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1  """
2  CS241 Checkpoint 8A
3  Written by Chad Macbeth
4  """
5
6  ### Class represents a GPA and allows conversion
7  ### between letter and grade point average.
8  class GPA:
9
10     ### Initialize the GPA object
11     def __init__(self):
12         self.gpa = 0
13
14     ### Accessor for GPA
15     ### In many ways, this is a pointless function
16     ### because the user could just do student.gpa to get
17     ### the value. This get functions are common in other
18     ### languages but not so much in python.
19     def get_gpa(self):
20         return self.gpa
21
22     ### Mutator for GPA
23     ### GPA must be positive
24     ### These are very useful to ensure the user sets the value
25     ### to a valid value. However, this doesn't prevent the user
26     ### from doing student.gpa = -5 (ouch)
27     def set_gpa(self, gpa):
28         if gpa < 0.0:
29             self.gpa = 0.0
30         else:
31             self.gpa = gpa
32
33     ### Convert the GPA to a letter grade
34     def get_letter(self):
35         if self.gpa <= 0.99:
36             return "F"
37         elif self.gpa <= 1.99:
38             return "D"
39         elif self.gpa <= 2.99:
40             return "C"
41         elif self.gpa <= 3.99:
42             return "B"
43         else:
44             return "A"
45
46     ### Convert a letter to a GPA
47     def set_letter(self, letter):
48         if letter == "A":
49             self.gpa = 4.0
50         elif letter == "B":
51             self.gpa = 3.0
52         elif letter == "C":
53             self.gpa = 2.0
54         elif letter == "D":
55             self.gpa = 1.0
56         else:
57             self.gpa = 0.0
58
59     ### Test the GPA Class
60     def main():
61         student = GPA()
62
63         print("Initial values:")
64         print("GPA: {:.2f}".format(student.get_gpa()))
65         print("Letter: {}".format(student.get_letter()))
66

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67     value = float(input("Enter a new GPA: "))
68
69     student.set_gpa(value)
70
71     print("After setting value:")
72     print("GPA: {:.2f}".format(student.get_gpa()))
73     print("Letter: {}".format(student.get_letter()))
74
75     letter = input("Enter a new letter: ")
76
77     student.set_letter(letter)
78
79     print("After setting letter:")
80     print("GPA: {:.2f}".format(student.get_gpa()))
81     print("Letter: {}".format(student.get_letter()))
82
83 if __name__ == "__main__":
84     main()
85
86
87
88
```