# Report on the python hashing implementation.

## General Overview:

pyHasher normalizes a file and creates a hash for it. The normalization is done by running mnfy3 or mnfy2, and if both fail, falling back to mnfyfailsafe, then creating a sha512 hash of the output file. It can be run in either python2 or python3, as long as both are installed.

## Usage instructions:

To hash a single file, use the following command:

‘pyHasher.py <filename>’

Optionally, to see the normalized file, append ‘—dump’. (though this is only useful for debugging/test)

## Assumptions:

### Differences between ASTs:

|  |  |  |  |
| --- | --- | --- | --- |
| Python 2.4 | Python 2.5 | Python 2.6 | Python 3.3 |
| \*Cant be found/Does not exist | ImportFrom module was not optional in 2.5  Set/SetComp/DictComp were introduced in 2.7 | ImportFrom module was not optional in 2.5  Set/SetComp/DictComp were introduced in 2.7 |  |

### Changes Made and Status:

|  |  |  |  |
| --- | --- | --- | --- |
| Change | Developed | Tested | Notes |
|  |  |  |  |

## Known Issues:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Issue | Location | Impact | Severity | Action |
| Slicing error-  P=(p+[1,2,3])[:1]  Gets minified to  P=p+[1,2,3][:1]  Which has different meaning. | Mnfy27, Mnfy33 | No impact on hashing because its consistant. Is an issue for mnfy’s standalone goals of portable code. | Low | No action required for hashing /RedHat purposes. |
| Some docstrings are referenced by \_\_doc\_\_ call in python. Docstrings are removed by mnfy, causing compile/run problems. | Mnfy27,Mnfy33 | No impact on hashing because code does not need to compile and removal of docstrings is consistent. | Low | No action required for hashing/RedHat purposes. |
| Big Numbers:  For some reason, reading and printing very large numbers (in the order of 10\*\*10) causes digits to be lost. | Mnfy27, but I think it is in all of Python. | Potential hashing risk, because large numbers could change code execution, though both hashes would be the same. | Medium | Not really sure if there is a fix for this one. |
|  |  |  |  |  |

## Testing Report:

Test scripts:

/libs/mnfy33/test\_mnfy.py - Unit Testing of Mnfy33 (written by Brett Cannon)

/libs/mnfy33/verify\_mnfy.py - Coverage Testing (written by Brett Cannon)

/libs/mnfy273/test\_mnfy.py - Unit Testing of Mnfy27 (modified from mnfy3300 version)

/libs/mnfy273/verify\_mnfy.py - Coverage Testing of Mnfy27 (modified from mnfy3300 version)

Unit Testing of MnfyFailSafe – Informally tested, no test scripts saved.

testHasher.py – Testing of hashing function/blackbox testing/testing multiple environments.

\*Note: Not all tests pass, because of the issues listed above.