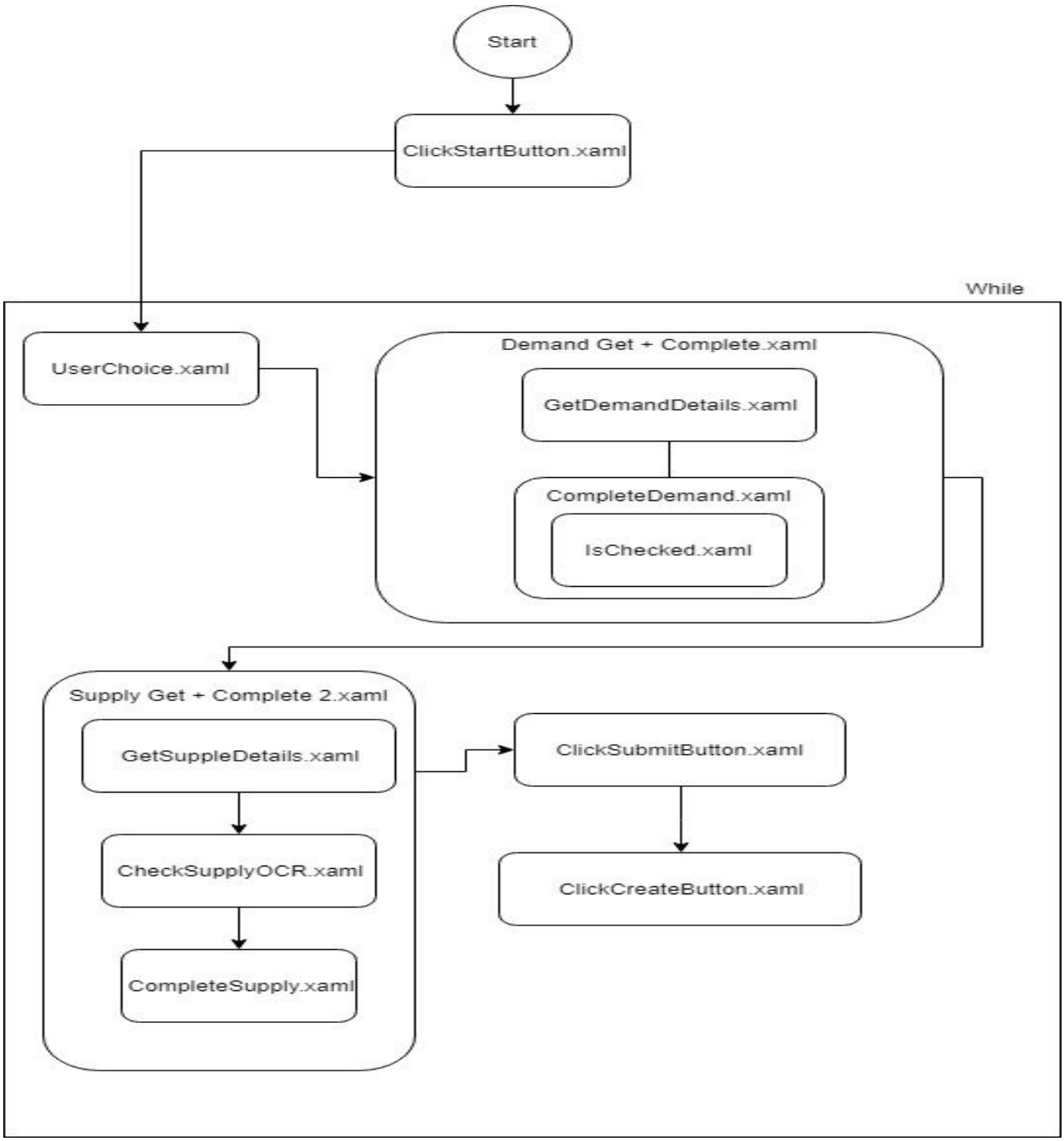
Automation Challenge - Shortest Path

Summary

The goal of this challenge is to create an **attended robot** that works in tandem with the user.

Description



Dependencies: The used dependencies are the ones from the package.json file


```
{
  "name": "UiPathBrief",
  "description": "Blank Process",
  "main": "Main.xaml",
  "dependencies": {
    "UiPath.UIAutomation.Activities": "[18.3.6877.28298]",
    "UiPath.System.Activities": "[18.3.6877.28276]",
    "UiPath.Excel.Activities": "[2.4.6863.30657]",
    "UiPath.Mail.Activities": "[1.2.6863.29868]",
    "UiPath.GoogleVision.Activities": "[0.1.6852.1955]",
    "UiPathTeam.Cognitive.Microsoft.OCR.Design": "[1.0.6814.41316]",
    "Microsoft.Activities": "[1.0.1]"
  },
  "schemaVersion": "3.2",
  "studioVersion": "18.3.2.0",
  "projectVersion": "1.0.0.0",
  "runtimeOptions": {
    "autoDispose": false,
    "excludedLoggedData": [
      "Private:*",
      "*password*"
    ]
  },
  "projectType": "Workflow",
  "libraryOptions": {
    "includeOriginalXaml": false,
    "privateWorkflows": []
  }
}
```


Package specifications: The robot we have created will be run from the UIPath Studio
Compatibility: UIPath Community Edition 2018.4, tested with IE 11

Used modules:

RPA Challenge - Shortest Path
ClickStartButton
UsersChoice
Demand Get + Complete
CompleteDemand
IsChecked
GetDemandDetails
CleanData
Supply Get + Complete 2
CheckSupplyOCR
CompleteSupply
GetSupplyDetails
CleanDataSupply
ClickSubmitButton
Click Create Button

User Stories

1. **As a user I want**

   To match one Demand (market as a **RED** point) to the closest Supply (market as a **GREEN** point)

   So I can satisfy the most efficient Demand - Supply relationship

2. **As a robot I want**

   To fill the required data inside the form using the data from the tables generated from the Demand - Supply relationship

   So I can submit the form created and complete the demand

3. **As a user I want**

   To get a report regarding of the accuracy of the process - selecting the correct pairs and the behaviour of the robot

   So I can track and get an overview of the entire process

Acceptance Criteria

1. What we implemented :
   - The required flow from the request
   - A scalable and easy to maintain solution
   - Modularization according to the scope of the flow and interactions between elements:
     - UI actions: eg.: ClickStartButton
     - Get actions eg.: GetDemandDetails
     - Preprocessing actions eg.: CleanData
   - Included the newest technologies like Microsoft OCR engine, where we have dynamically modified its properties
   - Validation of data was done a bit differently, when we couldn't find a value we have hardcoded with hyphens so the data dictionary will always have the required keys to complete the data table;

2. What we did not implement :
   - There can never be enough Try catches! (however in the spirit of a speedy implementation, this can be added at a later time)

3. Future development :
   - Shortest path algorithm so the robot would become an unattended one from an attended one.

- A better processing of the data - more cases treated in the case of OCR or selectors failure
- Robot starting from Orchestrator.
- We could extend this application to monitor carbon footprint using external public services called from an API.

4. Difficulties:

   - OCR : we struggled to have almost the same results on different resolutions, and we did it by scalling it dynamically.
   - We did not consider that the two fields, Permit Required and Urgent, could impose so different end results. When the fields were randomly selected we received a success rate of 0-20% and correctly completed rows were 2-3 of each chosen pair.
   - Github versioning was quite inefficient given the fact that we need to close and reopen the Studio each time when a commit-push to the master was made.

   We also partially analysed the BT Brief 1:

   - mfinante.gov.ro X3 fail attempts of scrapping. Given this situation we offer an solution:
     A buffer of some kind could be made to keep the historical data of the reports of previous years so we could interrogate mfinante.gov.ro only for the current year reports.
   - Due to this problem, there were issues in determining the appropriate browser between IE and Chrome, as in Chrome the website didn't crash as often, but the main components of the page could not be identified correctly when using the UIPath Web Automation extension in Chrome.

Testing methods

We created the process as modules, thus giving the chance to different members of the team to work on the solution simultaneously. Some modules consist of submodules, which allowed them to be tested independently from the main flow, bringing the application on the required state for that submodule to run and then running it with some default value to see if the expected output is the same as the actual one.

We also did some integrating tests when we integrated all the modules in the main workflow and ran the entire flow.

For the UATs, we put ourselves in the position of the client. We wanted to view the final report, when a success score was displayed. We modified where we thought the problem was so that score will approach the desired value of 100%.

Working environment

- **Developing environment**

  1. Inter(R) Core(™) I7-6700 HQ, 2.6 GHz / 8.00 GB / Windows 10, 64-bit Operating System, x64-based processor.

  2. MacOS, I5 1.6 GHz, Virtual Box VM with Windows 10 OS, 4GB, 64-bit Operating System, x64-based processor.

  3. HP ZBook Studio G4

- **Versioning** - we used Github as a versioning method. Initially we had created a repo which due to many changes from all team members, such as changing file names to be more relevant and working on the same files, it became impossible to synchronize so we moved all the changed files to one computer and agreed to create a new repo with the final version of the application.
  Link 1: https://github.com/CiocanelAndreia/RPA-League_Hackathon_RoboDucks
  Link 2: https://github.com/AndreeaLC/RPA-League-Hackathon_RoboDucks (final version)
  We also used Github Desktop client for the connection to the github server.

- **Team members**
  We initially started with 3 members, Andreea Curcan, Andreia Ciocănel and Alex Fierăscu. After some time, another person, Marius Birsan from the team Juniors RPA joined our team and became a intuitive, helpful and hardworking “duck” member to our team. He provided lots of ideas and were very involved with developing the solution.

Parting thoughts:

- Great mentor interactions and continuous support and patience when faced with varied and surprising issues, as well as other teams interactions (Juniors RPA)
- *Banca Transilvania* feedback which was faster, more reliable and comprehensive than the one from mfinante.gov.ro