PyAnsys Geometry cheat sheet

Version: 0.13.0

Verify your installation

Check your PyAnsys Geometry version

```python
from ansys.geometry.core import __version__
print(f"PyAnsys Geometry version: {__version__}")
```

```
PyAnsys Geometry version: 0.13.0
```

Sketching

There are two ways of creating 2D sketches in PyAnsys Geometry.

```python
from ansys.geometry.core.sketch import Sketch
from ansys.geometry.core.math import Point2D
```

Functional-style sketching

```python
sketch = Sketch()

(
  sketch
    .segment_to_point(Point2D([3, 3]), "Segment2")
    .segment_to_point(Point2D([3, 2]), "Segment3")
    .segment_to_point(Point2D([0, 0]), "Segment4")
)
```

You can visualize the sketch by calling the `plot` method.

```python
sketch.plot()
```

Object-oriented sketching

```python
sketch = Sketch()

sketch.triangle(
    Point2D([-10, 10]),
    Point2D([5, 6]),
    Point2D([-10, -10]),
)
```

Modeling

Launch a modeling session

```python
from ansys.geometry.core import launch_modeler
modeler = launch_modeler()
print(modeler)
```

```
Ansys Geometry Modeler (0x7fcd248de660)

Ansys Geometry Modeler Client (0x7fcd248de7b0)
  Target:      localhost:700
  Connection: Healthy
  Backend info:
    Version:            26.1.0
    Backend type:       CORE_LINUX
    Backend number:     20251119.1
    API server number:  1542
    CADIntegration:     1.1.0.144
```

By default, it will detect which modeling service is available on your system and launch it. If you have multiple modeling services installed, you can specify which one to use by passing the `mode` argument.

```python
modeler = launch_modeler(mode='spaceclaim')
modeler = launch_modeler(mode='discovery')
modeler = launch_modeler(mode='geometry_service')
```

Connect to an existing modeler

```python
from ansys.geometry.core import Modeler
modeler = Modeler()
print(modeler)
```

Create a design

```python
design = modeler.create_design("MyDesign")
print(design)
```

```
ansys.geometry.core.designer.Design 0x7fcd248bd010
  Name                   : MyDesign
  Is active?             : True
  N Bodies               : 0
  N Components           : 0
  N Coordinate Systems   : 0
  N Named Selections     : 0
  N Materials            : 0
  N Beam Profiles        : 0
  N Design Points        : 0
```

Create a body by extruding a sketch

```python
body = design.extrude_sketch("MyBody", sketch, 2)
print(body)
```

```
ansys.geometry.core.designer.Body 0x7fcd248be270
  Name              : MyBody
  Exists            : True
  Parent component  : MyDesign
  MasterBody        : 0:22
  Surface body      : False
  Color             : #D6F7D1
```

Plot the design

```python
design.plot()
```

Export the design to a file

```python
scdocx_path = design.export_to_scdocx()
pmdb_path = design.export_to_pmdb()
para_txt_path = design.export_to_parasolid_text()
para_bin_path = design.export_to_parasolid_bin()
fmd_path = design.export_to_fmd()
disco_path = design.export_to_disco()
```

Extra: Product scripting

Ansys SpaceClaim and Ansys Discovery support product scripting, and so does the Ansys Geometry service. If you have a product script you want to run, you can use the `run_discovery_script_file` method available on the `Modeler` object. The `script_args` parameter is optional and they will be made available to the script inside a dictionary called `argsDict`.

```python
result = modeler.run_discovery_script_file(
    file_path="path/to/script.py",
    script_args={"arg1": "value1", "arg2": "value2"},
)
```