Classes and Objects

supplement slides

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class definition

```
1  class Charge:
2      def __init__(self, x0, y0, q0):
3          self.x = x0
4          self.y = y0
5          self.q = q0
6
7      def potential_at(self, x, y):
8          COULOMB = 8.99e09
9          dx = x - self.x
10         dy = y - self.y
11         r = (dx*dx + dy*dy)**(1/2)
12         if r == 0.0: # Avoid division by 0
13             return float('inf')
14         return COULOMB * self.q / r
15
16     def __str__(self):
17         result = str(self.q) + ' at ('
18         result += str(self.x) + ', ' + str(self.y) + ')'
19         return result
20
21 if __name__ == '__main__':
22     c = Charge(.51, .63, 21.3)
23     print(c)
24     print(c.potential_at(0.1, 0.2))
```

constructor

ordinary method

instance variables

special method

invoke constructor

call the __str__ function

call the potential_ad function