BC-SIM-TN-011
simResort User Manual
Version 1.0.0

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Document Change Record

Issue	Revision	Date	Affected Pages	Change description

1 Introduction

1.1 Scope

In this document we will describe the software developed to solve the issue reported in [RD.1] and all the features and functionalities. The software could be used standalone or integrated in the pipeline, after the correct identification of the packets interested by the issue.

1.2 Reference Document

[RD.1] BC-SIM-TR-023_-_Anomalies_in_the_Packet_sorting (DOI: 10.20371/INAF/TechRep/176)
[RD.2] BC-SIM-TN-003 – Reports and Notes Layout and Flow – Version 2 (DOI: https://doi.org/10.20371/INAF/TechRep/179)

1.3 Acronyms

XML eXtensible Markup Language.

1.4 Document Format and Repository

This document is compliant with the SIMBIO-SYS Report and Note Layout and Flow [RD.2] and will be archived both on the INAF Open Access repository and the SIMBIO-SYS team Archive.

2 Software description

simResort is a module developed to move a specific packet in a new position in a XML telemetry file, that will be used as input for the SIMBIO-SYS pipeline, to solve sorting errors described in [RD.1]. Briefly, during the acquisition with a really short repetition time could be a saturation of the buffer of the fine time of the spacecraft clock (2 Bytes). The fine Time is resets but the Coarse time is not incremented, creating a wrong positioning of the packet when they are sorted by the generation time.
The module is developed in Python 3.10.4 for the SIMBIO-SYS pipeline environment, CentOS 7. Some tests demonstrated that it also works correctly in other LINUX distributions (Ubuntu and Fedora) and macOS (12.5.1 and earlier).
The software checks the XMLID attribute of each packet looking for a specific value. If the value of XMLID is in the file, it is moved from the current position to the correct one, otherwise an error message is generated.

2.1 Version

The current version of the software is 1.0.0. It is not included in the SIMBIO-SYS pipeline SimGen.

2.2 Usage

The standard usage of the software is

```
$ ./simResort --output output.xml --move x --after y input.xml
```

In this case the software read the file *input.xml* find the packet with XMLID *x* and move it after the packet with XMLID *y*. The new telemetry file is saved in the file *output.xml*.
The optional arguments are:

-h, --help
-o, --output
-m, --move
-a, --after
-v, --version

Each option is described in following sections.
In the next version of the software will be implemented some default values for the commonly used options.

2.2.1 Help

Print a help message indicating the options and exit.
In this case all the other options are ignored.

```
$ ./simResort -h
usage: simResort [-h] [-o outFile] [-m packet_to_move] [-a after_this]
[-v] file

SIMBIO-SYS Telemetry Sorter

positional arguments:
  file                  XML file to process

options:
  -h, --help                        show this help message and exit
  -o outFile, --output outFile      Output file
  -m packet_ID, --move packet_ID.   packet to move
  -a packet_ID, --after packet_ID   move after this
  -v, --version                     how program's version number and
                                    Exit
```

2.2.2 Output

Set the file name and path for the software output (outFile).

2.2.3 Move

Set the ID of the packet will be moved.

2.2.4 After

Set the id of the packet after that the moved one will be placed.

2.2.5 Version

Print the software version number and then exit.
In this case, all the other options are ignored.

3 Version History

0.1.0 Original version