```
{
    "name": "Bounded Rounded Library",
    "objectType": "sipModel",
    "libraryType": "SIPmath_3_0",
    "dateCreated": "2021-08-17",
    "provenance": "SLS",
    "U01": {
        "rng": [
            {
                "name": "HDR101",
                "function": "HDR_2_0",
                "arguments": {
                    "counter": "PM_Index",
                    "entity": 1,
                    "varId": 1,
                    "seed3": 2,
                    "seed4": 2
                }
            }
        ]
    },
    "sips": [
        {
            "name": "Unbounded",
            "ref": {
                "source": "rng",
                "name": "HDR101"
            },
            "function": "Metalog_1_0",
            "metadata": {
                "Average": -0.508109215629409,
                "Trial1": 0.108155020321771,
                "Trial2": 0.422196005333154,
                "Trial3": -0.0278776878964113
            },
            "arguments": {
                "aCoefficients": [
                    -0.44366710027334577,
                    0.31428823046335125,
                    -0.46025990428473268,
                    0.52556291243339126,
                    2.11565238380833565
                ]
            }
        },
```


U01 section refers to a uniform random variable on 0 to 1.

rng stands for random number generator, which in this case is named “HDR101” and is an HDR2.0 function (current HDR Generator with an iteration counter and 4 seeds). In theory other RNGs could be supported as well.

The arguments of the HDR are the Monte Carlo iteration counter (PM_Index), and the four seeds as specified.

The SIPs section starts

This SIP is named Unbounded and is driven by a U01 named “HDR101”.

The function is a Metalog 1.0 (current formulation of the Metalog).

Metadata includes the Average and three specific trials for calibration across platforms.

The arguments are the a-coefficients and, in general (but not this case), bounds.

```
{
    "name": "LowerBounded",
    "ref": {
        "source": "rng",
        "name": "HDR101"
    },
    "function": "Metalog_1_0",
    "metadata": {
        "Average": 0.761476070271115,
        "Trial1": 1.11422045881313,
        "Trial2": 1.52530746378309,
        "Trial3": 0.972507308941779
    },
    "arguments": {
        "lowerBound": 0,
        "aCoefficients": [
            -0.44366710027334577,
            0.31428823046335125,
            -0.46025990428473268,
            0.52556291243339126,
            2.11565238380833565
        ]
    }
},
{
    "name": "UpperBounded",
    "ref": {
        "source": "rng",
        "name": "HDR101"
    },
    "function": "Metalog_1_0",
    "metadata": {
        "Average": 2.65292268755144,
        "Trial1": 4.10251154330337,
        "Trial2": 4.34439447538021,
        "Trial3": 3.97173009312584
    },
    "arguments": {
        "upperBound": 5,
        "aCoefficients": [
            -0.44366710027334577,
            0.31428823046335125,
            -0.46025990428473268,
            0.52556291243339126,
            2.11565238380833565
```


The arguments are the a-coefficients and, in this case, a lower bound of 0.

The arguments are the a-coefficients and, in this case, an upper bound of 5.

```
            ]
        }
    },
    {
        "name": "Bounded",
        "ref": {
            "source": "rng",
            "name": "HDR101"
        },
        "function": "Metalog_1_0",
        "metadata": {
            "Average": 1.95676830432083,
            "Trial1": 2.63506214351606,
            "Trial2": 3.02004307526592,
            "Trial3": 2.46515514678502
        },
        "arguments": {
            "lowerBound": 0,
            "upperBound": 5,
            "aCoefficients": [
                -0.44366710027334577,
                0.31428823046335125,
                -0.46025990428473268,
                0.52556291243339126,
                2.11565238380833565
            ]
        }
    },
    {
        "name": "Unrounded",
        "ref": {
            "source": "rng",
            "name": "HDR101"
        },
        "function": "Metalog_1_0",
        "metadata": {
            "Average": -50.8109215629409,
            "Trial1": 10.8155020321771,
            "Trial2": 42.2196005333154,
            "Trial3": -2.78776878964113
        },
        "arguments": {
            "aCoefficients": [
                -44.366710027334577,
                31.428823046335125,
```


The arguments are the a-coefficients and, in this case, a lower bound of 0 and an upper bound of 5.

```
            -46.025990428473271,
            52.556291243339125,
            211.565238380833563
        ]
    }
},
{
    "name": "RoundNearest",
    "ref": {
        "source": "rng",
        "name": "HDR101"
    },
    "function": "Metalog_1_0",
    "metadata": {
        "Average": -50.808,
        "Trial1": 11,
        "Trial2": 42,
        "Trial3": -3
    },
    "rounding": "nearest",
    "arguments": {
        "aCoefficients": [
            -44.366710027334577,
            31.428823046335125,
            -46.025990428473271,
            52.556291243339125,
            211.565238380833563
        ]
    }
},
{
    "name": "RoundUp",
    "ref": {
        "source": "rng",
        "name": "HDR101"
    },
    "function": "Metalog_1_0",
    "metadata": {
        "Average": -51.068,
        "Trial1": 11,
        "Trial2": 43,
        "Trial3": -3
    },
    "rounding": "up",
    "arguments": {
```


This variable is rounded to the nearest integer.

This variable is rounded up to the integer above.

```
                "aCoefficients": [
                    -44.366710027334577,
                    31.428823046335125,
                    -46.025990428473271,
                    52.556291243339125,
                    211.565238380833563
                ]
            }
        },
        {
            "name": "RoundDown",
            "ref": {
                "source": "rng",
                "name": "HDR101"
            },
            "function": "Metalog_1_0",
            "rounding": "down",
            "metadata": {
                "Average": -50.57,
                "Trial1": 10,
                "Trial2": 42,
                "Trial3": -2
            },
            "arguments": {
                "aCoefficients": [
                    -44.366710027334577,
                    31.428823046335125,
                    -46.025990428473271,
                    52.556291243339125,
                    211.565238380833563
                ]
            }
        }
    ]
}
```


This variable is rounded down to the integer below.