# User’s Manual

Contents

[User’s Manual 1](#_Toc124209215)

[1. Prerequisites: 2](#_Toc124209216)

[2. Contents: 2](#_Toc124209217)

[3. Setting Preferences: 2](#_Toc124209218)

[4. Using the modified version PBE: 3](#_Toc124209219)

[5. Using IDA: 5](#_Toc124209220)

## Prerequisites:

The prerequisites components for the introduced tool are:

* Python: The developed workflow requires at least Python 3.7. This [Link](https://www.digitalocean.com/community/tutorials/install-python-windows-10) could be helpful for installation.
* SimCenter Backend Applications: The backend applications developed by SimCenter (some changes are made by the authors). These applications are included in the release folder.

## Contents:

The Shared Release folder contains five main subfolders:

* Applications folder contain the backend applications used to accomplish simulations. These applications are developed and released by SimCenter team, however, few of them are modified by the authors to include the required features.
* PBE folder contains the updated version of the PBE application that contains Seismic isolation definitions (To run: PBE.exe).
* IDA folder contains a release of IDA application which is a simple application to perform Incremental Dynamic Analysis on a predefined PBE model (To run: IDA.exe).
* Examples folder contains solved examples.
* Records folder contains the ground motions input files used in the above mention examples (users should rectify their locations according to their environments).

## Setting Preferences:

For both PBE and IDA, users should modify the links in the preferences settings (below file menu) so the required simulations could be accomplished:

As shown in the figure below, The user is required to link with Python.exe, Opensees.exe, and Dakota.exe. It is preferred to use the versions placed in the applications. For the “Backend Application” Field, user should insert a path foe the parent folder of applications folder (in this case it is the release folder itself)



**Fig. 1.** Required preferences settings.

## Using the modified version PBE:

The PBE application is developed by SimCenter Team. Its documentation could be found in this [link](https://nheri-simcenter.github.io/PBE-Documentation/). The Authors have been developed the SI panel to contains definitions for simulation base isolators. The Panel contains GUI wrapping components for materials, Friction models and isolators as they defined in Opensees. A link for the original command in Opensees Wiki is provided in the GUI for users, see **Fig. 2**. Selecting an isolator for the model is by choosing the isolator name in the SIM panel (or choosing the Fixed-base option for no isolation is implemented), see **Fig. 3**. All commands can follow probabilistic random variables framework.

Graphical user interface, application, Teams

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**Fig. 2.** User-Interface to define isolation systems: (a) Material definitions; (b) Friction models; (c) Isolators bearings.

Graphical user interface, application

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**Fig. 3.** Assigning an isolator to the MDOF system.

## Using IDA:

The IDA application contains a simple interface. For the “IN” panel user should input a location for a PBE model and the start, end and incremental change of intensity. The Functionality is limited to PBE models with events defined by Multiple PEER or Multiple SimCenter components. The “Out” panel shows the Loss parameter subjected to different intensity.