

## Task 1

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1) Create a class named Shape. Add an instance method called area. But don't define the method, just **raise NotImplementedError()** exception with a suitable message.

2) Make it an abstract base class by inheriting ABC class from the **abc** module. (To import: from abc import ABC)

Make the area method an abstract method by decorating it with **abstractmethod** decorator (import this also from abc).

3) Add 4 different subclasses for class Shape. - Triangle, Square, Pentagon, Circle.

Define constructor for each of them to assign the necessary parameters required for calculating the area.

Define the area method for each of the classes. When invoked it should return the area of the shape by calculating it.

Create an object for each of the subclasses and call the area method on the objects.

## Task 2

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Create a class named Cypher. The purpose of that class is to receive an input string of characters and convert it to another cypher string. Use a constructor to receive the input. You can also read the input from user. But don't use input() inside the constructor.

The class must have a class method to do the string conversion. And an instance method to invoke the classmethod from within it.

- Use the below conversion logic:
  - Iterate over each character in the string, and if the character is a digit increment it by one (0->1, 1->2, ... 9 should be replaced with 0)
  - if the character is an alphabet then shift the character by 2 positions (use chr() and ord() built-ins for this) (a->c, b->d, ... y->a, z->b) If the character is in upper case convert it to lower and vice versa
  - The returned string must be of same length as the input.

No need to implement the reversing algorithm but will be a plus if available.

1) create an object for the Cypher class with the string.

2) call the instance method, which should internally call the classmethod you prepared for the conversion, pass the string data to classmethod and do the conversion.

No need to consider special characters for now.

Expected output for the string "ABcD1293Z" is "cdEf2304b"