



# S.O.L.I.D. Principle



Hina Arora

---

# Single Responsibility Principle (SRP)

01



```
1  #Single Responsibility Principle (SRP) by Hina Arora
2
3  # Bad example - this class has multiple responsibilities
4  class User:
5      def __init__(self, name, email, password):
6          self.name = name
7          self.email = email
8          self.password = password
9
10     def login(self):
11         # handle user authentication logic
12         pass
13
14     def get_profile(self):
15         # handle user profile retrieval logic
16         pass
17
18 # Good example - this class has a single responsibility
19 class User:
20     def __init__(self, name, email, password):
21         self.name = name
22         self.email = email
23         self.password = password
24
25     class Authentication:
26         def authenticate(self, email, password):
27             # handle user authentication logic
28             pass
29
30     class UserProfile:
31         def get_profile(self, user):
32             # handle user profile retrieval logic
33             pass
34
```



Hina Arora

# Open-Closed Principle (OCP)

02



```
1  #Open-Closed Principle (OCP) by Hina Arora
2
3  # Bad example - this class is not open for extension
4  class Shape:
5      def __init__(self, type):
6          self.type = type
7
8      def area(self):
9          if self.type == "rectangle":
10             return self.width * self.height
11          elif self.type == "circle":
12             return 3.14 * (self.radius ** 2)
13
14  # Good example - this class is open for extension
15  class Shape:
16      def area(self):
17          pass
18
19  class Rectangle(Shape):
20      def __init__(self, width, height):
21          self.width = width
22          self.height = height
23
24      def area(self):
25          return self.width * self.height
26
27  class Circle(Shape):
28      def __init__(self, radius):
29          self.radius = radius
30
31      def area(self):
32          return 3.14 * (self.radius ** 2)
33
```



Hina Arora

# Liskov Substitution Principle (LSP)

03



```
1  #Liskov Substitution Principle (LSP) by Hina Arora
2
3  # Bad example – this class violates the LSP
4  class Bird:
5      def fly(self):
6          pass
7
8  class Penguin(Bird):
9      def fly(self):
10         raise Exception("I can't fly")
11
12 # Good example – this class follows the LSP
13 class Bird:
14     def fly(self):
15         pass
16
17 class Penguin(Bird):
18     def swim(self):
19         pass
20
```



Hina Arora

# Interface Segregation Principle (ISP)

04



```
1  #Interface Segregation Principle (ISP) by Hina Arora
2
3  # Bad example – this class violates the ISP
4  class Vehicle:
5      def start_engine(self):
6          pass
7
8      def fly(self):
9          pass
10
11 # Good example – this class follows the ISP
12 class GroundVehicle:
13     def start_engine(self):
14         pass
15
16 class Airplane:
17     def start_engine(self):
18         pass
19
20     def fly(self):
21         pass
22
23
```



Hina Arora



# Dependency Inversion Principle (DIP)

05



```
1  #Dependency Inversion Principle (DIP) by Hina Arora
2
3  # Bad example - this class violates the DIP
4  class ProductService:
5      def __init__(self):
6          self.db = MongoDB()
7
8      def get_products(self):
9          return self.db.get_all()
10
11  class MongoDB:
12      def get_all(self):
13          pass
14
15  # Good example - this class follows the DIP
16  class ProductService:
17      def __init__(self, db):
18          self.db = db
19
20      def get_products(self):
21          return self.db.get_all()
22
23  class DB:
24      def get_all(self):
25          pass
26
27  class MongoDB(DB):
28      def get_all(self):
29          pass
30
```



Hina Arora

---

# Was this post helpful to you?

Please like and share it  
to your friends!



Hina Arora

