	0 0 Account C Client Rec 1 Client 1 2003-05-19 Complete 1 3046
10. 2.001+0B Service-Payment 104/07/2016/08/07/2016 BACK-OFF-Check	0 0 Account C Client Rec 1 Client 1 2003-05-19 Complete 1 3046
11. 2.001+0B Service-Payment 104/07/2016/08/07/2016 BACK-OFF-Check	0 0 Account C Client Rec 1 Client 1 2003-05-19 Complete 1 3046
12. 2.001+0B Service-Payment 104/07/2016/08/07/2016 BACK-OFF-Check	0 0 Account C Client Rec 1 Client 1 2003-05-19 Complete 1 3046
13. 2.001+0B Service-Payment 104/07/2016/08/07/2016 BACK-OFF-Check	0 0 Account C Client Rec 1 Client 1 2003-05-19 Complete 1 3046
14. 2.001+0B Service-Credit Card 104/07/2016/08/07/2016 BACK-OFF-TX	27113 0 Account C Client Rec 1 Client 1 2003-05-19 Complete 1 3046
15. 2.001+0B Service-Credit Card 104/07/2016/08/07/2016 BACK-OFF-TX	30762 0 Account C Client Rec 1 Client 1 2003-05-19 Complete 1 3046
16. 2.001+0B Service-A.I.B. Serv 104/07/2016/08/07/2016 BACK-OFF-TX	30762 0 Account C Client Rec 1 Client 1 2003-05-19 Complete 1 3046
17. 2.001+0B Service-A.I.B. Serv 104/07/2016/08/07/2016 BACK-OFF-TX	18348 0 Account C Client Rec 1 Client 1 2003-05-19 Complete 1 3046
18. 2.001+0B Service-A.I.B. Serv 104/07/2016/08/07/2016 BACK-OFF-TX	23287 0 Account C Client Rec 1 Client 1 2003-05-19 Complete 1 3046
19. 2.001+0B Service-A.I.B. Serv 104/07/2016/08/07/2016 BACK-OFF-TX	30303 0 Account C Client Rec 1 Client 1 2003-05-19 Complete 1 3046
20. 2.001+0B Service-Controls 104/07/2016/08/07/2016 BACK-OFF-TX	0 0 Account C Client Rec 1 Client 1 2003-05-19 Complete 1 3046
21. 2.001+0B Service-Controls 104/07/2016/08/07/2016 BACK-OFF-TX	0 0 Account C Client Rec 1 Client 1 2003-05-19 Complete 1 3046
22. 2.001+0B Service-Controls 104/07/2016/08/07/2016 BACK-OFF-TX	0 0 Account C Client Rec 1 Client 1 2003-05-19 Complete 1 3046
23. 2.001+0B Service-iPhone 104/07/2016/08/07/2016 BACK-OFF-TX	13131 0 Account C Client Rec 1 Client 1 2003-05-19 Complete 1 3046
24. 2.001+0B Service-iPhone 104/07/2016/08/07/2016 BACK-OFF-TX	4005095 13001498 0 Account C Client Rec 1 Client 1 2003-05-19 Complete 1 3046
25. 2.001+0B Service-Payment 104/07/2016/08/07/2016 BACK-OFF-Check	2304865 2030970 0 Account C Client Rec 1 Client 1 2003-05-19 Complete 1 3046
26. 2.001+0B Service-Payment 104/07/2016/08/07/2016 BACK-OFF-Check	333485 0 Account C Client Rec 1 Client 1 2003-05-19 Complete 1 3046
27. 2.001+0B Service-BQ Clear 104/07/2016/08/07/2016 BACK-OFF-Check	0 0 Account C Client Rec 1 Client 1 2003-05-19 Complete 1 3046
28. 2.001+0B Service-Table-In 104/07/2016/08/07/2016 BACK-OFF-Check	0 0 Account C Client Rec 1 Client 1 2003-05-19 Complete 1 3046
29. 2.001+0B Service-Table-In 104/07/2016/08/07/2016 BACK-OFF-Check	0 0 Account C Client Rec 1 Client 1 2003-05-19 Complete 1 3046
30. 2.001+0B Service-Payment 104/07/2016/08/07/2016 BACK-OFF-Check	4005072 37320271 0 Account C Client Rec 1 Client 1 2003-05-19 Complete 1 3046
31. 2.001+0B Service-Payment 104/07/2016/08/07/2016 BACK-OFF-Check	4334338 14036088 0 Account C Client Rec 1 Client 1 2003-05-19 Complete 1 3046

Figure 1. Task Mining

Here are the key insights obtainable from task mining:

Productivity - You can discover how much time users allocate to the Process and how idle the activities are because of context switches. For example, users stopped working on the activity to work on something else. Precisely calculate the costs of your Process based on the productive time of your resources on the Process. Understand which applications users are working on the most.

Working Patterns - You can discover the main patterns of performing a business activity and the most efficient ways to complete the activity by identifying deviations and inefficiencies.

Set the most efficient patterns as best practices for the employees.

Understand the root causes of inefficiencies and take action to solve them.

Automation Opportunities - You can discover the working patterns to be automated, with the best tradeoff between benefits and complexity.

Simulate the automation of the most suitable working patterns and verify performance and cost benefits.

Getting a complete picture of the Process through the combination of business data and user interaction data creates the complete picture of the Process, which can be analyzed from the business and task levels.

1.2 Task Mining Programming Model An Introduction

The IBM Task Mining architecture includes four components—TM Web, TM Agent, TM Backend, and Persistency Layer—that record, collect, store, and process data. The architecture ensures data security offered by the Persistency Layer that enables 256-bit Key Encryption. In addition, it transforms and loads the data from IBM Task Mining into IBM Process Mining.

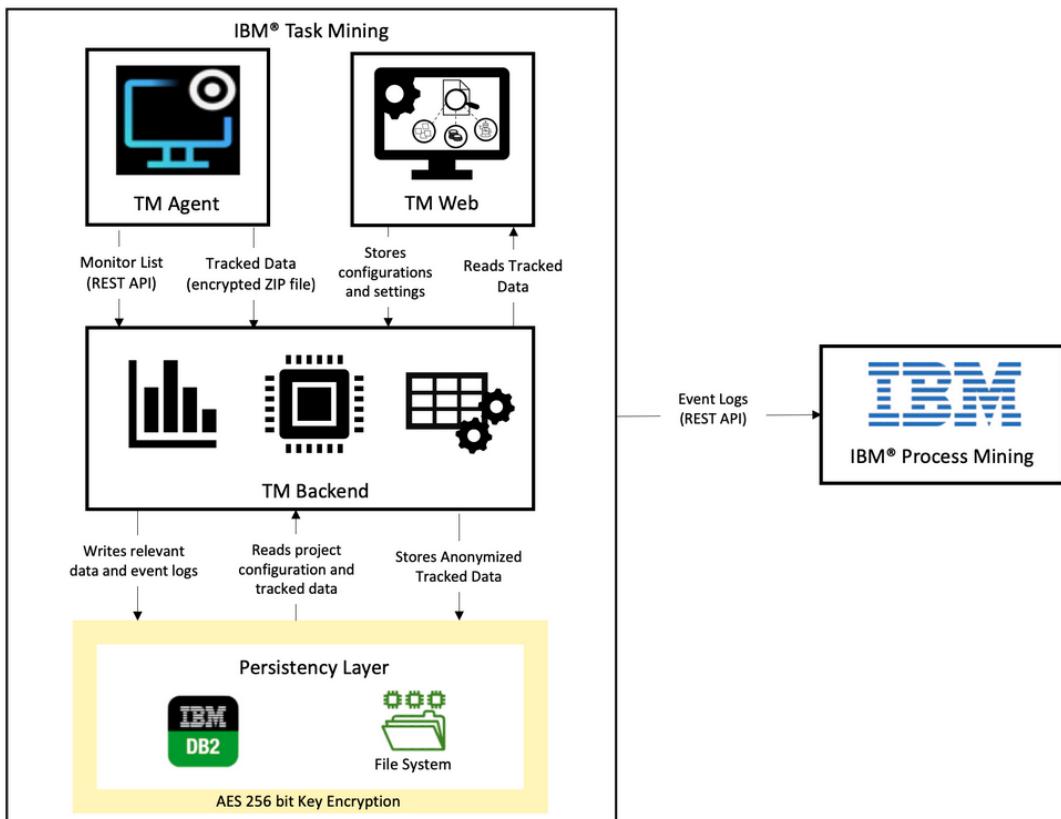


Figure 2. Components and Data Flow in IBM Task Mining

Component	Abbreviation	Description
Task Mining Web	TM Web	The web-based user interface (WUI) to configure settings in IBM Task Mining, add or create a process for Task Mining, manage users, interact with the acquired data, and view insights on the user interaction on the system
Task Mining Agent	TM Agent	The user interface to track, record, and save the on-screen activities on any selected application in the system
Task Mining Backend	TM Backend	The backend component collects data from the TM Agent and processes the data to transform it into useful information for IBM Process Mining.
Persistency Layer		Stores and protects the data with 256-bit Key Encryption.

The Persistence Layer in TM Backend receives data from the Task Mining Agent (TM Agent) and stores them in the filesystem. It works as a central hub for all the clients and provides the required services using Rest API.

The TM Backend processes the data logged by the TM Agent in Persistency Layer according to the configuration meta-data. It helps to correlate user actions to business transactions and extract the relevant data required for process mining and analysis. TM Backend then processes the generated data to create the event logs uploaded to IBM Process Mining using REST API over HTTPS.

1.3 Lab Introduction

1.3.1 Business Scenario

Opening the GitHub Issue is a critical desktop activity. It is a swivel-chair activity in an automated process. The business owners of the automated process want to improve lead time and costs associated with the Open GitHub Issue activity.

In this lab, you will create a Task Mining Project to enable business users to conduct a time study and cost analysis of the desktop steps involved in the Opening GitHub Issues activity.

There are three desktop applications involved in creating GitHub Issues:

1. GitHub web applications
2. Notepad
3. Desktop Calculator

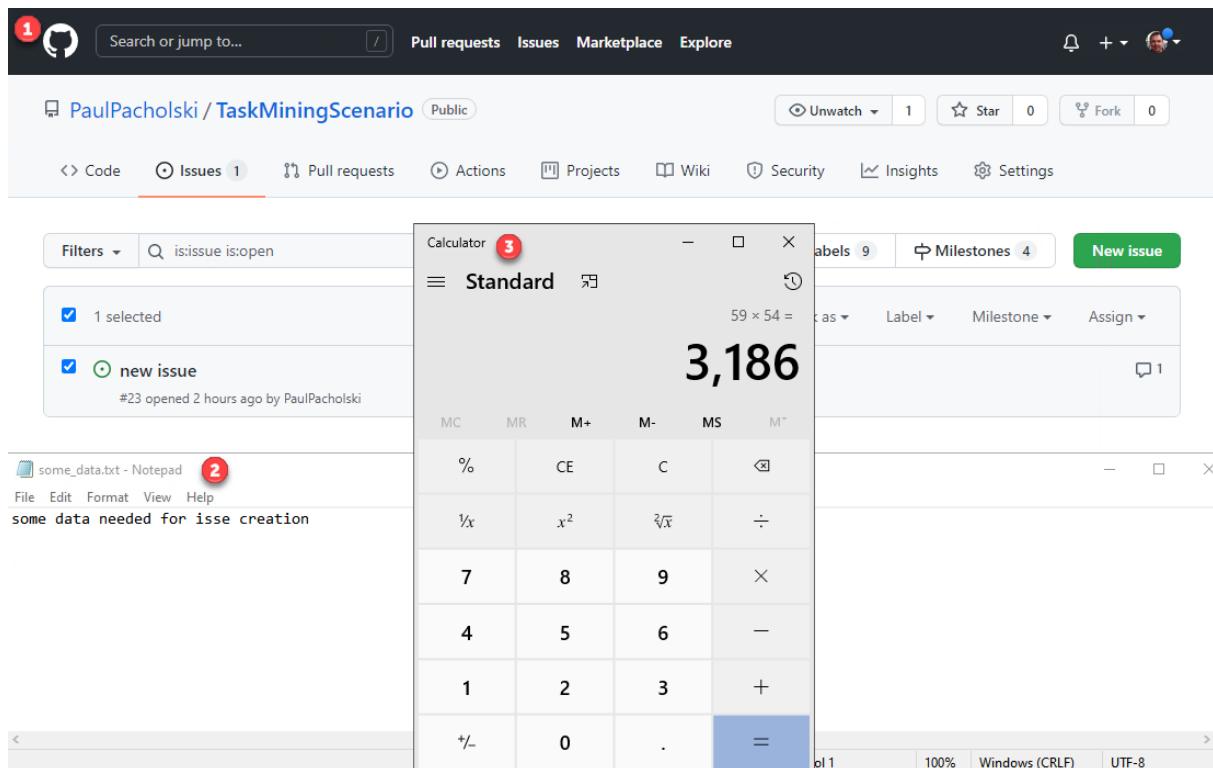


Figure 3. Desk Applications

1.3.2 Lab Objectives

In the [first](#) Task Mining lab series lab, you learned how to use Task Mining to analyze desktop activities to improve the GitHub Issue opening process.

In this second of the Task Mining lab series, you will learn how the Task Mining project you used in the first lab was built and configured!

The figure below shows all the steps needed to create a Task Mining project. In this lab, you will perform the actions with the checkmarks.

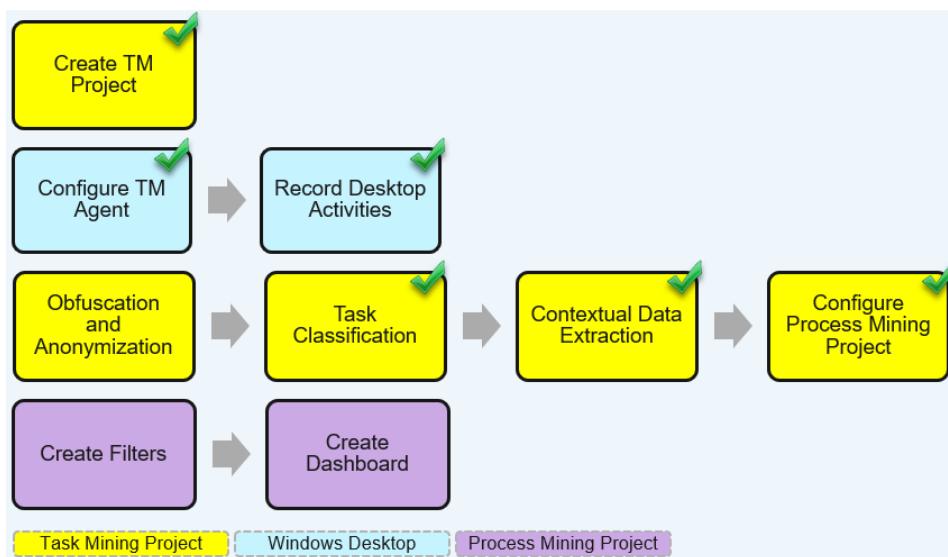


Figure 4. Steps to create and configure Task Mining project

2 Lab Instructions

2.1 Lab Setup

2.1.1 GitHub

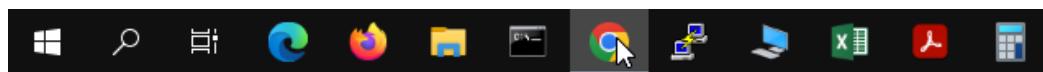
To complete this lab, you will need to get a GitHub user id for <https://www.github.com>

2.1.2 Setup IBM Process and Task Mining Environment

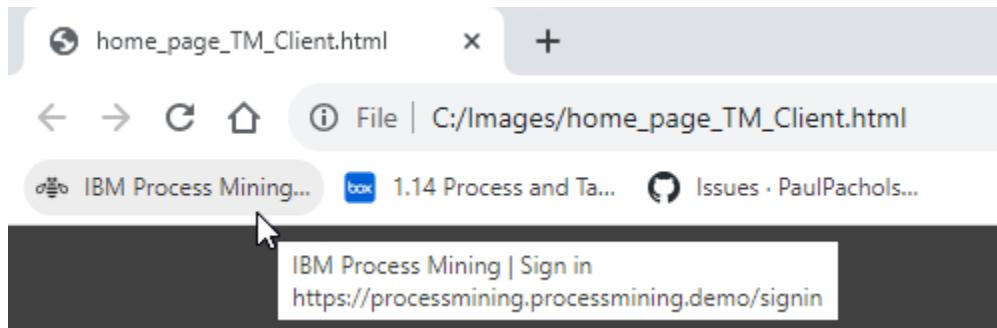
- _1. Download the [IBM Process Mining and Task Mining Environment](#) document.
- _2. Follow the instructions in **2.4.2 Accessing Task Mining Client VM Using RDP**

2.2 Create Task Mining Project

- _1. Switch to **IBM Task Mining Client VM** RDP desktop.
- _2. In the *IBM Task Mining Client VM*, open **Chrome Web Browser** if not already opened.

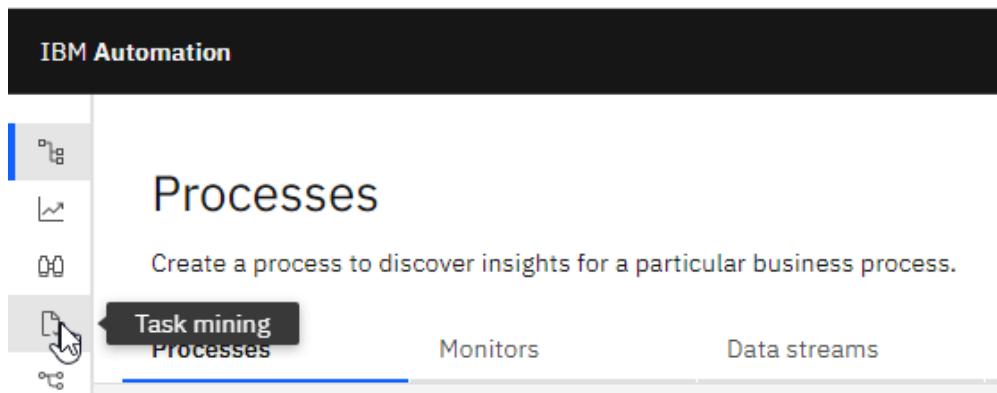


- _3. In Task Mining Window Client, click **IBM Task Mining...** bookmark.



- _4. Enter the credentials of **task.miner** and **IBMDemOs!** and click **Log in**.

- _5. Click the **Task mining** icon.



- _6. Click **Create task mining project +**



7. Enter the following values and click **Create project**

Entry	Value
Task mining project name	Create New GitHub Issues
Organization	Task Mining
Standalone task mining project	Yes
Enable Obfuscation & Anonymization	No Note if you would like to explore this feature, select Yes . Later on in this lab, to configure the Obfuscation and Anonymization, you can optionally follow the instructions in Appendix A. Obfuscation and Anonymization .

Create task mining project

Task mining project name
Create New GitHub Issues ✓

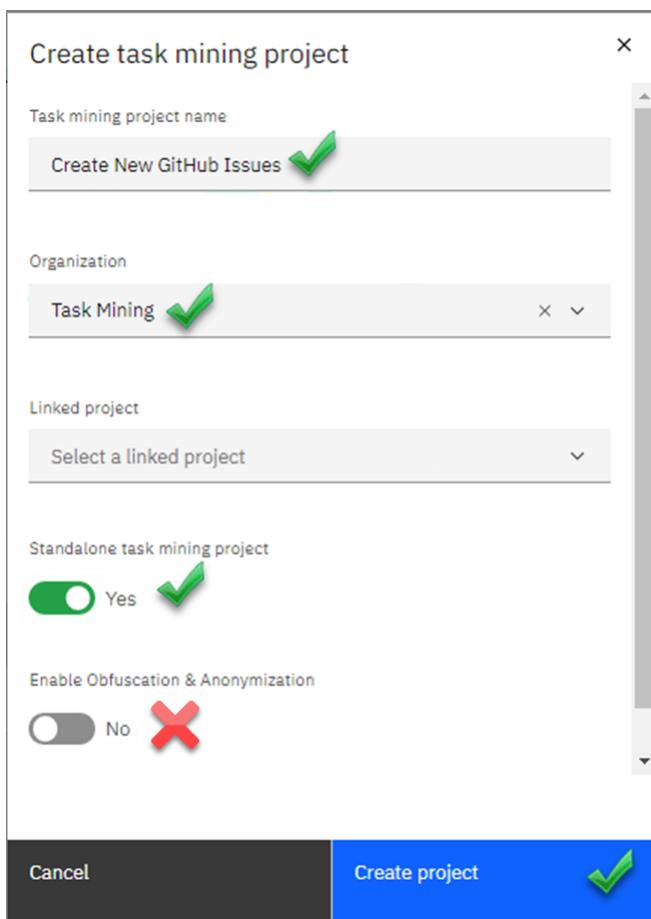
Organization
Task Mining ✓

Linked project
Select a linked project ▾

Standalone task mining project
Yes ✓

Enable Obfuscation & Anonymization
No ✗

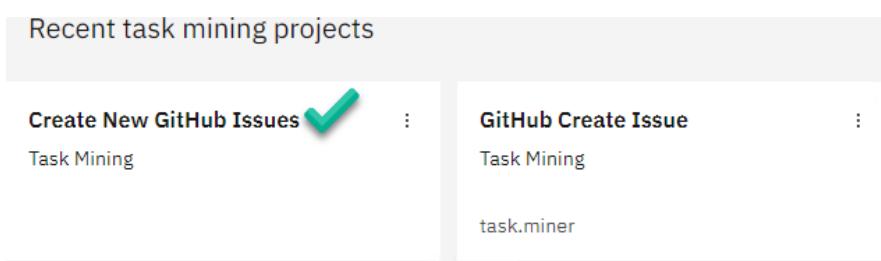
Cancel Create project ✓



You should now see the Project you just created.

Recent task mining projects

Create New GitHub Issues ✓	GitHub Create Issue
Task Mining	Task Mining
	task.miner

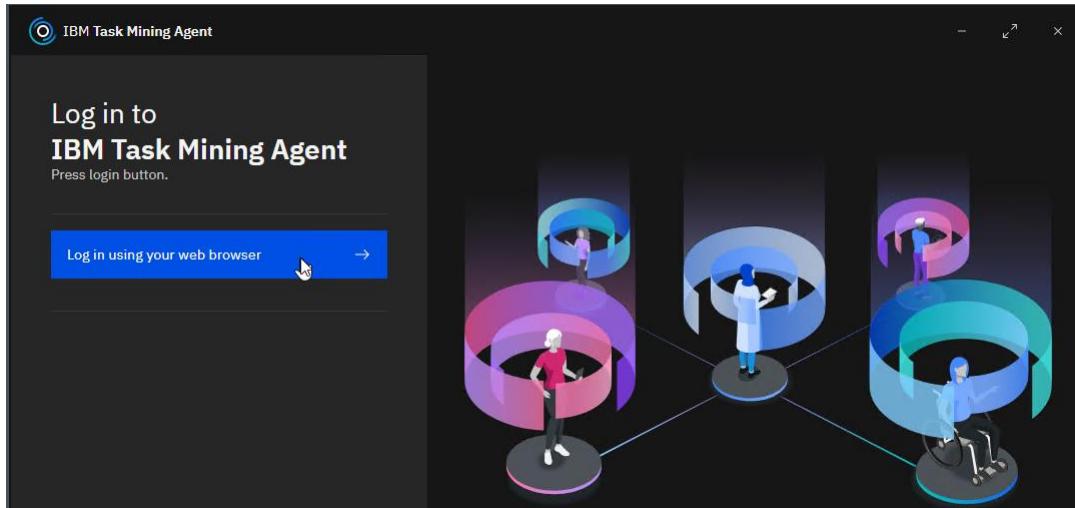


2.2.1 Start IBM Task Mining Agent

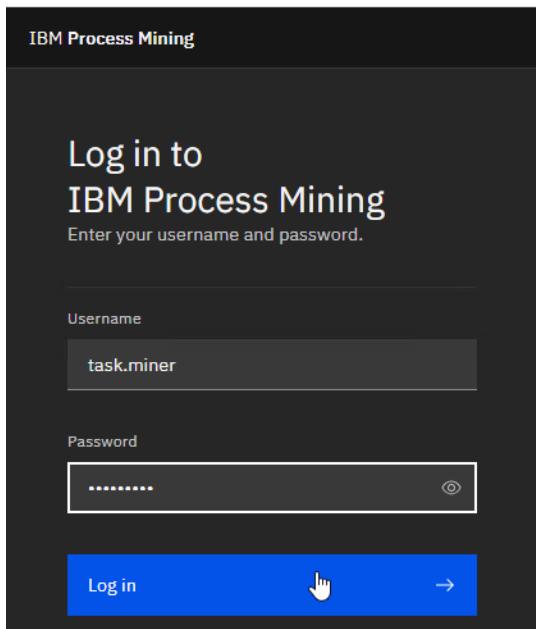
_1. On the desktop, double-click **IBM Task Mining Agent**.



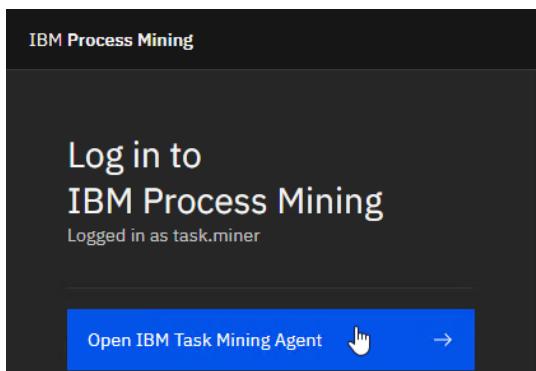
_2. Click **Log in using your web browser**.



_3. On the *Log in window*, enter the credentials of **task.miner / IBMDem0s!** and click **Log in**

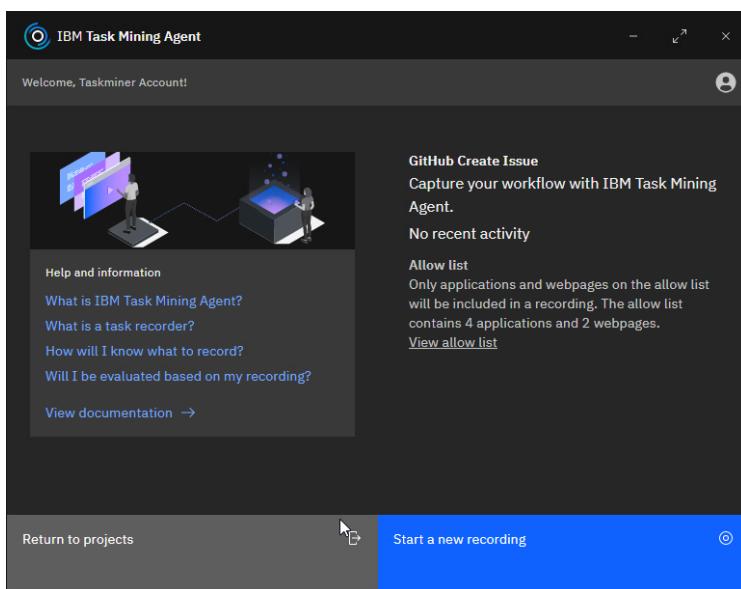


_4. Click **Open IBM Task Mining Agent**.



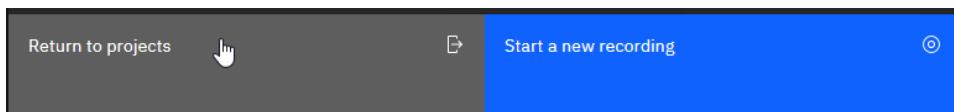
_5. **Close** web browser

You should now see the Task Mining Agent window.

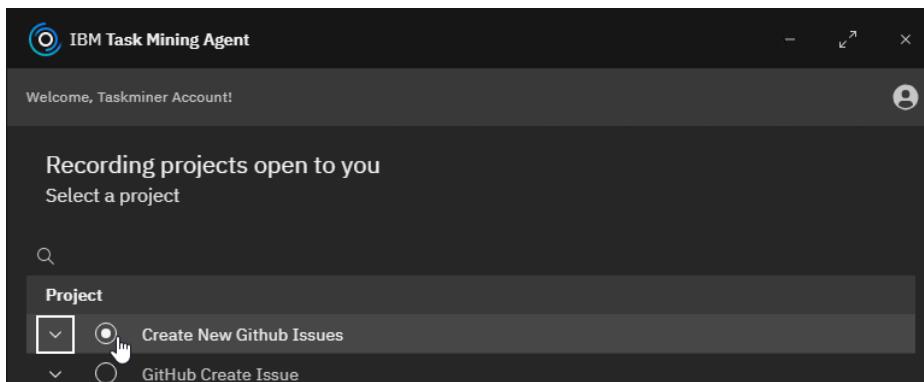


2.3 Configure IBM Task Mining Agent

_1. Switch to the IBM Task Mining Agent window and click **Return to projects**.

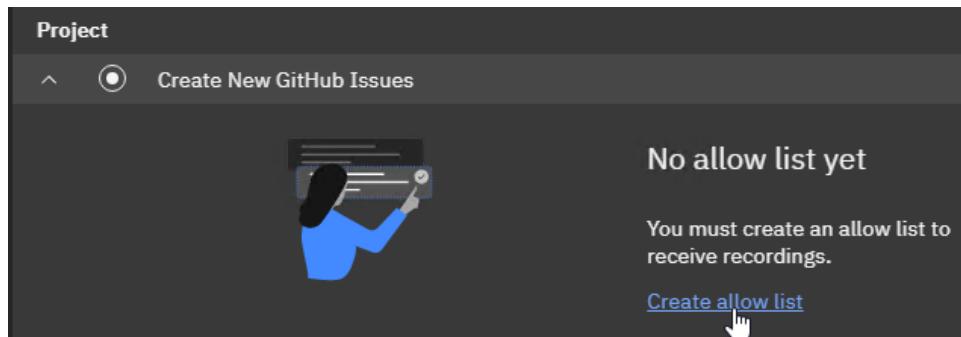


_2. Select **Create New GitHub Issues** project and click the **Project** dropdown.



_3. Click the **dropdown** on *Create New Github Issues*.

_4. Click **Create allow list**.



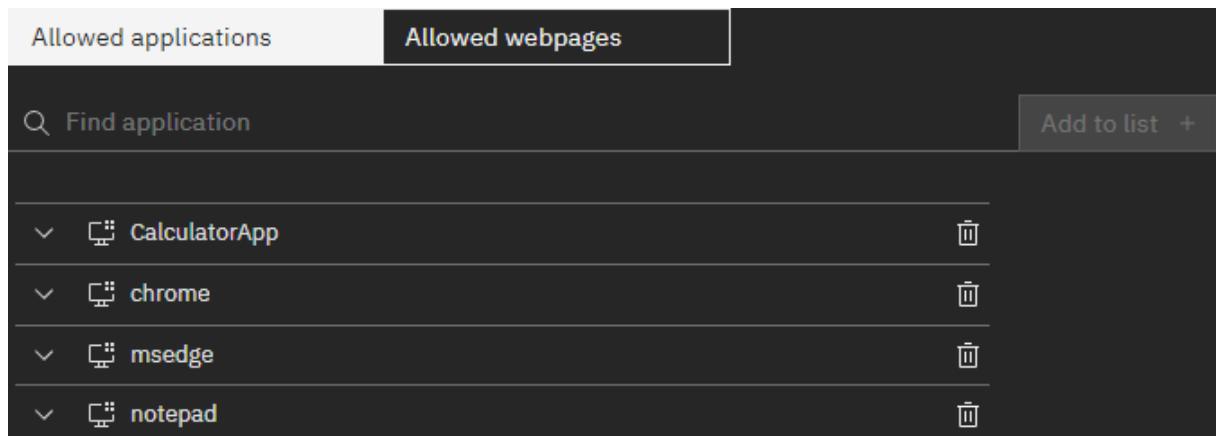
_5. Type **chrome** in the search box, wait for the chrome icon to appear, and then click **Add to list +**



You should now see the Chrome application added:



_6. Repeat the above steps to add: **msedge**, **notepad**, and **CalculatorApp**



_7. Click **Allowed webpages**

Create New GitHub Issues / Settings

Define the list of allowed applications and webpages that will be captured while recording this task. Any application or webpage not on this list will be ignored by the recorder.

Allowed applications and websites ⓘ ⚠

Allowed applications Allowed webpages

_8. Type **github.com** in the search box and then select **https://github.com**

github.com

ftp://github.com

ftps://github.com

http://github.com

https://github.com

_9. Click **Add to list +**

https://github.com

Add to list +

_10. Click **Apply Preferences to recorder**

Cancel

Apply preferences to recorder

2.4 Record Opening of a GitHub Issue Desktop Events

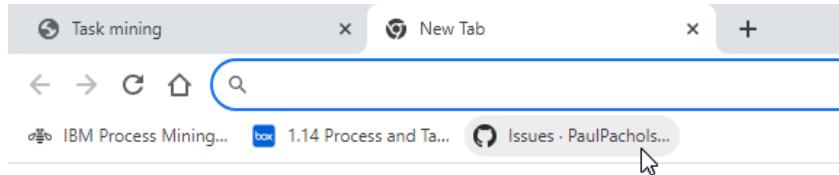
The Task Mining Agent installed on the Windows 10 desktop will record events generated by these three desktop applications required to pen GitHub Issues: Web browser (github.com), Notepad, and Calculator.

The IBM Task Mining Agent will send the events to the Task Mining project you created.

After you record the events, you will switch to TM Project to create an event processing model based on these recorded events.

2.4.1 Start GitHub Web application.

- _1. Switch to **Google Chrome** web browser.
- _2. Click **+** to open a new tab.
- _3. Click **Issues - PaulPachols...** bookmark.



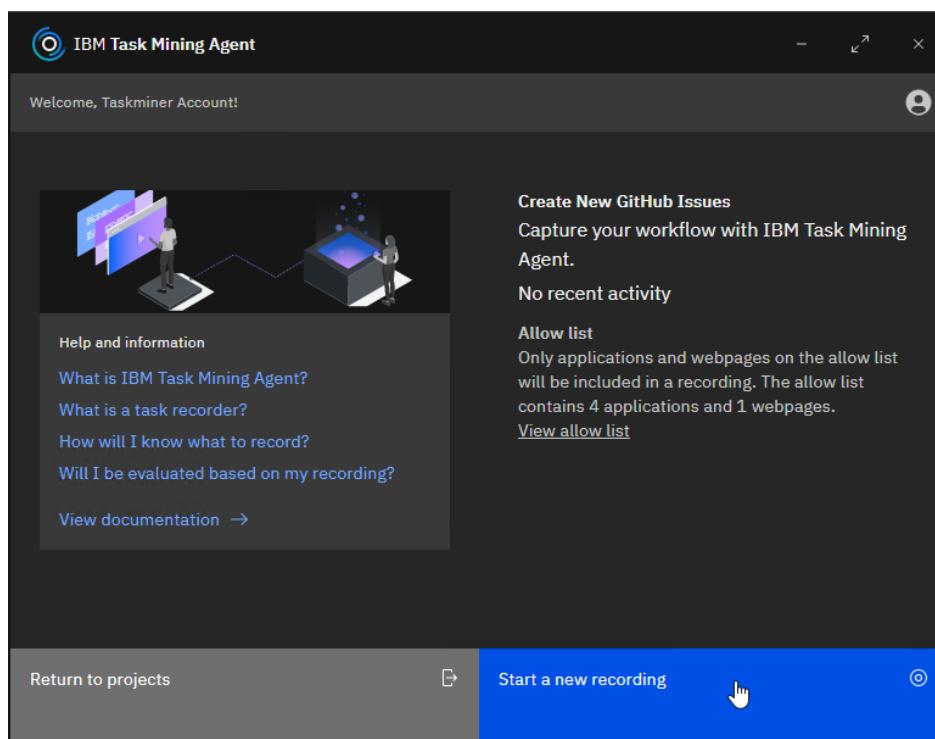
- _4. Click **Sign In** and sign in with your GitHub user id and password.



Note that you may see a lot of open issues in this GitHub project!

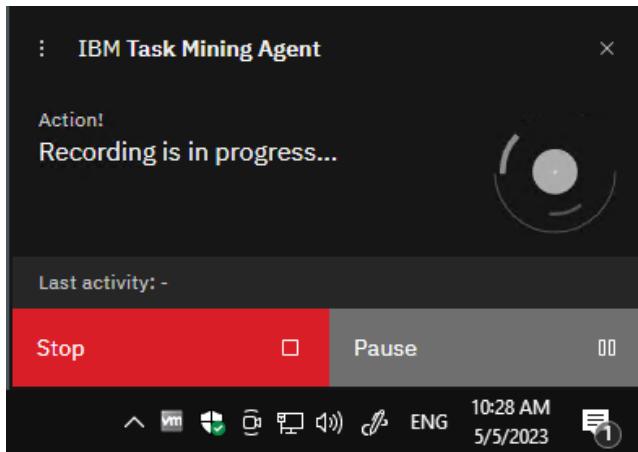
2.4.2 Record Desktop Events

- _1. Switch to the *IBM Task Mining Agent* window and click **Start a new recording**



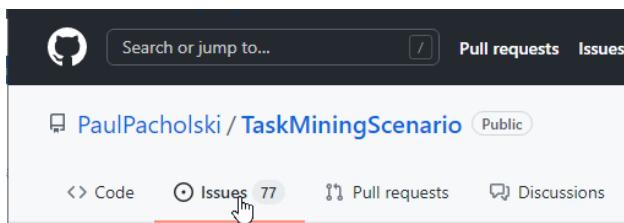
The IBM Task Mining Agent is ready to send all recorded desktop events to the [GitHub New Create Issue](#) TM project.

_2. Wait until you see the **Recording in progress...**



_5. Switch to **Chrome** Web browser

_6. Click **Issues** tab



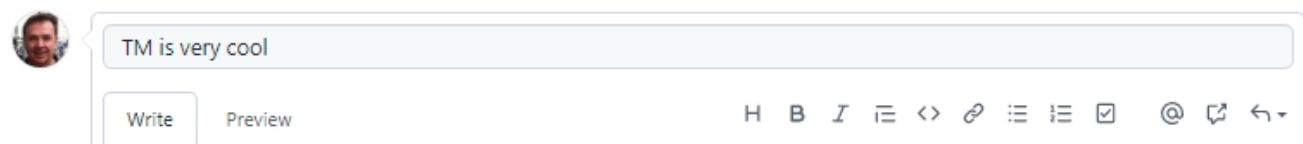
Note: TM Recorder is taking screenshots while you are recording. To ensure the quality and accuracy of the screenshots, please try not to rush when recording.

_7. Click the **New issue** button.

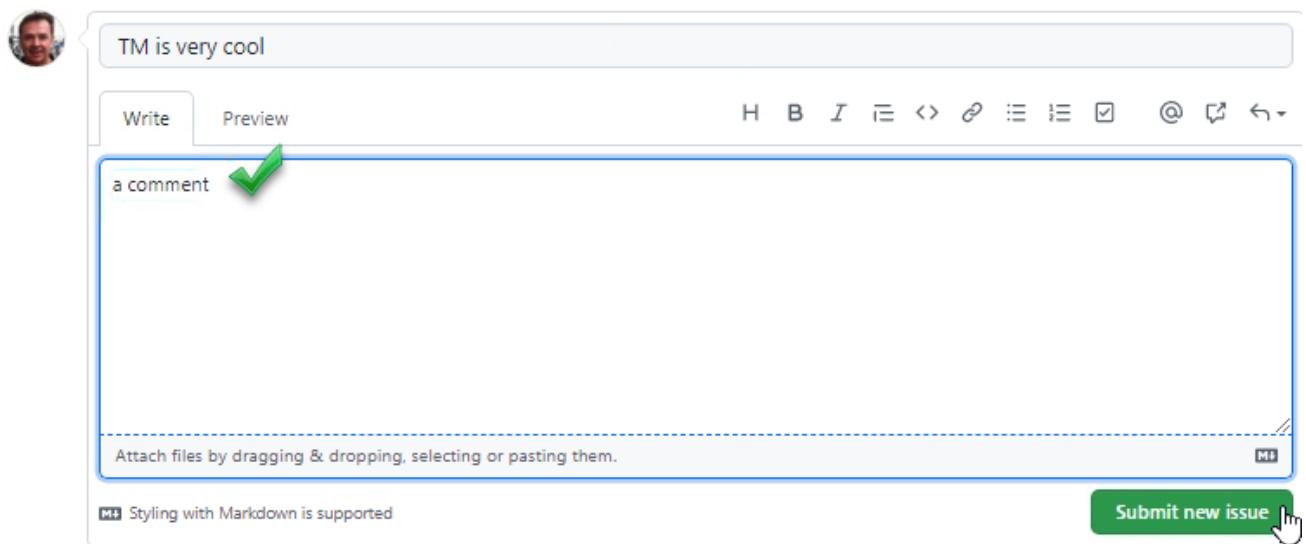


_8. For *Title* enter, <user-id> TM is very cool

Note: since you are using a shared environment when creating a new issue, please use your user name as a prefix in the issue title. For example, <user-id> TM is very cool



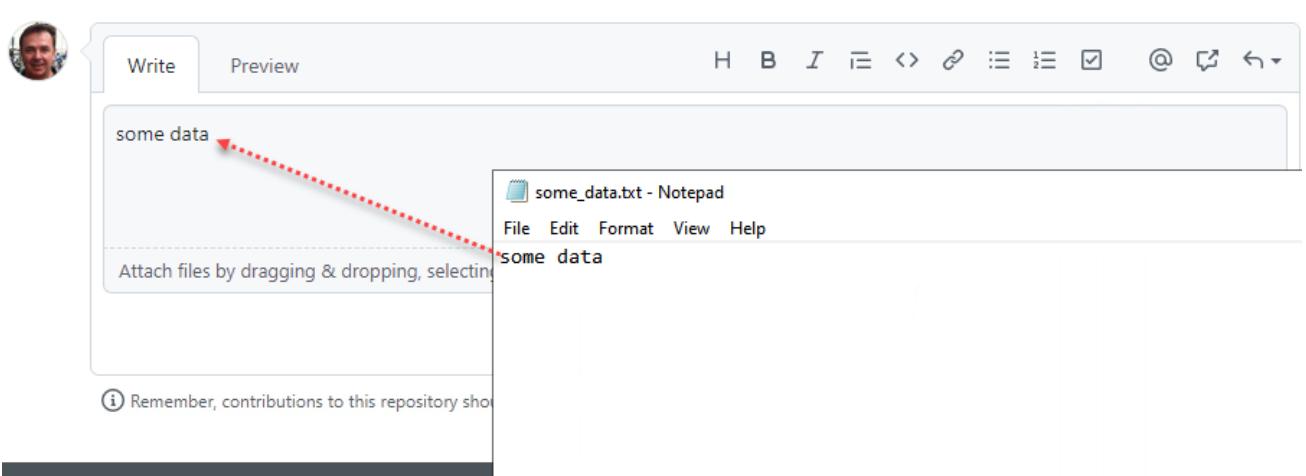
_9. In the comment area, enter a **comment** and click the **Submit new issue** button.



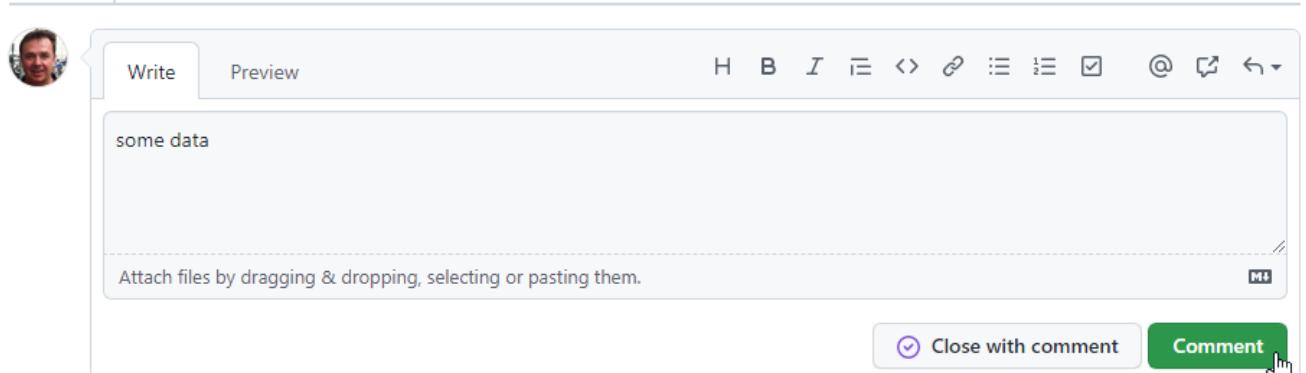
_10. Double-click **some_data...** document icon on the desktop



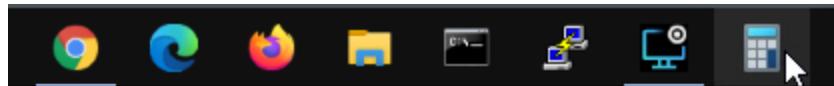
_11. Copy **some data** text from *Notepad* to the *Comment section* in GitHub



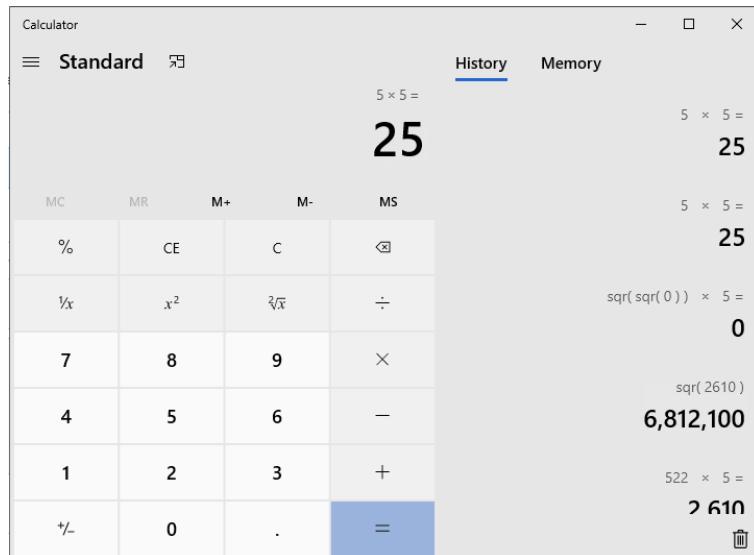
_12. Click **Comment** button



_13. From the Windows Task Bar, click **Calculator**



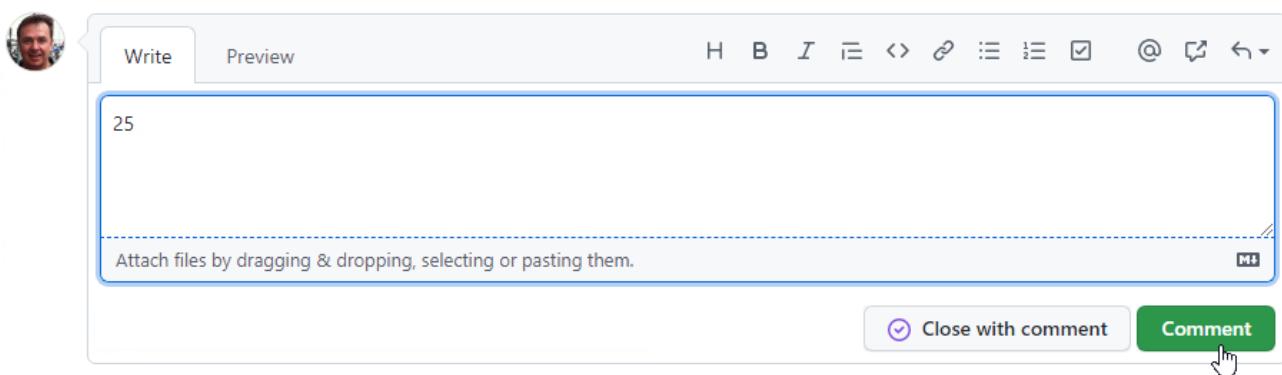
_14. Use the *Calculator app* and perform a calculation. For example $5 \times 5 =$



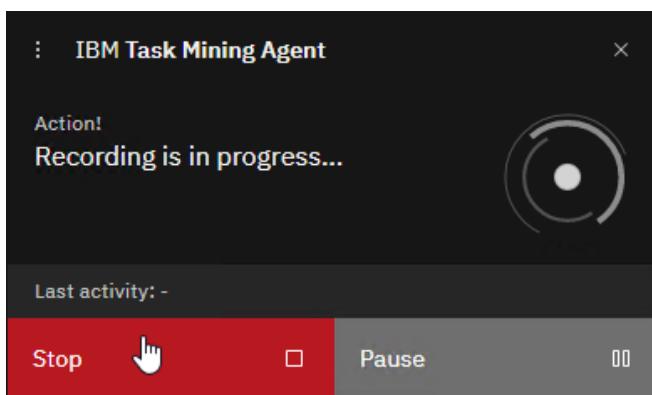
_15. Copy the **calculation** to the new GitHub comment section

A composite screenshot showing a GitHub issue comment and a floating calculator window. On the left, a comment from user "PaulPacholski" is shown, with the text "No description provided." In the bottom right corner of the comment area, there is a floating calculator window. The calculator shows the same history of calculations as the previous screenshot. A red dotted arrow points from the number "25" in the calculator's history to the "25" in the GitHub comment text area.

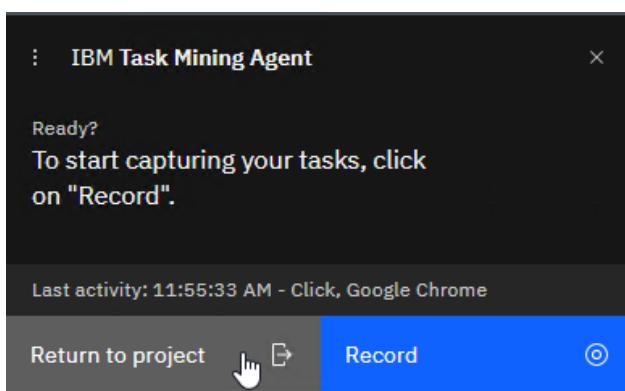
_16. Click **Comment** button



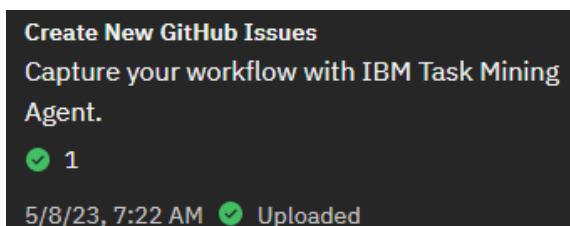
_17. In the *IBM Task Mining Agent* window, click **Stop**.



_18. In the *IBM Task Mining Agent* window, click **Return to project**.



You should now see a successful upload message.

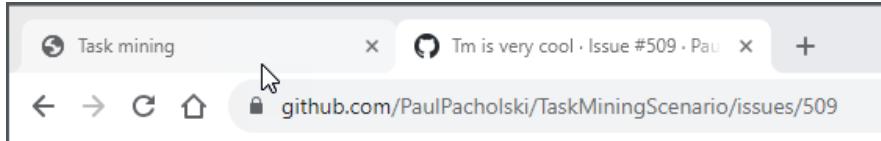


2.5 Perform Task Classification

Task Classification aims to identify and aggregate desktop events (clicks) that represent a specific and meaningful user activity, for example, adding a comment to an issue.

2.5.1 Open Task Mining Project

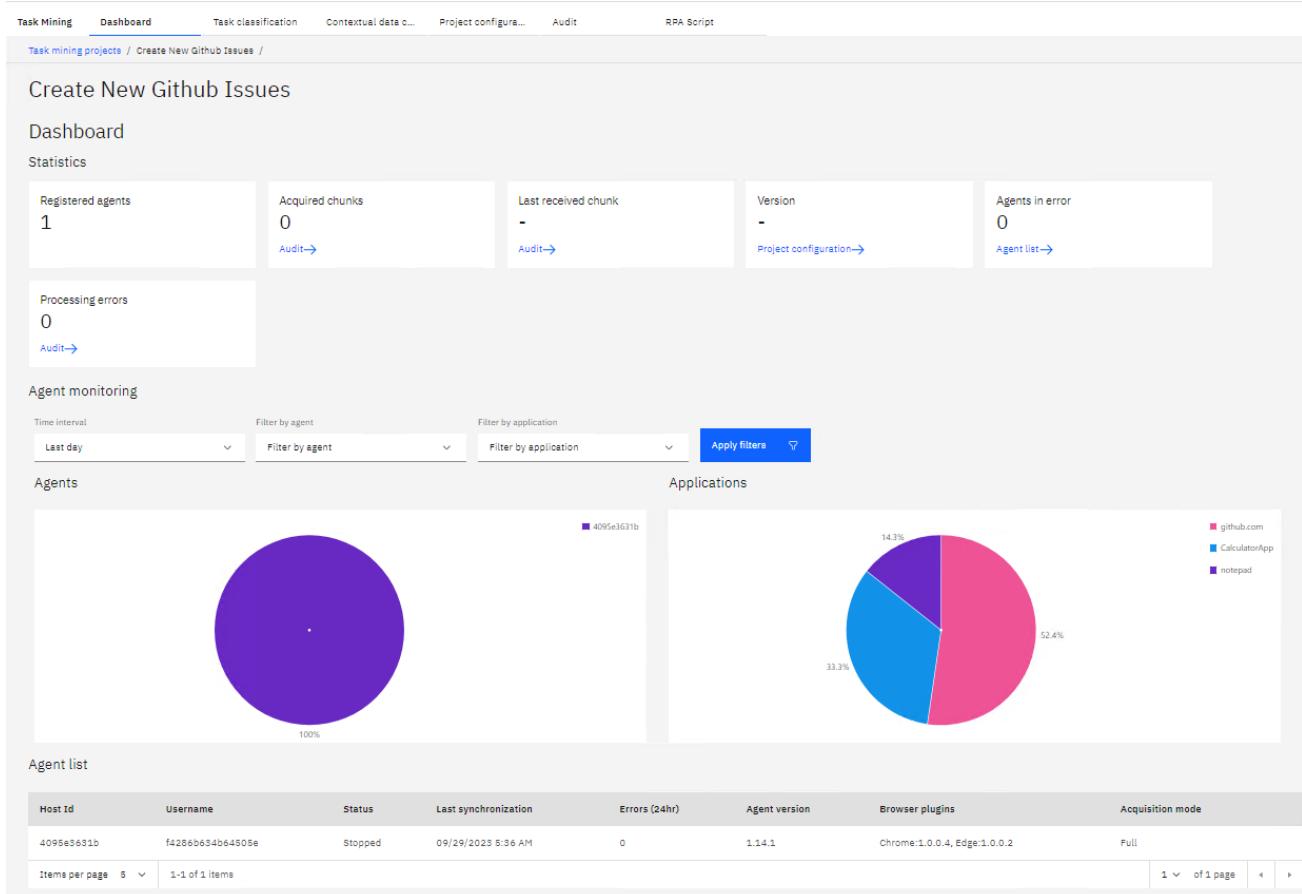
- _1. Switch back to **Chrome** Web Browser and **maximize** it.
- _2. Click the **Task mining** tab



- _3. **Maximize** the Chrome web browser.
- _4. Click **Create New GitHub Issues** project.



In the Dashboard view, you should now see the statistics of the recorded desktop activities.



2.5.2 Obfuscation & anonymization

If you selected Obfuscation and Anonymization when configuring **Appendix A. Obfuscation and Anonymization**

2.5.3 Task Classification

This page shows all the recorded events (tasks), representing the interactions that the user carries out on a Windows desktop in the applications/websites included in the monitoring list of the agent. The task

classification aims to identify only the events associated with Activities you want to show up in the Process model view.

- _1. Click the **Task classification** tab.

The screenshot shows the 'Task Mining' interface. At the top, there are tabs: 'Task Mining', 'Dashboard', 'Task classification' (which is highlighted with a blue border and a mouse cursor), and 'Contextual data cl...'. Below the tabs, a breadcrumb navigation bar shows 'Task mining projects / Create New GitHub Issue /'. A red vertical bar is on the left side of the screen. In the center, there's a 'Task classification' section with a sub-section 'Obfuscation & Anonymization'. A yellow warning box is displayed with the text: 'Warning: In the current project Obfuscation and Anonymization phase is required. You must confirm the completion of the privacy settings before enabling Task and Contextual data classification pages. Please be sure you have complete the privacy settings before confirming.' A 'Confirm' button is at the bottom right of the warning box.

- _2. For Items per page, select **25**

The screenshot shows a dropdown menu for 'Items per page' with options 5, 10, 15, and 25. The option '25' is highlighted with a blue background and a white border, and a mouse cursor is pointing at it. Above the dropdown, it says '1–5 of 8 items'.

2.5.3.1 Calculator Application

You will now select relevant events associated with the Calculator application. You will configure the event processor to create a new *Calculator* activity will be created whenever you click a button on the Windows Calculator App.

- _1. For *Filter by application*, select **CalculatorApp** and then click **Apply filters**

The screenshot shows the 'Task classification' interface with a 'Filter by application' section. A dropdown menu is open, showing 'CalculatorApp' with a checked checkbox and a green checkmark icon. Other options like 'github.com' and 'notepad' are also listed. To the right, there's a 'Filter by page' section and a 'Page & URL' table. The table has two rows: one for 'github.com' and one for 'Calculator'. At the bottom right, there's a blue 'Apply filters' button with a green checkmark icon and a cursor pointing at it.

_2. Find a row with **ClassName=Button** in the *Task name* column and click the **Show task properties** eye icon.

Frequency	Application	Page & URL	Task name	
2	CalculatorApp	Calculator		XAML[@Type=text][@AutomationId=button1][@Name=Five]
2	CalculatorApp	Calculator		XAML[@ClassName=Button]...

_3. Click the **Apply wildcard** icon.

Application: CalculatorApp Page name: Calculator

Selected element: XAML[@ClassName=Button][@Type=button][@AutomationId=num5Button][@Name=Five]

_4. In the *New value*, remove trailing filter elements, leaving only **XAML[@ClassName=Button][@Type=button]**, and then click the **Simulate** button.

Wildcard editing

Edit wildcard on selector

Here you can apply an aggregation rule on the field in order to group different elements into a unique one. You can replace a variable portion of the string by deleting it, this action creates a placeholder that you can edit. In the case of existing task names in the grouped elements, the name of this element will be used for the entire group. Simulate the rule parts is mandatory to confirm the action.

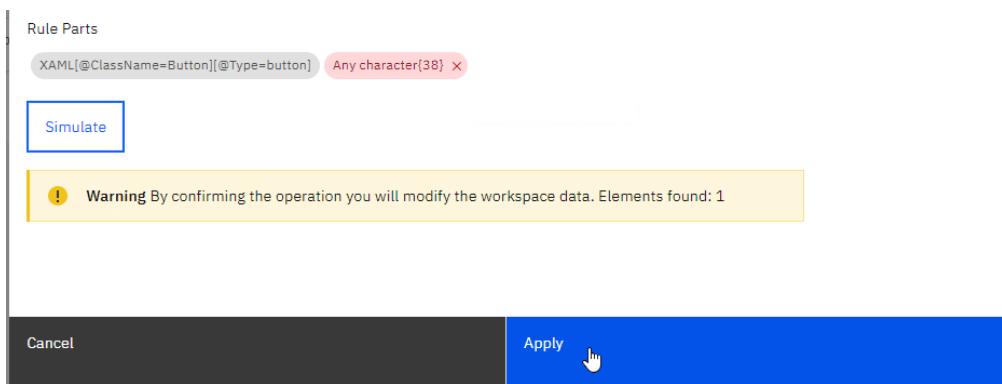
Original value: XAML[@ClassName=Button][@Type=button][@AutomationId=equalButton][@Name=Equals]

New value: XAML[@ClassName=Button][@Type=button]

Rule Parts: XAML[@ClassName=Button][@Type=button] [@AutomationId=equalButton][@Name=Equals]

Cancel Apply

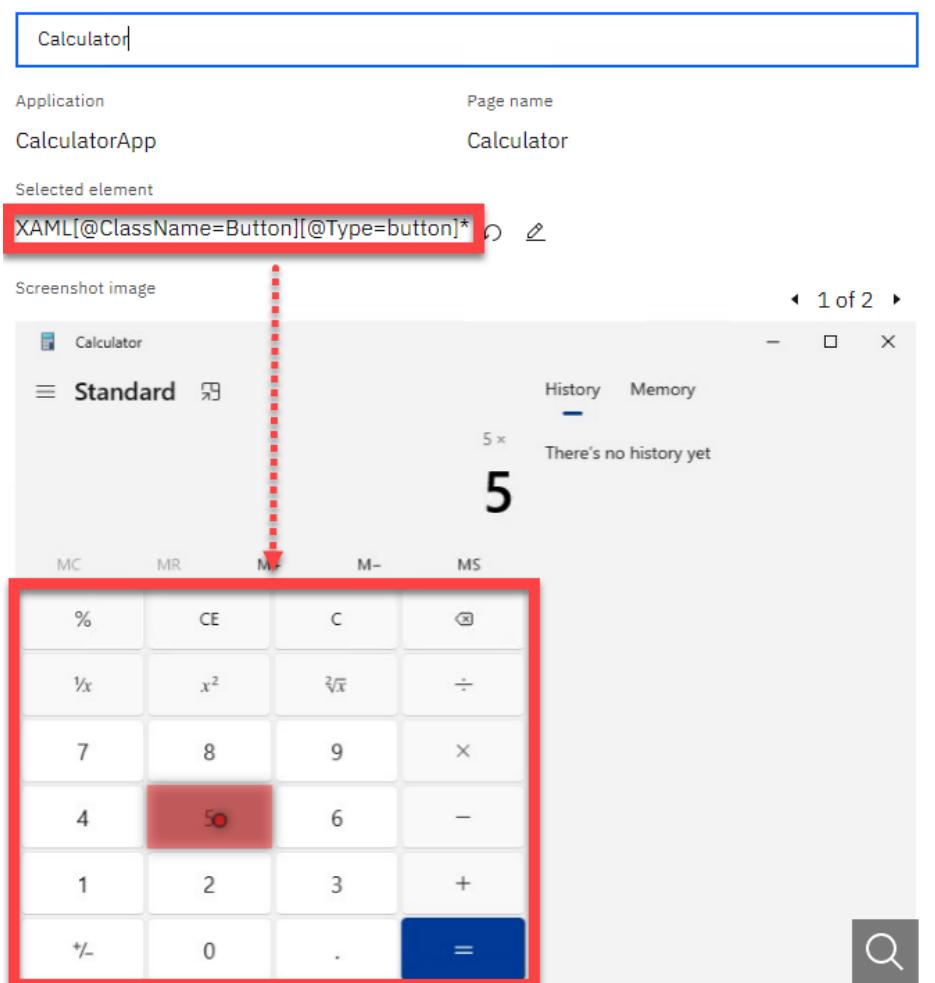
5. Click **Apply**



6. For the *Task name*, enter **Calculator**.

The screenshot shows the 'Task name' input field containing 'Calculator', which is highlighted with a blue border. Above the input field, the 'Application' section shows 'CalculatorApp'. To the right, the 'Page name' section shows 'Calculator'. Below the input field, the 'Selected element' section shows the XAML path 'XAML[@ClassName=Button][@Type=button]*' followed by a circled 'OK' button and a magnifying glass icon.

_7. Note that a new Calculator activity will be created when any button in the CalculatorApp is clicked.



2.5.3.2 Notepad Application

You will now select relevant events associated with the Notepad application. You will configure the event processor to create a new *Notepad Handling* activity will be created whenever you click a button on the Windows Notepad App.

_1. For *Filter by application*, deselect **CalculatorApp** and select **notepad**, and then click **Apply filters**.

The screenshot shows the 'Event Processor' interface. At the top, there is a search bar with the text 'notepad' and a 'Filter by page' dropdown. On the right, there is a blue 'Apply filters' button with a hand cursor icon. Below the search bar, there is a table with three columns: 'Page & URL', 'Task name', and 'Automation'. The first row has an unchecked checkbox next to 'CalculatorApp'. The second row has an unchecked checkbox next to 'github.com'. The third row has a checked checkbox with a green checkmark next to 'notepad'. The 'notepad' row is highlighted with a light gray background.

_2. Find a row with **some_data.txt - Notepad** in the *Page & Url* column and click the **Apply wildcard** pencil icon.

Frequency	Application	Page & URL	Apply wildcard
2	notepad	some_data.txt - Notepad	

_3. In the *New value*, remove leading filter elements, leaving only **- Notepad**, and then click the **Simulate** button.

Wildcard editing

Edit wildcard on page title

Here you can apply an aggregation rule on the field in order to group different elements into a unique one. You can replace a variable portion of the string by deleting it, this action creates a placeholder that you can edit. In the case of existing task names in the grouped elements, the name of this element will be used for the entire group. Simulate the rule parts is mandatory to confirm the action.

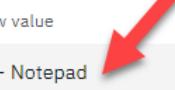
Original value
some_data.txt - Notepad

New value
- Notepad

Rule Parts
some_data.txt X **- Notepad**

Simulate

Cancel **Apply**



_4. Click **Apply**

Rule Parts
Any character{14} X **- Notepad**

Simulate

! **Warning** By confirming the operation you will modify the workspace data. Elements found: 1

Cancel **Apply**

Note that this filter modification will allow us to capture events from any Notepad window, no matter what file is being edited.

_5. Click the **Show task properties eye icon** on the row where you changed the *Page & Url Filter*.

A screenshot of a table titled 'Page & Url'. It has three columns: 'Page & Url' containing '- Notepad', 'Task name' containing 'Win32[@ClassName>Edit][@Type=document...]', and a header 'Show task properties' with a button. The 'Show task properties' button is highlighted with a red box.

_6. For the *Task name*, enter **Notepad Handling**.

A screenshot of the 'Task properties' dialog. It shows 'Frequency index' as 1 and 'Application' as 'notepad'. Under 'Task name', the value 'Notepad Handling' is entered and highlighted with a blue border.

_7. Note that, every interaction with the desktop Windows Notepad application will generate a new *Notepad Handling* activity.

A screenshot of the 'Task properties' dialog. It shows 'Frequency index' as 2 and 'Application' as 'notepad'. Under 'Task name', the value 'Notepad Handling' is entered. Below it, 'Page name' is set to '- Notepad'. A 'Selected element' field contains the XPath expression 'Win32[@ClassName>Edit][@Type=document][@AutomationId=15][@Name=Text Editor]'. A red dotted arrow points from this field to a screenshot of a Windows Notepad window. The screenshot shows a redacted text area with a search bar at the bottom.

2.5.3.3 GitHub Web Application Activities

You will now select relevant events associated with the GitHub Web application. Next, you will configure the event processor to create the following GitHub Web application activities:

The figure consists of two side-by-side screenshots of the GitHub web interface. The left screenshot shows the 'Write' tab of a new issue page. It features a text area labeled 'Issue Title' (2) containing 'issue body' (1). Below the text area is a file upload instruction: 'Attach files by dragging & dropping, selecting or pasting them.' (3). At the bottom right are 'Styling with Markdown is supported' and a green 'Submit new issue' button. The right screenshot shows the 'Write' tab of a comment page. It features a text area labeled 'Comment' (4) containing 'Comment'. Below it is the same file upload instruction (3). At the bottom right are 'Close with comment' and a green 'Comment' button (5).

- 1. GH_Issue_Body_Handling
- 2. GH_Issue_Title_Handling
- 3. GH_Submit_New_Issue_Btn
- 4. GH_Issue_Comment_Handling
- 5. GH_Comment_On_Issue_Btn

2.5.3.3.1 Body Handling Activity

1. For **Filter by application**, deselect **notepad** and, select **github.com**, and then click **Apply filters**.

A screenshot of a 'Filter by application' dialog. On the left, there's a list of applications: 'notepad' (unchecked), 'github.com' (checked with a green checkmark), 'CalculatorApp' (unchecked), and 'notepad' again (unchecked). On the right, there's a table with columns 'Application' and 'Page & URL'. It shows two rows: one for 'notepad' with '*- Notepad' and another for 'notepad' with 'some_data.txt - Notepad'. At the top right of the dialog is a blue 'Apply filters' button with a cursor icon pointing to it.

There are several pages associated with github.com Issues handling. We will now filter out pages not related to the New Issues page.

_2. For *Filter by page*, select **New Issue – PaulPach...** and then click **Apply filters**

The screenshot shows the 'Filter by page' section of a user interface. A dropdown menu is open, displaying several options: 'New Issue - PaulPach...', 'TM is very cool · Issue...', and 'TM is very cool · Issue...'. The first option is checked and highlighted with a green checkmark. To the right of the dropdown, there is a blue button labeled 'Apply filters' with a hand cursor icon over it. Below the dropdown, there is a table titled 'Page & URL' with three rows, each containing a link to a GitHub issue page.

You should see only the events generated on the New Issues web page.

_3. Find a row with `//textarea[@id='issue_body']` in the *Task name* column and click the **Apply wildcard** pencil icon on the **second row** in the *Page & Url* column

Frequency	Application	Page & Url	Task name
3	github.com	New Issue · PaulPacholski/TaskMiningScenario · Issue #418 · PaulPacholski/TaskMiningScenario · GitHub	//input[@id='issue_title']
1	github.com	New Issue · PaulPacholski/TaskMiningScenario · Issue #418 · PaulPacholski/TaskMiningScenario · GitHub	//textarea[@id='issue_body']

_4. In *New value*, remove **new** and then click the **Simulate** button.

The screenshot shows a 'Wildcard editing' dialog box. At the top, it says 'Edit wildcard on page URL'. Below that, there is a text area with placeholder text: 'Here you can apply an aggregation rule on the field in order to group different elements into a unique one. You can replace a variable portion of the string by deleting it, this action creates a placeholder that you can edit. In the case of existing task names in the grouped elements, the name of this element will be used for the entire group. Simulate the rule parts is mandatory to confirm the action.' Underneath, there are sections for 'Original value' (showing 'https://github.com/PaulPacholski/TaskMiningScenario/issues/new') and 'New value' (a text input field containing 'https://github.com/PaulPacholski/TaskMiningScenario/issues/'). Below these is a 'Rule Parts' section with a list item 'https://github.com/PaulPacholski/TaskMiningScenario/issues/' followed by a 'new' placeholder. At the bottom left is a 'Simulate' button with a hand cursor icon over it. At the very bottom of the dialog are 'Cancel' and 'Apply' buttons.

_5. Click **Apply**

The screenshot shows the 'Rule Parts' section of a software interface. At the top, there are two input fields: one containing a URL and another containing a regular expression. Below these is a 'Simulate' button. A yellow warning box contains the text: 'Warning By confirming the operation you will modify the workspace data. Elements found: 2'. At the bottom, there are 'Cancel' and 'Apply' buttons. The 'Apply' button is highlighted with a blue background and has a hand cursor icon over it.

_6. Click the **Show task properties eye icon** on the row where you changed the *Page & Url Filter*.

Frequency	Application	Page & Url	Task name
3	github.com	New Issue · PaulPacholski/Task... ↲ https://github.com/PaulPachols... ↲ ↲	//input[@id='issue_title']
1	github.com	New Issue · PaulPacholski/Tas... ↲ https://github.com/PaulPachol... ↲ ↲	//textarea[@id='issue_bo...']

_7. For the *Task name*, enter **GH_Issue_Body_Handling**

The screenshot shows the 'Task properties' dialog. It includes fields for 'Frequency index' (set to 1) and 'Application' (set to 'github.com'). The 'Task name' field is highlighted with a blue border and contains the text 'GH_Issue_Body_Handling'. There is a close button 'x' at the top right of the dialog.

_8. Note that all clicks inside the body section of this page will contribute to *GH_Issue_Body_Handling* Activity.

Task properties

Frequency index Application
1 github.com

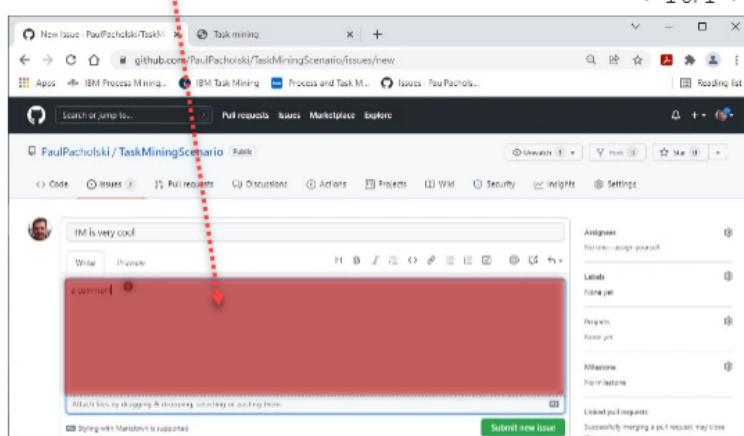
Task name
GH_Issue_Body_Handling

Page name
New Issue · PaulPacholski/TaskMiningScenario

URL
https://github.com/PaulPacholski/TaskMiningScenario/issues/*

Selected element
`//textarea[@id='issue_body']`

Screenshot image



2.5.3.3.2 Title Handling Activity

_1. Find a row with `//textarea[@id='issue_title']` in the *Task name* column and click the **Show task properties** eye icon.

Frequency	Application	Page & Url	Task name	Show task properties
3	github.com	New Issue · PaulPacholski/Task... https://github.com/PaulPacholski/TaskMiningScenario/issues/*	<code>//input[@id='issue_title']</code>	

_2. For the Task name, enter **GH_Issue_Title_Handling**

Task properties

Frequency index Application
3 github.com

Task name
GH_Issue_Title_Handling

_3. Note that specifying a GitHub Issue title will generate *GH_Issue_Title_Handling* Activity.

Task properties

Frequency index
3

Application
github.com

Task name:

GH_Issue_Title_Handling

Page name

New Issue · PaulPacholski/TaskMiningScenario

URL

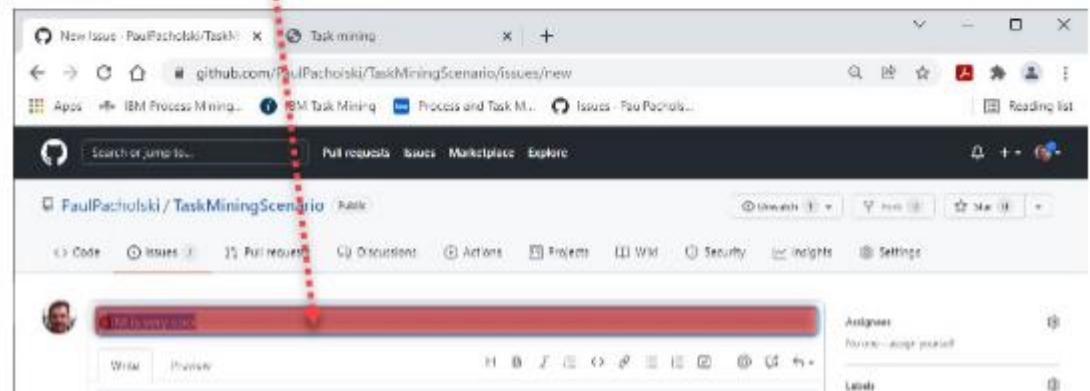
https://github.com/PaulPacholski/TaskMiningScenario/issues/*

Selected element

//input[@id='issue_title']

Screenshot image

1 of 3



2.5.3.3.3 Submit New Issue Activity

_1. Find a row with //form[@id='new_issue']/div/div[1]/div/div[1]/div/div[2]/button in the Task name column and click the Show task properties eye icon

Note, hover over the task name to see the fully expanded name

1	github.com	New Issue · PaulPacholski/Task...	//form[@id='new_issue']/d...	
1	github.com	New Issue · PaulPacholski/Tas...	//form[@id='new_issue']/...	

_2. For the *Task name*, enter **GH_Submit_New_Issue_Btn**

Task properties

Frequency index Application
1 github.com

Task name
GH_Submit_New_Issue_Btn

_3. Note that clicking the *Submit new issue* button will generate a new *GH_Submit_New_Issue_Btn* Activity.

Task properties

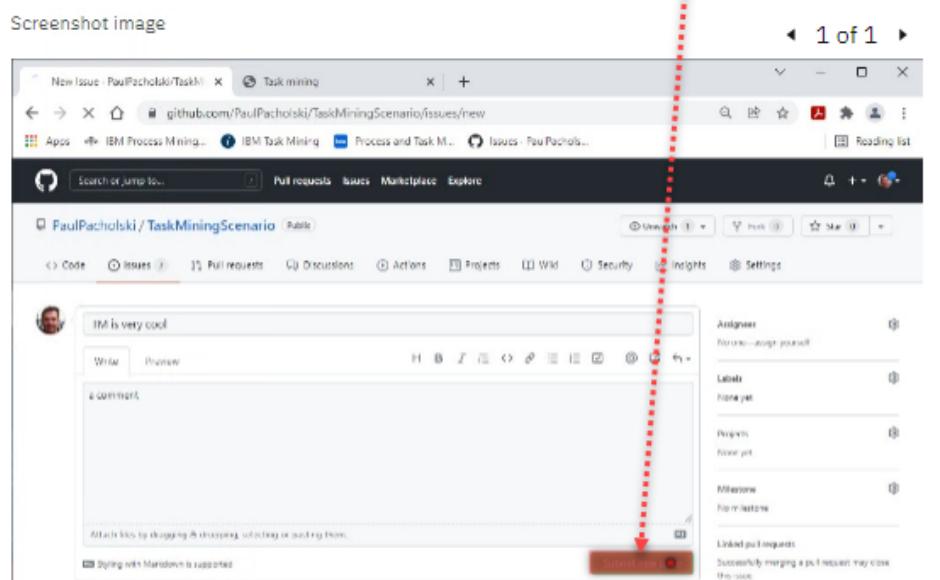
Frequency index Application
1 github.com

Task name
GH_Submit_New_Issue_Btn

Page name
[New Issue · PaulPacholski/TaskMiningScenario](#)

URL
https://github.com/PaulPacholski/TaskMiningScenario/issues/*

Selected element
`//form[@id='new_issue']/div/div/div[1]/div/div[1]/div/div[2]/button`



2.5.3.3.4 Issue Comment Handling

There are several pages associated with [github.com](#) Issues handling. We will now filter out activities not associated with the *New Issues* page.

_1. For *Filter by page*, deselect New Issue - PaulPach..., select **TM is very cool - Issue...** and then click **Apply filters**.

Frequency	Application	Page & Url	Task name
3	github.com	TM is very cool · Issue #39 · PaulPacholski... https://github.com/PaulPachol...	/Task... chols... GH_Issue_Title_Handling

You should now see only the events generated on the open issues web page.

We must apply a wild card to the page filter since we want to receive events for any title, not just the "TM is very cool" issue.

_2. Find a row with `//textarea[@id='new_com...]` in the *Task name* column and click the **Apply wildcard** pencil icon on the **first row** in the *Page & Url* column

Frequency	Application	Page & Url	Task name
2	github.com	TM is very cool · Issue #39 · PaulPacholski... https://github.com/PaulPachol...	//textarea[@id='new_com...']

_3. In **New value** remove: **TM is very cool**, and the **issue number** (i.e., 134)

_4. “**TM is very cool · Issue #134 · PaulPacholski/TaskMiningScenario**”

becomes

“**· Issue # · PaulPacholski/TaskMiningScenario**”

The screenshot shows the 'Wildcard editing' dialog box. At the top, it says 'Edit wildcard on page title'. Below that is a descriptive text block. Under 'Original value', the text 'TM is very cool · Issue #134 · PaulPacholski/TaskMiningScenario' is shown. Under 'New value', the text '· Issue # · PaulPacholski/TaskMiningScenario' is entered. A 'Rule Parts' section shows three tokens: 'Any character{16}' (with an 'X' button), '- Issue #' (with an 'X' button), and '134' (with an 'X' button). Below this is a 'Simulate' button with a hand cursor icon pointing at it. At the bottom, there are 'Cancel' and 'Apply' buttons.

_5. Click the **Simulate** button.

_6. Click **Appy**

New value
· Issue # · PaulPacholski/TaskMiningScenario

Rule Parts
Any character{16} X · Issue # Any character{3} X · PaulPacholski/TaskMiningScenario

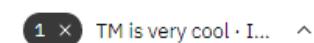
Simulate

! Warning By confirming the operation you will modify the workspace data. Elements found: 1

Cancel Apply

Since we changed the page name from hardcoded to filtered, we must reset the page filters.

_7. Click x to remove **TM is very cool – I...** filter



_8. Click x to remove the **github.com** filter



_9. Re-apply **github.com** and ***- Issue # - Pau...** filters, and then click **Appy filters**

Filter by application Filter by page

1 X github.com ✓ 1 X * · Issue #* · Pau... ✓

Apply filters

_10. Find a row with **//textarea[@id='new_com...** in the **Task name** column and click the **Show task properties** eye icon.

Frequency	Application	Page & Url	Task name	Show task properties
2	github.com	* · Issue #* · PaulPacholski/Ta... ↴ ↵ https://github.com/PaulPachol... ↴ ↵	//textarea[@id='new_com...	⊖ ⓘ

_11. For the **Task name**, enter **GH_Issue_Comment_Handling**

Task properties

Frequency index	Application
2	github.com
Task name	<input type="text" value="GH_Issue_Comment_Handling"/>

_12. Note that all clicks inside the body section of this page will generate *GH_Issue_Comment_Handling* Activity.

Task properties

Frequency index Application
2 github.com

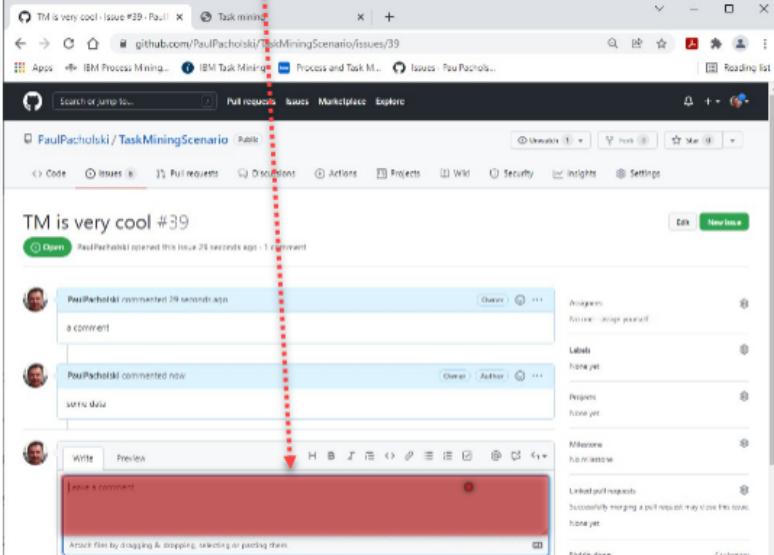
Task name
GH_Issue_Comment_Handling

Page name
* · Issue #* · PaulPacholski/TaskMiningScenario

URL
https://github.com/PaulPacholski/TaskMiningScenario/issues/*

Selected element
`//textarea[@id='new_comment_field']`

Screenshot image



The screenshot shows a GitHub issue page for issue #39. The URL is <https://github.com/PaulPacholski/TaskMiningScenario/issues/39>. The page displays two comments from the user 'PaulPacholski'. At the bottom, there is a red-bordered text area labeled 'Write a comment' with a placeholder 'Type a comment...'. A red dashed arrow points from the 'Selected element' text above to this 'Write a comment' field.

2.5.3.3.5 Issue Comment Button

_1. Find a row with `//div[@id='partial-new-co...'` in the *Task name* column and click the **Show task properties** eye icon.

2	github.com	* · Issue #* · PaulPacholski/Tas... https://github.com/PaulPacholski/TaskMiningScenario/issues/39	<code>//div[@id='partial-new-co...</code>	Show task properties
2	github.com	* · Issue #* · PaulPacholski/Ta... https://github.com/PaulPacholski/TaskMiningScenario/issues/39	<code>//div[@id='partial-new-co...</code>	

_2. For the *Task name*, enter **GH_Comment_On_Issue_Btn**

Task properties

Frequency index Application
2 github.com

Task name
GH_Comment_On_Issue_Btn

_3. Note that all clicks inside the body section of this page will create a *GH_Comment_On_Issue_Btn* Activity.

Task properties x

Frequency index Application
2 github.com

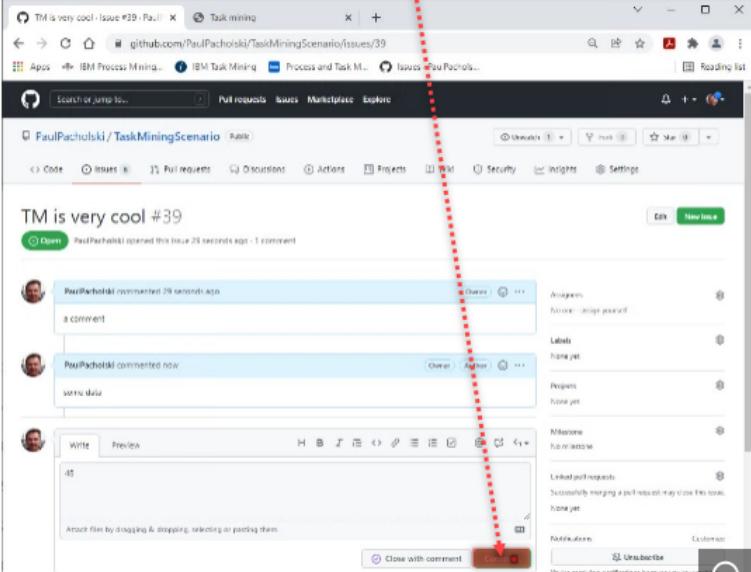
Task name
`GH_Comment_On_Issue_Btn`

Page name
`* · Issue #* · PaulPacholski/TaskMiningScenario`

URL
`https://github.com/PaulPacholski/TaskMiningScenario/issues/*`

Selected element
`//div[@id='partial-new-comment-form-actions']/div/div[2]/button`

Screenshot image ◀ 1 of 2 ▶



The screenshot shows a GitHub issue creation dialog for issue #39. A red dashed line highlights the 'Close with comment' button at the bottom of the form. The dialog includes fields for title ('TM is very cool #39'), description ('a comment'), and a rich text editor. To the right, there are sections for Assignees, Labels, Projects, Milestones, and Notifications.

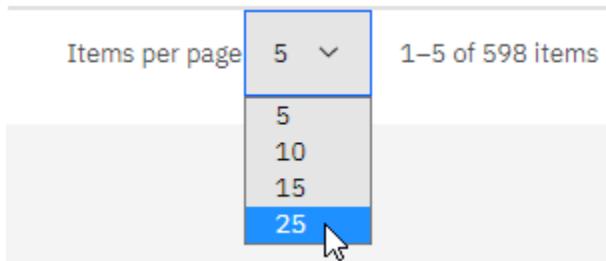
2.6 Perform Contextual Data Classification

Contextual Data Classification aims to identify and extract data elements in desktop applications. Specifically, our objective is to extract the title of the new GitHub Issue so we can use it to identify distinct Cases by the issue title.

_1. Click the **Contextual data ...** tab



_2. For Items per page, select **25**



Approximately 600 data items were extracted from the recorded interaction with three applications!

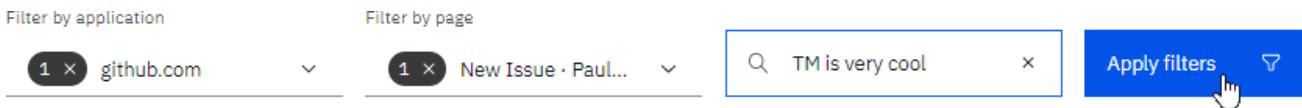
We will now use a filter to select the data item records associated with the New Issue web page to narrow down the data item records.

_3. Select **github.com** and **New Issue - PaulPach...** page filters and then click **Apply filters**



Now let's look for the selector to extract the issue title. Recall that the title of the issue you entered during the recording included the string "TM is very cool."

_4. In the search area type, **TM is very cool**, and then click **Apply filters**



_5. Click the **Show contextual data properties** eye icon

Cardinality	Application	Page & Url	Contextual data id	Show contextual data properties
2	github.com	New Issue - PaulPacholski/TaskMin... ↗ https://github.com/PaulPacholski/Ta... ↗	//input[@id="issue_title"]	⊖ ⓘ

_6. For **Contextual data**, name enter **GH_Issue_Title**.

Values

TM is very cool

Contextual data name

GH_Issue_Title

_7. Note that the Issue title entered in the title fields will now be extracted to the **GH_Issue_Title** variable.

Contextual data properties

Cardinality Application
2 github.com

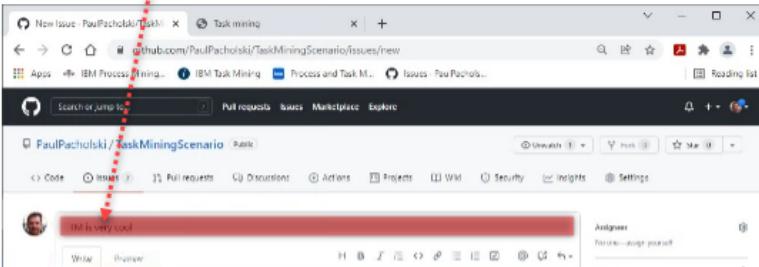
Page name New Issue · PaulPacholski/TaskMiningScenario

URL https://github.com/PaulPacholski/TaskMiningScenario/issues/*

Contextual data id //input[@id="issue_title"] 

Values TM is very cool

Contextual data name GH_Issue_Title

Screenshot image 

2.7 Configure Process Mining Project

We will now define what tasks and contextual data should be included in a generated Process mining project. Next, we will publish the Task Mining project. This action will generate the Process Mining project to visualize the recorded desktop activities.

_1. Click **Project configure...** tab

Task Mining Dashboard Task classification Contextual data cl... **Project configura...** 

Task mining projects / Create New GitHub Issue /

_2. For Items per page, select **25**

Items per page 5  1–5 of 6 items

5
10
15
25 

Contextual data

2.7.1 Link Activities and Data

_1. Select the **Business activity check box** to select all Activities you defined in previous lab steps.

Create New GitHub Issue ↴

Standalone task mining project: Yes

Task selection

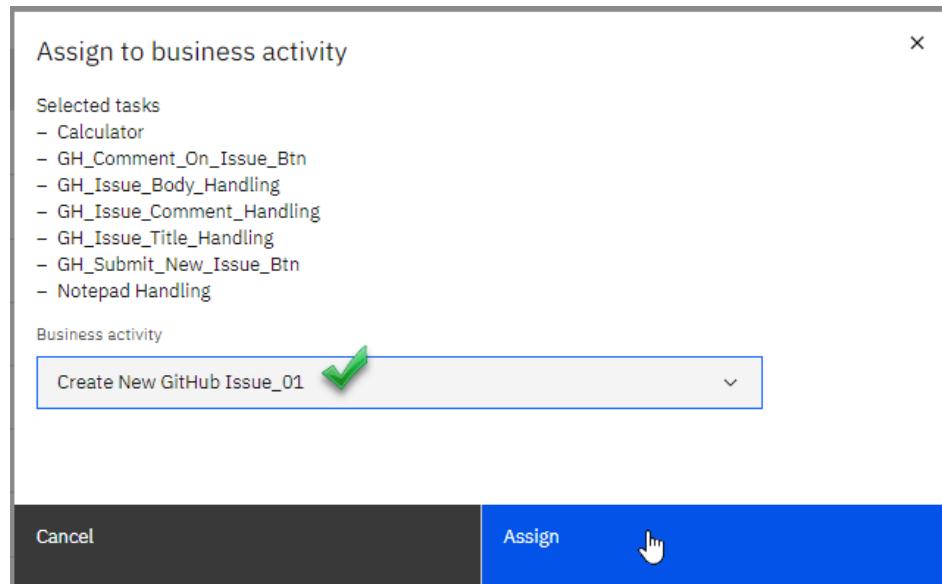
7 items selected	
<input checked="" type="checkbox"/> Business activity	Task name

_2. Click **Assign to business activity**.

Task selection

7 items selected		Assign to business activity
<input checked="" type="checkbox"/> Business activity	Task name	Start activity

_3. For Business activity, select **Create New GitHub Issue_01** and click **Assign**



Note that since you selected a standalone project (not linked to an existing Process Mining Project), two Process Mining projects will be generated for you:

1. The main Process Mining project includes a single *Create New GitHub Issue_01* Activity
2. A child Process Mining project linked to the main Process Mining project includes Task Mining activities.

_4. Mark the following Business activities as shown below

Task name	Check
GH_Comment_On_Issue_Btn	End activity
GH_Issue_Title_Handling	Start activity

Task selection

Business activity		Task name	Start activity	End activity	Manage business activities	
<input type="checkbox"/>	Create New GitHub Issue_01	Calculator	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	Create New GitHub Issue_01	GH_Comment_On_Issue_Btn	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
<input type="checkbox"/>	Create New GitHub Issue_01	GH_Issue_Body_Handling	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	Create New GitHub Issue_01	GH_Issue_Comment_Handling	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	Create New GitHub Issue_01	GH_Issue_Title_Handling	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	Create New GitHub Issue_01	GH_Submit_New_Issue_Btn	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	Create New GitHub Issue_01	Notepad Handling	<input type="checkbox"/>	<input type="checkbox"/>		

Items per page 25 ▾ 1-7 of 7 items

1 ▾ of 1 page

_5. Check as Lined to Project the GH_Issue_Title contextual data.

Contextual data selection

Link to project	Contextual data name	Example values	Process ID
<input checked="" type="checkbox"/>	GH_Issue_Title	TM is very cool,	<input type="checkbox"/>

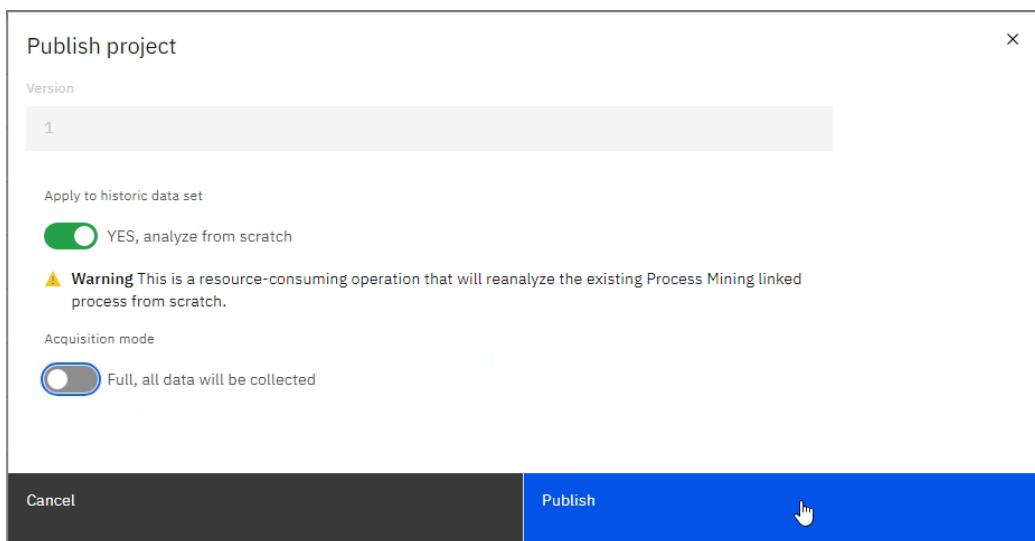
2.7.2 Publish

This step will create the two Process Mining projects: the main one and the child project that includes the actual Task Mining activities and is linked to the main Project.

_1. Click **Publish**

Link to project	Contextual data name
<input checked="" type="checkbox"/>	GH_Issue_Title
Publish 	

_2. Select **YES, analyze from scratch**, and click **Publish**.



2.7.3 Check Publish Status

_1. Click **Audit** tab

The Audit tab is selected.

_2. For **Group by session**, select **No** and then click **Apply filters**.

_3. Keep clicking **Apply filters** until you see "Complete" in all status columns for the chunk you recorded at the beginning of this lab.

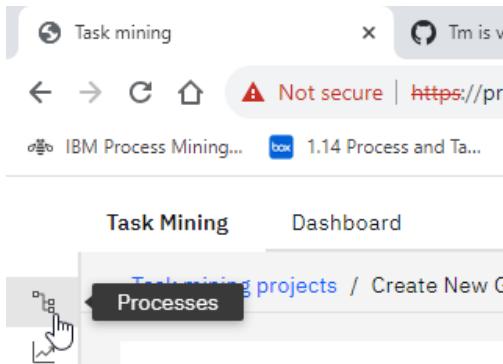
Capture id	Upload Time	Device Id	Processor status	Miner status	Upload status
16	14/12/2021 17:18	85c0cd261ec13e7a660ee97823cd69d940a93fb7cf1384c30a6bc032e91cbcf8	Complete	Complete	Complete

2.8 Examine the Task Mining Activities in the Process Mining Project

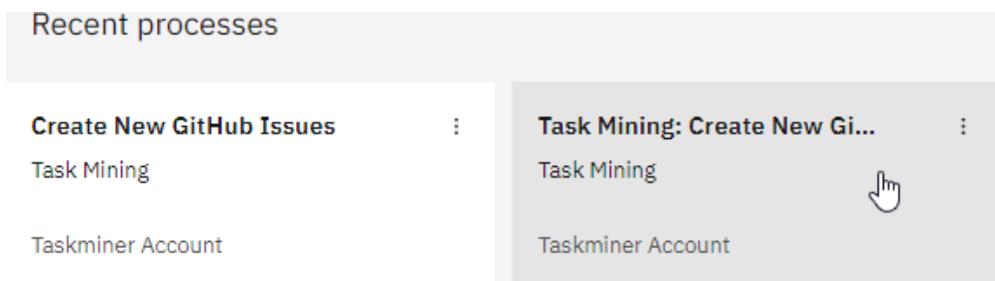
Let's look at the generated Task Mining process to verify that our Task Mining Project was correctly authored and configured.

2.8.1 Open Process Mining

- _1. Click the **Processes** icon.

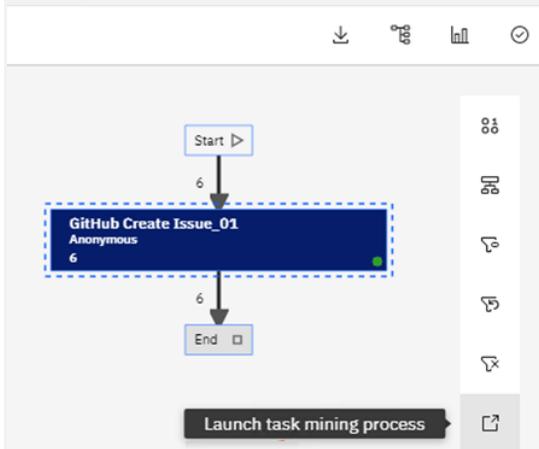


You should now see two new processes.



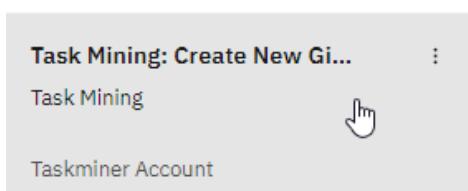
What are these two processes, and how are they related?

The **GitHub Create New Issue** is the parent Process Mining process. The **Task Mining: GitHub Create New Issue_01** is the "child" Task Mining process. Typically, a parent Task Mining process includes many activities. In our case, the parent Task Mining process has only one activity, but not all have an associated Task Mining process. If you open **GitHub Create New Issue**, you can navigate to the associated Task Mining process by selecting **Launch task mining process** as shown below:



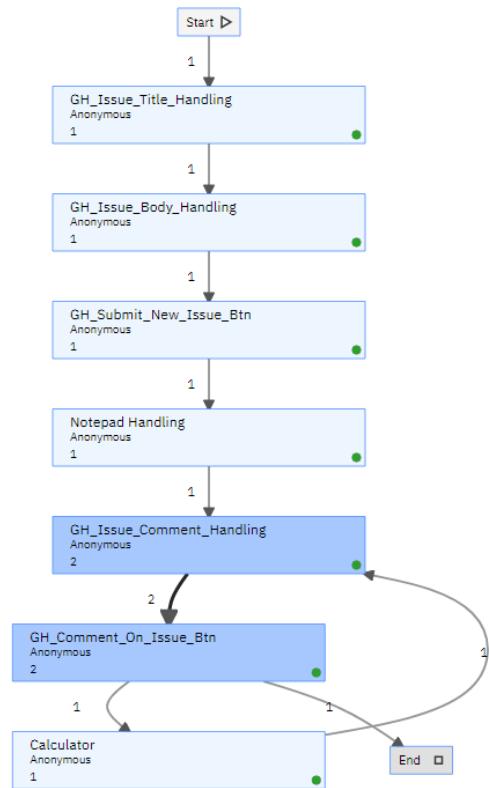
2.8.2 Examine Generated Process Mining Project

- _1. Click **Task Mining: Create New GitHub Isse_01** process



You should now see the Model showing the desktop activities you performed to open GitHub issues in the recording session at the beginning of this lab!

If you followed the recording instructions as specified in the lab, the Process Model should look similar to this:



3 Lab Summary

In the [first](#) of the Task Mining lab series, you learned how the Task Mining feature is used to analyze desktop activities to improve GitHub Issue opening activity.

In this second of the Task Mining lab series, you learned how the Task Mining project was built and configured!

Specifically, you performed the steps with the checkmarks, as shown in the figure below.

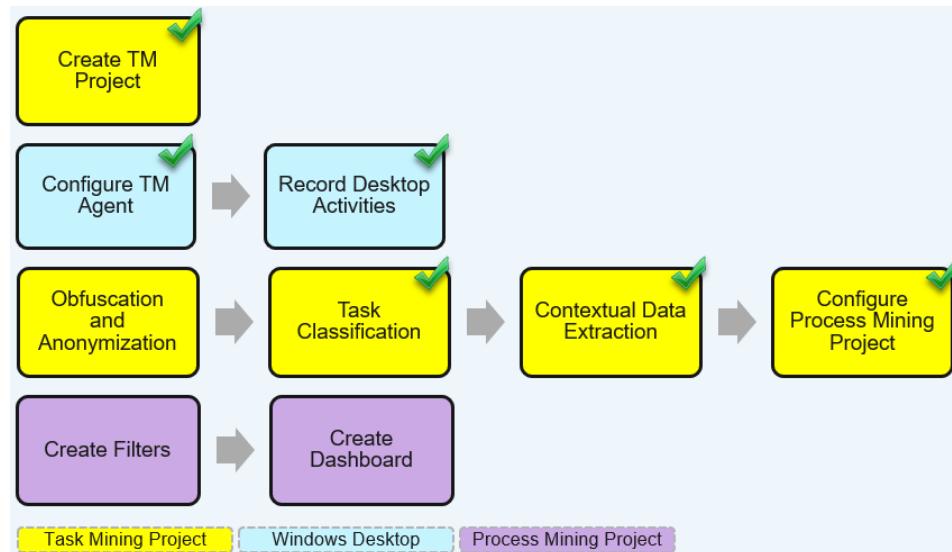


Figure 5. Steps to create and configure Task Mining project

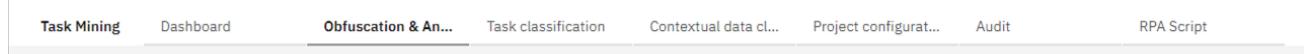
Don't hesitate to contact me (pacholsk@ca.ibm.com) with any technical problems or questions!

Any ideas for enhancements are also welcome. 😊

Appendix A. Obfuscation and Anonymization

This optional feature allows the admins to configure Obfuscation and/or anonymization of the screenshots and the extracted data.

_1. Click the **Obfuscation & Anonymization** tab



_2. Click the second eye icon to view the page properties for the second recorded GitHub page

Application	Page & URL	
github.com	Issues - ApplesHaveFeelings/ExperianTaskMining https://github.com/ApplesHaveFeelings/ExperianTaskMining/issues	
github.com	New Issue - ApplesHaveFeelings/ExperianTaskMining https://github.com/ApplesHaveFeelings/ExperianTaskMining/issues/new	
github.com	another-obfuscation - Issue #17 - ApplesHaveFeelings/ExperianTaskMining https://github.com/ApplesHaveFeelings/ExperianTaskMining/issues/17	
github.com	kenny-obfuscation - Issue #16 - ApplesHaveFeelings/ExperianTaskMining https://github.com/ApplesHaveFeelings/ExperianTaskMining/issues/16	

_3. Click the **magnifying glass icon** and type *issue_body* in the search bar

Contextual data				
Value	Visibility	Selector	Name	
Starred	Visible ▾	//div[@id="repository-details-container"]/ul/li[4]/div/div[1]...		
Uploading your files...	Visible ▾	//form[@id="new_issue"]/div/div/div[1]/div/div/tab-c...		
All GitHub	Visible ▾	//ul[@id="jump-to-results"]/li[3]/a/div[3]/span[2]		
All GitHub	Visible ▾	//ul[@id="jump-to-results"]/li[2]/a/div[3]/span[2]		
All GitHub	Visible ▾	/html/body/div[1]/div[1]/header/div[3]/div/div/form/label/d...		

Items per page 5 ▾ 1–5 of 108 items 1 ▾ of 22 pages ▶ ▷

Save

_4. Select the record with the selector `//textarea[@id="issue_body"]`

Contextual data				
<input type="text" value="issue_body"/> x				
Value	Visibility	Selector	Name	
Lucas Smith,(123) 456-7890,123 Main St,01/01/19...	Obfuscated ▾	//textarea[@id="issue_body"]		
Items per page 5 ▾ 1–1 of 1 items 1 ▾ of 1 page ▶ ▷				

Note that the Visibility setting to the captured data to (i) Obfuscated – contextual data is not captured, or (ii) Anonymized – contextual data is captured, but it is encrypted (so it can be made sizable if unencrypted).

Appendix B. Suggestions for TM Model Enhancements

1. Try some new recordings to create more instances with the following variations:
 - 1.1. The number of times you add a comment
 - 1.2. The source of the comments (Notepad, Calculator, just adding text)
 - 1.3. The order of the source of comments
 - 1.4. The duration and the delays to simulate activity with a long duration
2. You could enhance the TM Model. For example:
 - 2.1. You can change the starting activity from Title Handing to clicking on the New Issue button in two different places:

The screenshot shows two Jira interfaces. The top part is a single issue view for 'TM is very cool #40', which is open. It includes a green 'New issue' button at the top right. The bottom part is a search results page for 'is:issue is:open'. It also features a prominent green 'New issue' button. Both interfaces have red boxes highlighting the 'New issue' buttons.

TM is very cool #40

Open PaulPacholski opened this issue 2 hours ago · 2 comments

<> Code Issues 8 Pull requests Discussions Actions Projects Wiki ...

Filters is:issue is:open Labels 9 Milestones 4 New issue

2.2. Adding to an issue Assignees / Labels / Projects / Milestones:

PaulPacholski commented 2 hours ago Owner ...
a comment

PaulPacholski commented 2 hours ago Owner Author ...
some data

PaulPacholski commented 2 hours ago Owner Author ...

Assignees
No one—assign yourself

Labels
None yet

Projects
None yet

Milestone
No milestone

Have fun!

Don't hesitate to contact me (pacholsk@ca.ibm.com) if you have any technical problems or questions!

Any ideas for enhancements are also welcome. 😊

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