

EXCELERATE LEARNING EVENT

ROBOTIC PROCESS AUTOMATION (RPA)

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Objective	Assess learner's understanding of RPA concepts and their application in business automation

I. RPA WORKFLOW DESIGN

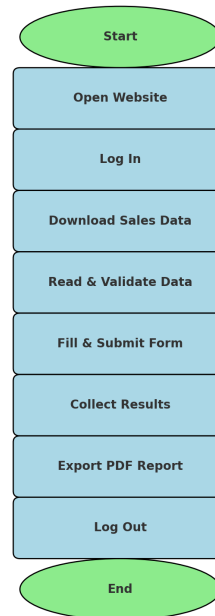
1.1 Business Task Suitable for Automation

The provided RPA script automates sales data entry and reporting for an intranet-based system. This process involves logging into a website, submitting sales data from an Excel file, capturing results, and exporting a summary report as a PDF.

1.2 Step-by-Step Workflow Diagram

The following steps outline how the RPA bot executes the process:

- Open the Intranet Website
- Navigate to the company's web portal using a browser automation tool.
- Log In to the System
- Enter the username and password.
- Click the "Log in" button.
- Download the Sales Data File
- Fetch the Excel file from a given URL.
- Save it locally for further processing.
- Read and Process Sales Data
- Open the Excel file and extract sales records.
- Iterate through each row to get the sales representative's d
- Fill and Submit the Sales Form for Each Sales Representati
- Enter first name, last name, target sales, and actual sales.
- Click the "Submit" button to send data.
- Collect Results
- Take a screenshot of the summary page.
- Export Data to a PDF Report
- Convert the HTML sales summary into a PDF document.
- Save the report for documentation.
- Log Out of the System
- Click the "Log out" button.



3. Key Steps in the Automation Process

Step	Action	Automation Component
Data Extraction	Download the Excel file containing sales data	<code>RPA.HTTP</code> module
Data Validation	Read the data and check for missing values	<code>RPA.Excel.Files</code> module
Decision-Making	Determine which sales rep data needs to be processed	<code>for</code> loop in Python
Data Submission	Fill out the form and submit sales records	<code>browser.page().fill()</code> & <code>click()</code>
Reporting	Take a screenshot and generate a PDF report	<code>browser.page().screenshot()</code> & <code>RPA.PDF</code>

II. BOT PROTOTYPE DEVELOPMENT

2.1. Selected RPA Platform

For this automation, we used Robocorp, a Python-based RPA platform that allows for building and running robots efficiently. Robocorp provides a powerful framework for automating web-based and file-processing tasks.

2.2 Basic Bot Development

The Python-based bot automates the process of handling sales data on the RobotSpareBin Industries website. Below is an overview of the bot's logic:

Step-by-Step Process:

>Open the Website

The bot navigates to <https://robotsparebinindustries.com/>.

>Log In

It enters the username (maria) and password (thoushallnotpass) to access the portal.

>Download the Sales Data

The bot downloads the SalesData.xlsx file from the website.

>Read & Validate Data

The bot reads the Excel file using `RPA.Excel.Files` and extracts the sales data.

>Fill and Submit Sales Forms

It loops through the sales records and enters the data into the website's form.

The bot submits each record.

>Collect Results

It captures a screenshot of the submission summary.

>Export PDF Report

The bot extracts sales results and saves them as a PDF report.

>Log Out

The bot logs out of the system once the process is completed.

2.3 Screenshots & Explanation

① Logging into the Website

The bot navigates to the login page and fills in the credentials.

```
python

page.fill("#username", "maria")
page.fill("#password", "thoushallnotpass")
page.click("button:text('Log in')")
```

② Downloading and Reading Excel Data

The bot downloads the file and extracts data from SalesData.xlsx.

```
http = HTTP()
http.download(url="https://robotsparebinindustries.com/SalesData.xlsx", overwrite=True)
excel = Files()
excel.open_workbook("SalesData.xlsx")
worksheet = excel.read_worksheet_as_table("data", header=True)
excel.close_workbook()
```

③ Filling and Submitting the Form

The bot iterates over the Excel data and submits each record.

```
for row in worksheet:
    fill_and_submit_sales_form(row)
```

④ Exporting the Report to PDF

The bot extracts the sales summary and saves it as a PDF.

```
sales_results_html = page.locator("#sales-results").inner_html()
pdf = PDF()
pdf.html_to_pdf(sales_results_html, "output/sales_results.pdf")
```

Complete Automation Script:

https://github.com/edmarbeatingo/Project_Automation_RPA_with_Robocorp/blob/main/automation_scripts.py

III. BUSINESS PROCESS EFFICIENCY ASSESSMENT

1. Selected Business:

RobotSpareBin Industries (Hypothetical Company from Robocorp Training Module)

The company manually processes weekly sales data for all Sales Representatives and generates a PDF report. The current process is repetitive, time-consuming, and prone to errors.

3.2 Three Processes Suitable for Automation

① Downloading and Uploading Sales Data

Current Process:

>A Microsoft Excel spreadsheet containing sales data is exported from an existing system.

>The employee manually uploads the spreadsheet to the intranet webserver.

Challenges:

>Manual handling increases the risk of errors (e.g., uploading the wrong file).

>Time-consuming, especially if the number of sales representatives increases.

Why RPA is Suitable?

✓ Automates file downloads and uploads with precision.

✓ Eliminates human intervention, reducing processing time.

✓ Ensures consistency in handling files and formats.

② Data Entry into the Intranet System

Current Process:

>The employee logs into the intranet.

>Manually enters each sales representative's information from the Excel file into the website form.

Challenges:

>Prone to human error (e.g., incorrect data entry, skipped records).

>Time-consuming, especially with many sales representatives.

>Repetitive, structured task suitable for automation.

Why RPA is Suitable?

✓ Can extract structured data from Excel and input it into the intranet automatically.

✓ Speeds up data entry, reducing time spent on manual work.

✓ Eliminates data entry errors, improving data accuracy.

③ Generating and Exporting the PDF Report

Current Process:

>Data is collected in a table on the intranet site.

>The employee manually copies and pastes the table into Microsoft Word.

>The document is then printed as a PDF.

Challenges:

>Manual copy-pasting introduces formatting inconsistencies.

>Dependence on Microsoft Word when automation can directly generate PDFs.

>Potential for human errors in selecting the correct data.

Why RPA is Suitable?

- ✓ Automates data extraction and PDF generation.
- ✓ Ensures a standardized format every time.
- ✓ Eliminates manual copy-pasting, improving efficiency.

IV. COST-BENEFIT ANALYSIS REPORT

4.1 Chosen Business Process: Data Entry into the Intranet System

This process involves manually entering weekly sales data for all sales representatives into the company's intranet system.

Manual Execution Cost Estimation:

Factor	Current Manual Process
Time per Entry	3 minutes per sales rep
Number of Sales Reps	100
Total Time per Week	300 minutes (5 hours)
Employee Hourly Wage	\$25/hour
Labor Cost per Week	\$125
Labor Cost per Year (52 weeks)	\$6,500
Error Rate	5% (leading to rework)
Rework Time Due to Errors	1 extra hour per week
Rework Labor Cost per Year	\$1,300
Total Manual Cost per Year	\$7,800

4.2 Expected Savings from RPA Implementation

Factor	Automated Process
Time per Entry	10 seconds per sales rep
Total Time per Week	17 minutes (0.3 hours)
Labor Cost per Week	\$7.50
Labor Cost per Year	\$390
Error Rate	Near 0%
Rework Time Due to Errors	Eliminated
Rework Labor Cost per Year	\$0
Total Automated Cost per Year	\$390

🔥 Time Savings per Year = 250+ hours

🔥 Labor Cost Reduction = \$7,410 per year

4.3 ROI (Return on Investment) Calculation

Initial RPA Implementation Costs:

Robocorp License = \$0 (Open-source)

VS Code License = \$0 (Open-source)

Development & Setup Cost = \$1,000 (In-house developer effort)

Employee Training Cost = \$500

Total Initial Cost: \$1,500

Annual ROI Calculation:

$$\text{ROI} = \frac{\text{Annual Savings} - \text{Initial Investment}}{\text{Initial Investment}} \times 100$$

$$\text{ROI} = \frac{7,410 - 1,500}{1,500} \times 100 = 394\%$$

✓ Break-even Point: Less than 3 months

✓ Long-term Savings: \$7,410 per year after the first year

V. RPA IMPLEMENTATION ROADMAP

5.1 Process Selection (Identify Automation Opportunities)

The chosen process for automation is weekly sales data entry and PDF report generation. This process was selected because:

- ✓ It is repetitive and time-consuming (manual data entry).
- ✓ It has a high risk of human error.
- ✓ It directly impacts reporting accuracy and decision-making.

5.2 Tool Selection (Choosing an RPA Platform)

Since we aim to keep costs low while ensuring efficiency, we choose:

- ◆ Robocorp – An open-source RPA framework with Python integration.
- ◆ VS Code – Free, lightweight IDE for developing and managing automation scripts.

Alternative Tools Considered:

>UiPath (Enterprise-grade but requires a license).

>Automation Anywhere (Good for large-scale operations but costly).

>Blue Prism (Best for highly regulated environments but requires training).

5.3 Pilot Testing (Deploy Bots in a Small-Scale Environment)

🎯 Objective: Validate the bot's performance before full deployment.

📌 Pilot Steps:

- ✓ Develop a basic bot to log into the intranet and enter data.
- ✓ Test with a small dataset (e.g., 10 sales reps instead of 100).
- ✓ Monitor execution time, accuracy, and error handling.

- ✓ Collect feedback from end-users (intranet admin team).
- ✓ Expected Outcome: Successful execution with minimal errors and 80%+ time reduction.

5.4 Scalability Plan (Expanding RPA Across Departments)

After a successful pilot, we scale automation across different areas:

- ◆ Phase 1 (Sales Reporting Automation) – Automate data entry & PDF generation.
- ◆ Phase 2 (Intranet Admin Tasks) – Automate report distribution & notifications.
- ◆ Phase 3 (Company-wide Expansion) – Identify further automation opportunities (e.g., HR, Finance).

🚀 Key Scalability Considerations:

- ✓ Set up RPA governance policies.
- ✓ Monitor bot performance using logs & dashboards.
- ✓ Ensure compliance and security when handling sensitive data.

5.5 Employee Training & Change Management

To ensure smooth adoption, we need a training plan for employees:

📌 Training Activities:

- ✓ Conduct workshops on how RPA works.
- ✓ Provide hands-on training for using Robocorp.
- ✓ Assign RPA champions (power users to assist others).

📌 Change Management Plan:

- ✓ Communicate benefits to employees (RPA supports their work, not replace them).
- ✓ Address concerns about job security.
- ✓ Create an open feedback loop for process improvements.

VI. RPA MAINTENANCE CHECKLIST

6.1 Essential Maintenance Tasks

🔧 Daily/Weekly Maintenance:

- ✓ Monitor Bot Execution Logs – Check error logs for failures or inconsistencies.
- ✓ Verify Data Accuracy – Ensure sales data is correctly entered and reports are accurate.
- ✓ Check System Performance – Identify slowdowns in processing speed.
- ✓ Monitor Bot Uptime – Ensure the bot is running as scheduled without interruptions.

🔄 Monthly Maintenance:

- ✓ Review Automation Metrics – Evaluate processing time, error rates, and success rates.
- ✓ Update Software & Dependencies – Ensure Robocorp, VS Code, and browser automation tools are up to date.
- ✓ Optimize Workflows – Identify bottlenecks and improve efficiency.
- ✓ Check Security Compliance – Ensure data handling meets company security policies.



Quarterly Maintenance:

- ✓ Conduct Performance Audits – Measure improvements and analyze areas for enhancement.
- ✓ Evaluate Business Impact – Check if the bot is meeting business goals (e.g., cost savings, error reduction).
- ✓ Upgrade Infrastructure if Needed – Increase bot capacity if workload has grown.

6.2 Guidelines for Troubleshooting & Optimizing RPA Workflows



Troubleshooting Issues:

- ◆ Bot Fails to Execute Tasks → Check logs, restart the bot, and verify input files.
- ◆ Incorrect Data Entry → Validate source files (Excel, web forms) and update parsing logic.
- ◆ Bot Stops Mid-Execution → Ensure internet connectivity and system resources are sufficient.
- ◆ Authentication Issues → Update login credentials and ensure access permissions are correct.



Optimizing RPA Performance:

- ✓ Reduce Manual Intervention – Ensure all steps are fully automated.
- ✓ Enhance Exception Handling – Implement retry mechanisms for failed tasks.
- ✓ Improve Error Messaging – Make logs more descriptive for easier debugging.
- ✓ Utilize Parallel Processing – Run multiple bots if data volume increases.

VII. PRESENTATION ON RPA BENEFITS & CHALLENGES

Automating Sales Data Entry with Robocorp

Introduction to RPA

- What is RPA?
 - - Automates repetitive tasks using software bots.
 - - Improves efficiency, reduces errors, and enhances scalability.
- Why Use RPA?
 - - Saves time on manual tasks.
 - - Increases accuracy and productivity.

Benefits of RPA

- ✓ Improved Efficiency: Automates repetitive tasks, speeds up workflows.
- ✓ Cost Savings: Reduces labor costs and errors.
- ✓ Error Reduction: Ensures data accuracy and consistency.
- ✓ Scalability: Expands automation across departments.

Challenges of RPA Implementation

- ⚠ Implementation Costs: Initial setup and testing.
- ⚠ Employee Resistance: Fear of job loss, training required.
- ⚠ Technical Limitations: Complex processes, dependence on structured data.



Best Practices for RPA Adoption

- ✓ Start Small, Scale Later: Pilot projects first.
- ✓ Engage Employees: Train staff to work alongside bots.
- ✓ Monitor & Optimize: Regular maintenance and performance tracking.
- ✓ Ensure Compliance & Security: Protect sensitive data.

Case Study: Sales Data Entry Automation

- Before RPA:
 - - Manual entry of sales data.
 - - High error rates, time-consuming.
- After RPA:
 - - Automated data extraction and entry.
 - - 70% time reduction, improved accuracy.

Conclusion & Next Steps

-  Key Takeaways:
 - - RPA saves time, reduces errors, and boosts efficiency.
 - - Challenges can be managed with planning and training.
-  Next Steps:
 - - Identify more automation opportunities.
 - - Optimize existing RPA workflows.