In [2]:

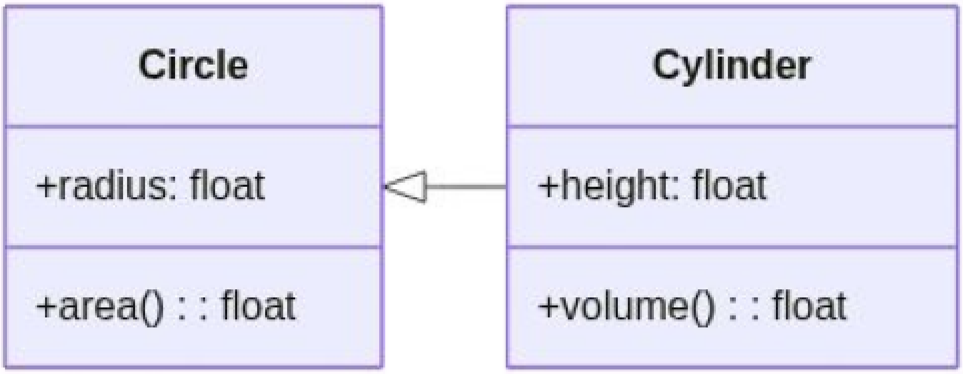
```
#Код для генерации диаграмм
import base64
import io, requests
from IPython.display import Image, display
from PIL import Image as im
import matplotlib.pyplot as plt

def mm(graph):
    graphbytes = graph.encode("utf8")
    base64_bytes = base64.urlsafe_b64encode(graphbytes)
    base64_string = base64_bytes.decode("ascii")
    img = im.open(io.BytesIO(requests.get('https://mermaid.ink/img/' + ba
    plt.imshow(img)
    plt.axis('off') # allow to hide axis
    plt.savefig('image.png', dpi=1200)
```

Прямое наследование: Cylinder как подкласс Circle.

In [3]:

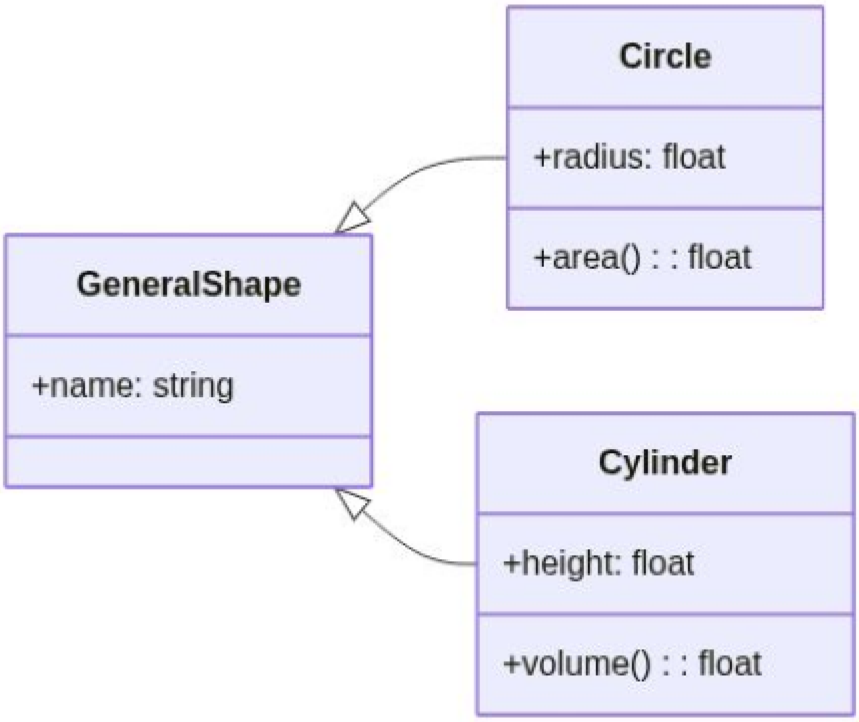
```
mm('''
classDiagram
direction LR
    class Circle {
        +radius: float
        +area(): float
    }
    class Cylinder {
        +height: float
        +volume(): float
    }
    Circle <|-- Cylinder''')
```



Общее базовое тело

In [4]:

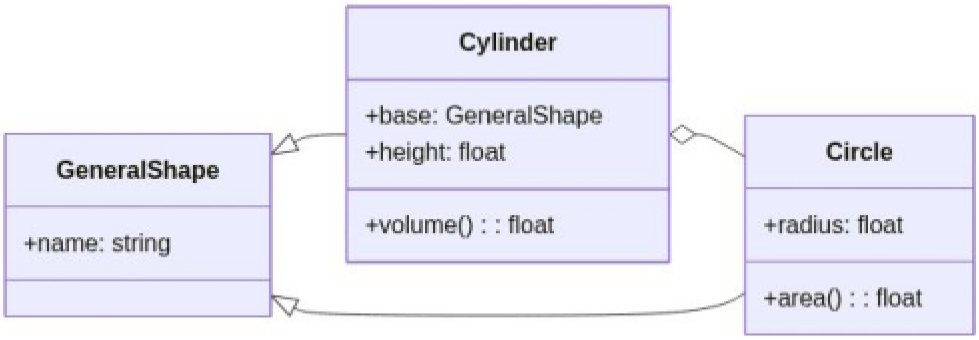
```
mm('''
classDiagram
    direction LR
    class GeneralShape {
        +name: string
    }
    class Circle {
        +radius: float
        +area(): float
    }
    class Cylinder {
        +height: float
        +volume(): float
    }
    GeneralShape <|-- Circle
    GeneralShape <|-- Cylinder''')
```



Композиция: Cylinder содержит Circle

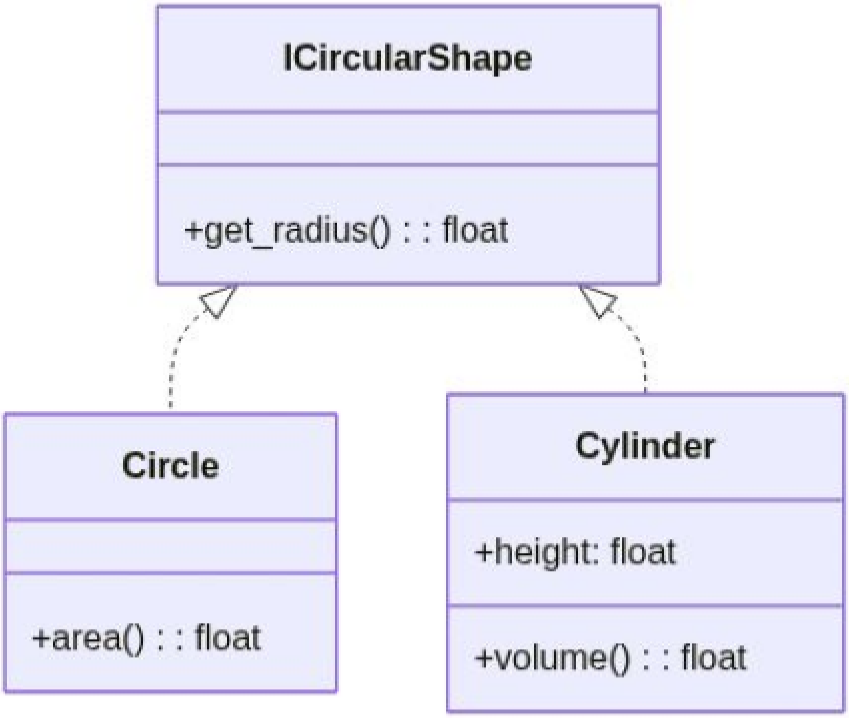
In [5]:

```
mm('''
classDiagram
    direction LR
    class Circle {
        +radius: float
        +area(): float
    }
    class Cylinder {
        +base: GeneralShape
        +height: float
        +volume(): float
    }
    class GeneralShape {
        +name: string
    }
    Cylinder o-- Circle
    GeneralShape <|-- Circle
    GeneralShape <|-- Cylinder
''')
```



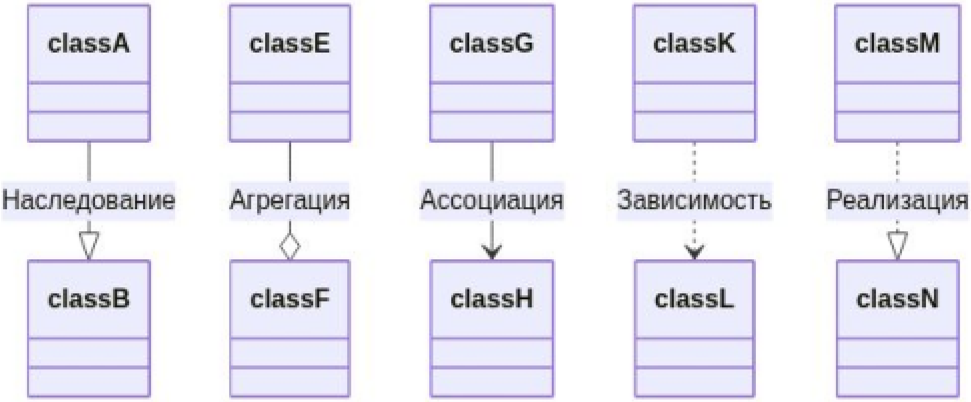
Интерфейс: ICircularShape реализуется и Circle, и Cylinder

```
In [8]: mm('''
classDiagram
    class ICircularShape {
        +get_radius(): float
    }
    class Circle {
        +area(): float
    }
    class Cylinder {
        +height: float
        +volume(): float
    }
    ICircularShape <|.. Circle
    ICircularShape <|.. Cylinder
''')
```



Некоторые из связей в UML-диаграмме классов:

```
In [7]: mm('''
classDiagram
classA --|> classB : Наследование
classE --o classF : Агрегация
classG --> classH : Ассоциация
classK ..> classL : Зависимость
classM ..|> classN : Реализация''')
```


classA
classE
classG
classK
classM
Наследование
Агрегация
Ассоциация
Зависимость
Реализация
classB
classF
classH
classL
classN