**Team 3 UiBank Loan Application Solution**

**Solution Design Document**

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**SUMMARY**

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# **Objective**

This document contains the solution design for the **UiBank Loan Application** process. It lays out the high-level “As-Is” process steps as well as the “To-Be” process steps to be automated using the selected Robotic Process Automation (RPA) tool. It also elaborates upon key aspects of the automation that is being implemented for this use case.

* **High Level Overview of As-Is Process:**
* In this process, an employee receives an email with an attached Excel file. This file contains the set of loan applications to be submitted to the UiBank website. The employee downloads this file, logs onto the website, and submits the data.
* Contingent on certain factors, notably the age of the applicant and the amount requested, the loan is approved or rejected.
* The result of the loan is noted in the same Excel file as the rest of the application information. If successful, APR and Loan ID are also noted. If a failure, the reason is also noted.
* Once all applications have been processed, the employee sends the updated Excel file back to the original sender.
* **Volumes Information:** Approximately 25 applications per day.

# **Scope for Automation**

The scope for the automation is to receive the Excel file, submit the applications to the UiBank site, update the Excel file with results, and send that file back to the original sender. This is to be done with two robots, a Dispatcher and a Performer.

# **Applications**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Application Name& Version** (including any upgrade information) | **External / Internal** | **Type** | **Credentials required for BOT ID** | **Read/ Write** |
| UiBank | Internal | Network-hosted Application | Yes | Read & Write |
| Excel | Internal | Desktop Application | No | Read |
| Outlook | Internal | Desktop Application | Yes | Read & Write |

# **Input Requirements**

The inputs and pre-requisites detailed out below, need to be present for the Bot to function in the desired manner.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **#** | **Type** | **Name** | **Description** | **Location** | **Initial Value** |
| 1 | Email | Loan Reception Email | The email address to which loan applications will be sent | PDD & SDD | Teams3loans@outlook.com |
| 2 | Password | Loan Reception Password | The password for the above email | SDD | GiveMeALoan! |
| 3 | Config File | Dispatcher Config | The config for the Dispatcher | Dispatcher Project Folder (LoanApplier) | See file for details. |
| 4 | Config File | Performer Config | The config for the Performer | Performer Project Folder (LoanPerformer) | See file for details. |
| 5 | Username | UiBank Username | The username for the UiBank website | SDD | eoin.dooley@schoolofautomation.tech |
| 6 | Password | UiBank Password | The password for the UiBank website | SDD | f!8X\*5e\_bF7PSaW |
| 7 | Email | Test Client Email | The email to which completed reports will be sent prior to deployment | SDD | waseem.butt@schoolofautomation.tech |
| 8 | Excel File | Loan Applications Document | The Excel file containing the applications to be processed | To be sent to Loan Reception Email | Columns: email, age, annual income, loan amount, loan request date, loan term, loan approved, APR %, loan ID, loan info. |

# **Complexity of the To-Be Process**

This process has been categorized as a ‘**Simple**’ process from an RPA Implementation perspective.

# **Detailed Solution Design**

**High-Level Design**

The following sections capture the business logic necessary to navigate through the process. Subprocess A is carried out by the Dispatcher robot, while all subsequent processes are carried out by the Performer.

## Subprocess A – Dispatch Excel File

|  |  |  |
| --- | --- | --- |
| **Subprocess A – Dispatch Excel File** | | |
| **Step ID** | **Step Description** | **Step Type** |
| A1 | Bot will check Loan Reception Email every 30min (interval may be adjusted). | Time Trigger |
| A2 | Upon receipt of new email, bot downloads all attachments and stores the sender’s address. | Download |
| A3 | *For each Excel file:* | Multi-Step |
| A3.1 | Append new column: “File” | Write Data |
| A3.2 | Append new column: “Sender” | Write Data |
| A3.3 | Convert file to data table (DT) | Data Manipulation |
| A3.4 | In DT, write file name to File Column | Write Data |
| A3.5 | In DT, write sender’s address to Sender Column | Write Data |
| A3.6 | Upload DT to Orchestrator as Queue Items | Upload |

## Subprocess B – Prepare New Transaction

|  |  |  |
| --- | --- | --- |
| **Subprocess B – Prepare New Transaction** | | |
| **Step ID** | **Step Description** | **Step Type** |
| B1 | Performer downloads New Transaction from Orchestrator | Event Trigger |
| B2 | Create folder for new Sender | Write Data |
| B3 | Write Transaction Information to Excel file | Write Data |
| B4 | *If file missing Loan Amount, Current Balance, or Age:* | Conditional |
| B4.1 | Write N/A in Loan Status | Write Data |
| B4.2 | Write reason for N/A | Write Data |
| B4.3 | Proceed to Subprocess D | Workflow |
| B4 | *Else:* | Conditional |
| B5 | Proceed to Subprocess C | Workflow |

## Subprocess C – Confirm Payments

|  |  |  |
| --- | --- | --- |
| **Subprocess C – Apply for Loan** | | |
| **Step ID** | **Step Description** | **Step Type** |
| C1 | Open Chrome browser | Application |
| C2 | Navigate to UiBank website | Application |
| C3 | *If logged in, skip to Step C4, else:* | Conditional |
| C3.1 | Enter Username into Username Field | Type Into |
| C3.2 | Enter Password into Password Field | Type Into |
| C3.3 | Click Sign In | Click |
| C3.4 | If present, agree to privacy policy | Click |
| C4 | Navigate to Loan Application Page | Application |
| C5 | *Enter Loan Application Data* | Multi-Step |
| C5.1 | Enter Email | Type Into |
| C5.2 | Enter Amount Requested | Type Into |
| C5.3 | Enter Term – *if amount is missing or nonstandard, enter 10* | Type Into |
| C5.4 | Enter Yearly Income | Type Into |
| C5.5 | Enter Age | Type Into |
| C6 | Click ‘Submit Loan Application’ | Click |
| C7 | Write result of loan to Excel | Write Data |
| C8 | Write ancillary data – *if success, write APR and Loan ID. If failure, write reason.* | Write Data |
| C9 | If further transactions are available, proceed to Step B1. Else, proceed to Subprocess D. | Workflow |

## Subprocess D – Sending email

|  |  |  |
| --- | --- | --- |
| **Subprocess D – Sending Email** | | |
| **Step ID** | **Step Description** | **Step Type** |
| D1 | Open Outlook | Application |
| D2 | Use Sender folder for Email Address | Type Into |
| D3 | Compose Email | Type Into |
| D4 | Attach Excel file | Data Manipulation |
| D5 | Send Email | Click |

s

# **Success Criteria**

The bot will send out the appropriate emails and Orchestrator will log the corresponding transactions as successful.

# **Exception Handling**

Exceptions handled by robotic process automation can primarily be classified into system and business exceptions. The automation under discussion handles each error type in a standardized manner.

In general, if the Bot encounters any unexpected scenario, the Bot will generate an exception message and inform the same to account team. The Bot will generate exception email, with mitigating actions specified below.

**Business Exceptions**

All known business exceptions are accounted for within the solution design. If an unexpected scenario is found, the Bot will log an exception in UiPath for that record and inform the same to account Team.

Any unexpected business scenarios that the Bot encounters will cause the Bot to skip the case, leaving it open and informing to Account team.

For any business exception, then:

1. **Action taken by automation**: Error captured in the Exception Report for the business exceptions
2. **Reporting Type**: The Exception message for the business scenario will be preserved within the Exception Report.
3. **Manual Action required**:
4. Account Team Supervisor: Manual review recommended if business exception occurs frequently
5. Bot Controller: None

**Known Business Exceptions:**

|  |  |
| --- | --- |
| **Exception Scenario** | **Exception Status Message** |
| Missing data in loan application | Loan marked N/A |

**System Exceptions**

System Exception such as the UiBank website not working is considered in the SDD. If an unexpected scenario is found, the Bot will log an exception in UiPath for that record and inform the same to Trading Team.

|  |  |
| --- | --- |
| **Exception Scenario** | **Exception Status Message** |
| UiBank is not accessible | UiBank is not accessible |
| Outlook is not accessible | Outlook is not accessible |

# **Process Maintenance**

* No especial maintenance is required.

# **Automation Operational Arrangements**

|  |  |
| --- | --- |
| How often will the solution run? | Dispatcher checks email every 30 minutes. Performer runs immediately upon receipt of a new transaction. |
| How many cases is the solution expected to handle? | 25/day |
| Will the solution run outside normal working hours? | Yes |
| What time will the solution start? | 9AM on 1st April. |
| What part will the Business play within the end-to-end process? | Review |
| Will the Business re-submit exception cases to the solution? | Possibly |

# **Business Continuity Plan/ Disaster Recovery (DR) Plan**

In case of complete failure of the Bot, the team will need to revert to manual process.

* Operations team will perform the “Process” process manually, until notified
* RPA Capability will be responsible for operational tracking, monitoring, maintenance. In case of any temporary outages or planned downtime, the COE will communicate to business and expedite restoration of services.
* Process owners are expected to systematically review and audit the results to ensure the functional value is provided.
* Changes to host systems to be proactively communicated to members of the RPA Capability.
* The process owner will receive notification emails for all failures.

# **Key Assumptions**

* TBD

# **Document Review Guidelines**

This document is to be reviewed every 12 months and updated with relevant process and system changes to reflect the current process and automation functionality. This review should be conducted by a nominee of the document owner and signed off by the document owner.

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# **Glossary**

|  |  |
| --- | --- |
| **Term** | **Description** |
| RPA | Robotics Process Automation |
| UiPath | UiPath |
| SIT | System Integration Testing |
| SLA | Service Level Agreement |
| SME | Subject Matter Expert |
| UAT | User Acceptance Testing |

# **Appendix**