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The **rep_sur** is a python script used to deal with surface conflicts between MCNP input files that generated with different decimal precision.

Assuming that there are two mcnp input files: the **OLD** and the **NEW**, where

- The **OLD** is generated from MCAM, where the float data have 15 digits. It contains the major structure of a model.
- The **NEW** is generated from MCCAD, where the float data have 7 digits. It contains the detail geometry of a part of model described in the **OLD**.

Now, we want to insert the cells and surfaces of the **NEW** into the **OLD**. However, there are some surfaces are defined both in the **NEW** and the **OLD**, but they have different digits. This leads to *gaps* and *overlaps* in the geometry. Therefore, we have to replace these surfaces in **NEW** using the correspondents form **OLD**.

Usage:

1. Keep just the **surfaces and cells** information of the **OLD**. Delete all the other information from the file. Make sure to back before delete.
2. Keep just the **surfaces** information part of the **NEW**. Delete all the other information from the file. Make sure to back before delete.
3. Add a comment lines:
 - Add a comment line: *CELL START* before the cell card of the **OLD**.
 - Add a comment line: *CELL END* after the cell card part of the **OLD**.
 - Add a comment line: *SURFACE CARD START* before the surfaces card part of both the **OLD** and the **NEW**.
 - Add a comment line: *SURFACE CARD END* after the surfaces card part of both the **OLD** and the **NEW**.
4. Open the *rep_sur.py* and change the *old_sur_file* and *new_sur_file* name to the correspondents.
5. Run the *rep_sur.py* by *python rep_sur.py*, and then the result will be in the *output*.
6. Copy the **replaced surfaces** in **output** into the finial file
7. Copy the **cells** information in **NEW** into the finial file

Please inform Xiaokang Zhang if there are bugs.

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