# User Manual: Partial Order Tool ver: 1.0

November 3, 2020

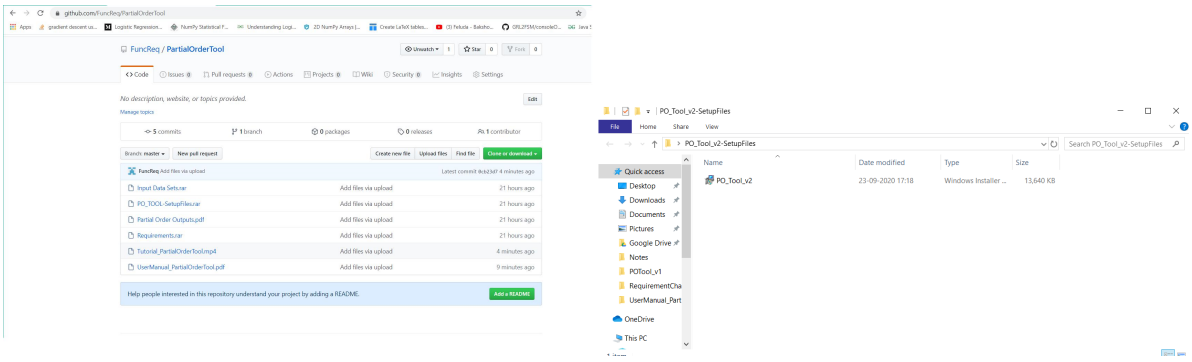
## 1 Download and Setup

The following steps need to be followed diligently for the correct setup of the tool in your machine.

$\mathcal{STEP}$-1. **Pre-requisite**: User must have Java SDK installed in their machine.

$\mathcal{STEP}$-2. **Download**: User needs to download the following files from the github repository (refer to 1(a)) for using the tool:

- *PO_TOOL-SetupFiles.rar*: It contains the PartialOrderTool installation files (refer to 1(b)).
- *Input Data Sets.rar*: : It consists of the data set corresponding to each of the five projects in separate folders (refer to Figure 4(a)). These data sets can be used in the tool




(a) Files in the repository (b) Contents of PO_TOOL-SetupFiles folder

Figure 1: Tool SetUp

$\mathcal{STEP}$-3. **Extract**: The downloaded RAR files need to be extracted at any sutaible location.

$\mathcal{STEP}$-4. **Installing the Tool**:

- Open the PO_TOOL-Setup Files folder.
- Right click on PO_Tool.msi file and select install option (refer to 2(a)).
- The installation wizard appears. Click on the *"Next"* button at the bottom of the wizard (refer to 2(b)).
- Next select a suitable installation location and click on *"Next"* button (refer to boxed portion in 2(c)).
- On the next screen of the wizard click on *"Install"* button at the bottom to start the installation process (refer to 2(d)).

- Finally on completion of the installation click on *"Finish"* button to exit the wizard (refer to 2(e)).

A folder named Partial˙Order˙Tool will be created in the selected location.

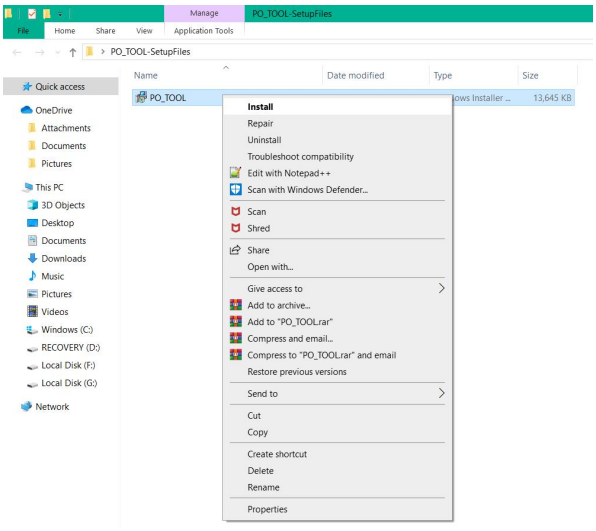
# 2 Using the Partial_Order Tool

$\mathcal{STEP}$-1. Right click on the Tool icon (i.e. PartialOrderTool˙ver1.exe) and select *"Open"* option (refer to 3(b)).

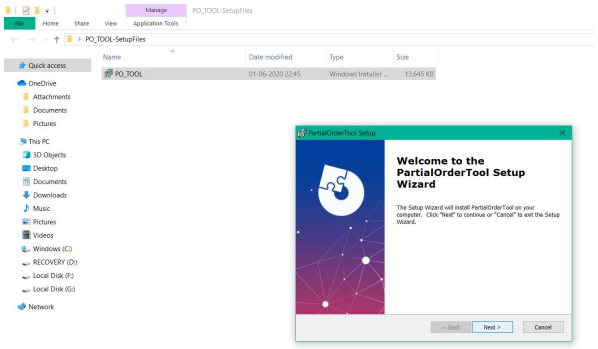
$\mathcal{STEP}$-2. The tool interface opens (refer to 3(a)).

$\mathcal{STEP}$-3. *Providing Input Data*: The set of functional, non-functional requirements, dependencies and conflicts can be provided in the following ways:

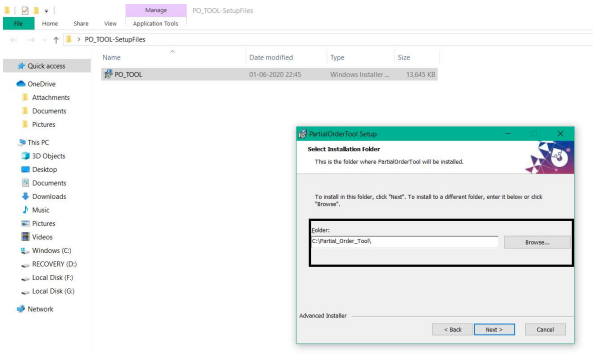
- *Option 1*: The user can choose to use the sample data set (stored in the folder *Input-DataSet.rar*) for using the tool. To use the sample data set the following steps needs to be done:
  (a) *Input Data Sets.rar* needs to be extracted at any suitable location.
  (b) User may select any one of the project folders (refer to Figure 4(a)).
  (c) Now all the files in the selected folder needs to be copied in the same location as that of the tool (refer to Figure 4(b)).
  (d) Click on the *"Load Configuration"* (refer to Figure 3(b)) button to load the data of the sample data set in the tool.
  (e) Figure 5 shows the data sets that are loaded in the tool.



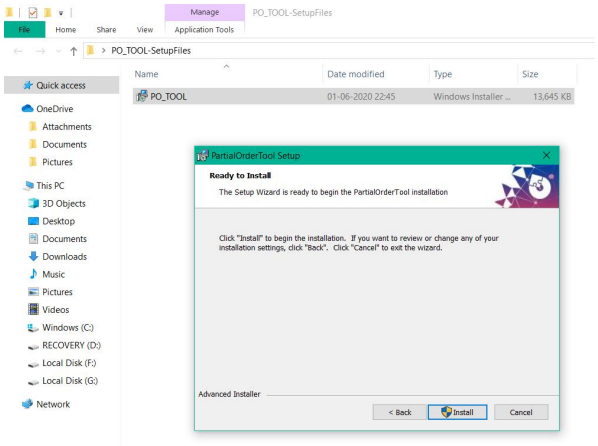

(a) Install Option



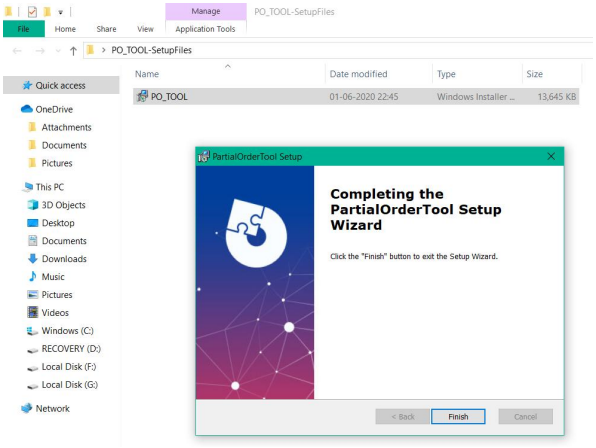

(b) Wizard opening screen




(c) Location for installation

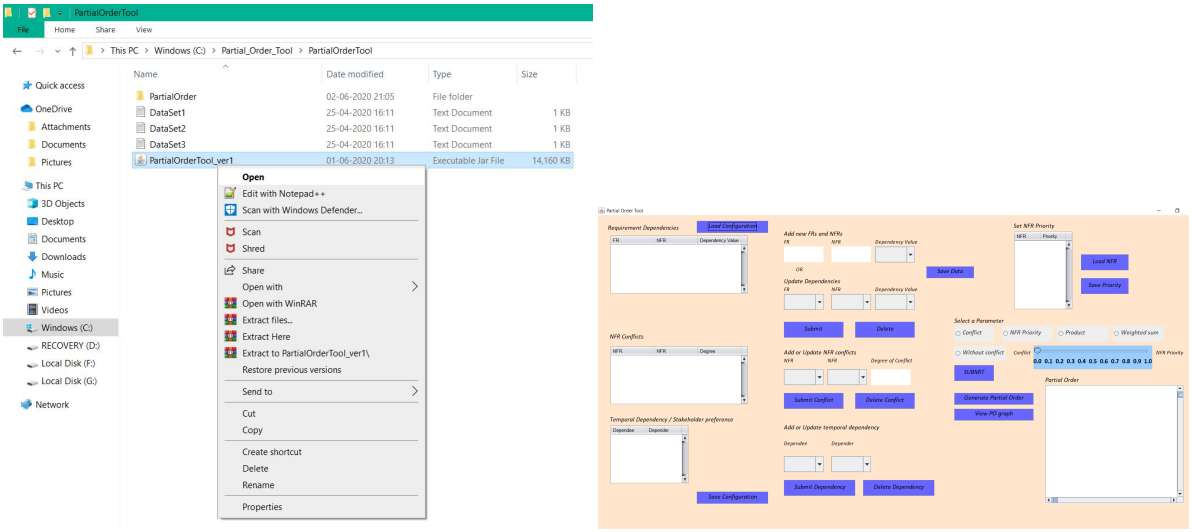



(d) Beginning installation




(e) Completion

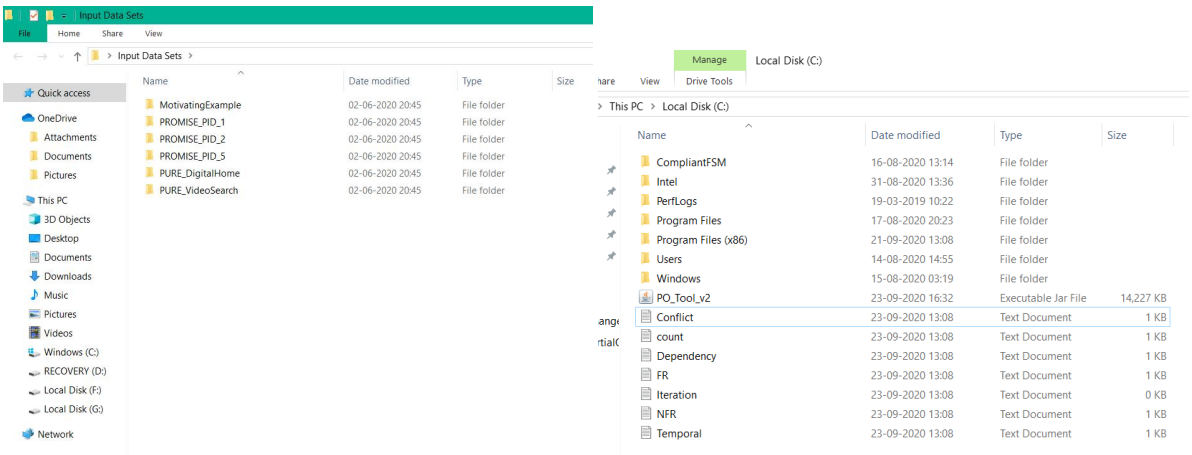
Figure 2: Installing Partial Order Tool




(a) Tool interface

(b) Starting the tool

Figure 3: Starting the application




(a) Sample Data Sets

(b) Files copied

Figure 4: Using sample data set

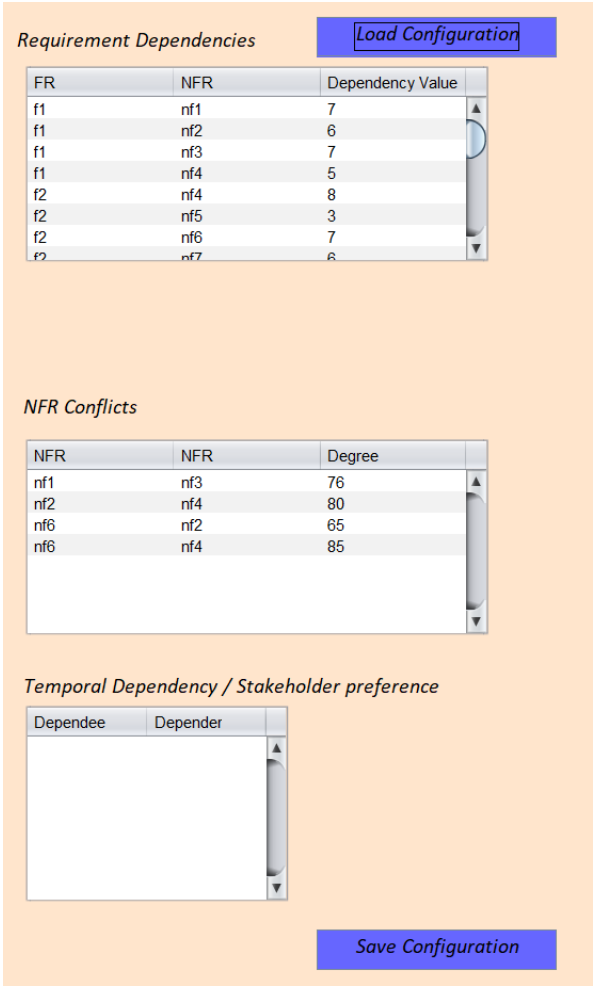



Figure 5: Data Loaded

- *Option 2*: User can directly provide input in the tool as follows:
  (a) **Adding new FR & NFR**: In the *"Add new FRs and NFRs"* (refer to Figure 6) section type the label of FR, its corresponding NFR and select the dependency value from the drop-down list (refer to the red boxed portion in Figure 6). Then click on the *"Submit"* button. The table at the left portion (refer to Figure 3(b)) displays the input submitted.

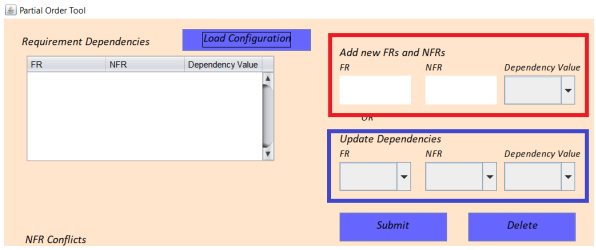



Figure 6: Adding FR & corresponding NFR

  (b) **Adding new NFR conflict**: FRs and NFRs has to be added into the list manually or to be loaded from existing set before specifying the conflicts. In the *"Add or Update NFR conflicts"* (refer to Figure 7) section select the pair of NFR that are in conflict using the drop-down list and also specify the degree of conflict. Then click on the *"Submit Conflict"* button.

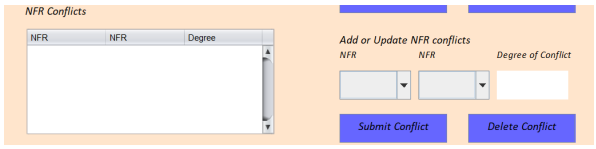



Figure 7: Adding NFR conflicts

  (c) **Adding temporal dependency or pre-specified orderings between FRs**: Similarly here also FRs has to be added into the list manually or to be loaded from existing set before specifying the dependencies. In the *"Add or Update temporal dependency"* (refer to Figure 8) section select the dependee and depender FR using the drop-down list (refer to the boxed portion in Figure 8). Then click on the *"Submit Dependency"* button.

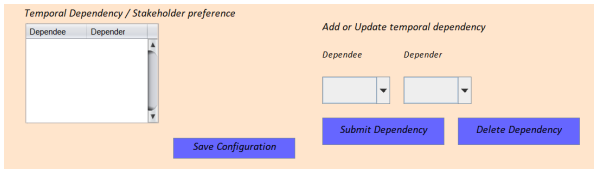



Figure 8: Adding temporal dependency

$\mathcal{STEP}$-4. The existing list of inputs can be modified or deleted as follows:

- **Modify FR-NFR dependency Value**: In the *"Add new FRs and NFRs"* section select a FR, NFR and a new dependency value from the drop-down list (refer to the blue boxed portion in Figure 6) and click on *"Submit"* button. The change can be viewed in the table at left.

- **Delete FR-NFR association**: In the *"Add new FRs and NFRs"* section select the FR and NFR from the drop-down list (refer to the blue boxed portion in Figure 6) and click on *"Delete"* button. The change can be viewed in the table at left.
- **Modify NFR conflict value**: In the *"Add or Update Conflicts"* section select the pair of NFRs from the drop-down list and type the new conflict value (refer to the boxed portion in Figure 7) and click on *"Submit Conflict"* button. The change can be viewed in the table at left.
- **Delete NFR conflict**: In the *"Add or Update Conflicts"* section select the the pair of NFRs from the drop-down list (refer to Figure 7) and click on *"Delete Conflict"* button. The change can be viewed in the table at left.
- **Delete temporal dependency**: In the *"Add or Update temporal dependency"* section select the pair of FRs from the drop-down list (refer to Figure 8) and click on *"Delete Dependency"* button. The change can be viewed in the table at the left.

$\mathcal{STEP}$-5. Once all the required dependencies and conflicts have been fixed click on *"Save Data"* button.

$\mathcal{STEP}$-6. Click on *"Load NFR"* button to load the NFR and set their priority values. Put priority value against each NFR and then click on *"Save Priority"* button (refer to Figure 9).

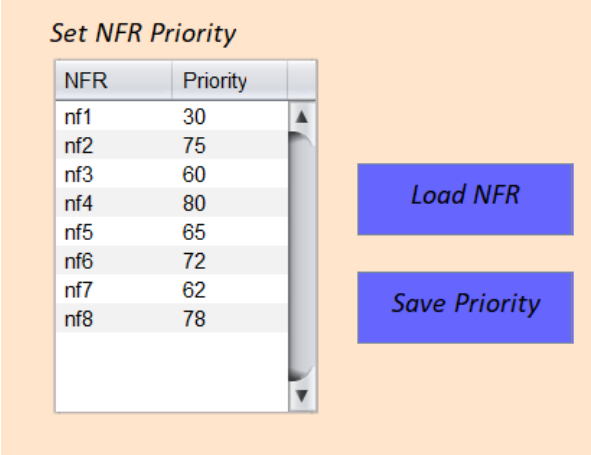



Figure 9: Setting NFR priority

$\mathcal{STEP}$-7. Now select any one of the parameters in the *"Select a Parameter"* section on the right (refer to Figure 10). In the case of parameter Weighted Sum, specify the weight to be assigned by dragging the slider to a position. The value at the left portion of the slider indicates weight assigned to the conflict and the right portion to the NFR priority (refer to the boxed portion in Figure 10). In Figure 10 the slider is at position 0:4 which means weight assigned to conflict is 0:4 and that to NFR priority is 0:6. After selecting the parameter click on the *"Submit"* button to set the parameter.

$\mathcal{STEP}$-8. Now click on the *"Generate Partial Order"* button to generate the Partial Order. Partial order in the form of linear sequence(s) that will be displayed in the white text area (refer to Figure 11(a)).

$\mathcal{STEP}$-9. Click on *"View PO Graph"* to see the partial order in the form of a graph (refer to Figure 11(b)).

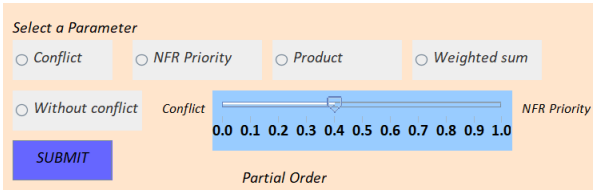
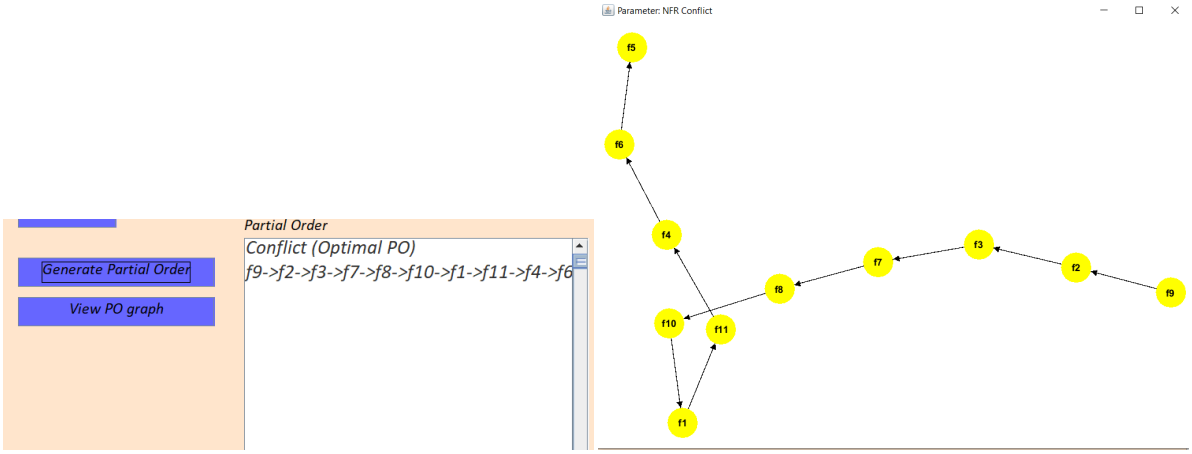



Figure 10: Setting parameter




(a) Partial Order in text

(b) Partial Order as a graph

Figure 11: Optimal Partial Order in Iteration 1