In [7]:

```python
# Exercise 01
from abc import ABC, abstractmethod
class Polygon(ABC):
    def noofsides(self):
        pass

class Triangle(Polygon):
    def noofsides(self):
        print("I have 3 sides")

class Pentagon(Polygon):
    def noofsides(self):
        print("I have 5 sides")

class Hexagon(Polygon):
    def noofsides(self):
        print("I have 6 sides")

class Quadrilateral(Polygon):
    def noofsides(self):
        print("I have 4 sides")
```

executed in 8ms, finished 00:50:09 2020-07-01

In [8]:

```python
# Driver code
R = Triangle()
R.noofsides()

K = Quadrilateral()
K.noofsides()

R = Pentagon()
R.noofsides()

K = Hexagon()
K.noofsides()
```

executed in 9ms, finished 00:50:19 2020-07-01

```
I have 3 sides
I have 4 sides
I have 5 sides
I have 6 sides
```

In [9]:
```
# Exercise 02
from abc import ABC, abstractmethod
class Animal(ABC):
    def move(self):
        pass

class Snake(Animal):
    def move(self):
        print("I can crawl")

class Dog(Animal):
    def move(self):
        print("I can bark")

class Lion(Animal):
    def move(self):
        print("I can roar")
```
executed in 10ms, finished 00:51:46 2020-07-01

In [10]:
```
# Driver code
K = Snake()
K.move()

R = Dog()
R.move()

K = Lion()
K.move()
```
executed in 8ms, finished 00:51:57 2020-07-01

```
I can crawl
I can bark
I can roar
```

In [11]:
```
# Exercise 03
from abc import ABC, abstractmethod
class Person(ABC):
    def ShowName(self):
        print("Abstract Base Class")

class Student(Person):
    def ShowName(self):
        super().ShowName()
        print("subclass ")
```
executed in 6ms, finished 00:53:04 2020-07-01

In [12]:
```
# Driver code
S1 = Student()
S1.ShowName()
```
executed in 4ms, finished 00:53:07 2020-07-01

```
Abstract Base Class
subclass
```

In [16]:

```python
# Task 02
from abc import ABC, abstractmethod
# Abstract Class
class Bank(ABC):
    def AccountName(self): pass

    def rateofinterest(self): pass

    def deposit(self): pass

    def withdraw(self): pass

# Derived Class
class Person(Bank):
    def AccountName(self):
        print('Saving Account')

    def rateofinterest(self):
        print("Rate of interest is 10%")

    def deposit(self):
        print("Depositing Money")

    def withdraw(self):
        print("Withdrawing Cash")
```

executed in 12ms, finished 01:01:51 2020-07-01

In [17]:

```python
# Driver Code
person1 = Person()
person1.AccountName()
person1.rateofinterest()
person1.deposit()
person1.withdraw()
```

executed in 6ms, finished 01:01:51 2020-07-01

```
Saving Account
Rate of interest is 10%
Depositing Money
Withdrawing Cash
```

In [3]:

```python
# Task 03
# Abstract Class
class Robot(ABC):
    @abstractmethod
    def obeyOrder(self): pass

    @abstractmethod
    def doCleaning(self): pass

# Derived Classes
class Cook(Robot):
    def obeyOrder(self):
        print('Cook Robot is cooking.')
    def doCleaning(self):
        print('Cook Robot is cleaning kitchen.')
    def cooking(self, dish):
        print(f'Robot is cooking {dish}.')
    def baking(self):
        print('Robot is baking cookies.')

class Gardener(Robot):
    def obeyOrder(self):
        print('Robot is gardening.')
    def doCleaning(self):
        print('Robot is cleaning garden.')
    def planting(self, plant):
        print(f'Robot is planting {plant}.')
    def watering(self):
        print('Robot is watering plants.')

class Driver(Robot):
    def obeyOrder(self):
        print('Robot is driving.')
    def doCleaning(self):
        print('Robot is cleaning the vehicle.')
    def drive(self, speed_status):
        print(f'Robot is driving {speed_status}.')
    def driveTo(self, destination):
        print(f'Robot is driving to {destination}')
```

executed in 13ms, finished 00:46:44 2020-07-01

In [6]:

```
# Driver Code
cook = Cook()
cook.obeyOrder()
cook.cooking('fish')

gardener = Gardener()
gardener.doCleaning()
gardener.planting('sun flowers')

driver = Driver()
driver.doCleaning()
driver.driveTo('Clifton')
```

executed in 8ms, finished 00:47:14 2020-07-01

```
Cook Robot is cooking.
Robot is cooking fish.
Robot is cleaning garden.
Robot is planting sun flowers.
Robot is cleaning the vehicle.
Robot is driving to Clifton
```