

```
1 //Code for Student.java file
2 // Define a class named Student
3 public class Student {
4
5     // Private fields for encapsulation
6     private String name;
7     private String id;
8     private int age;
9     private float cgpa;
10
11    // Default constructor
12    public Student() {
13        System.out.println("E-Constructor");
14    }
15
16    // Parameterized constructor with name, id, age, and cgpa
17    public Student(String name, String id, int age, float cgpa) {
18        System.out.println("P-Constructor");
19        // Set the values using setter methods
20        setName(name);
21        setId(id);
22        setAge(age);
23        setCgpa(cgpa);
24    }
25
26    // Setter method for name
27    public void setName(String name) {
28        this.name = name;
29    }
30
31    // Getter method for name
32    public String getName() {
33        return name;
34    }
35
36    // Setter method for id
37    public void setId(String id) {
38        this.id = id;
39    }
40
41    // Getter method for id
42    public String getId() {
43        return id;
44    }
45
46    // Setter method for age with validation
47    public void setAge(int age) {
48        if (age >= 0) {
49            this.age = age;
50        } else {
51            System.out.println("Age should be positive");
52        }
53    }
54
55    // Getter method for age
56    public int getAge() {
57        return age;
58    }
59
60    // Setter method for cgpa with validation
61    public void setCgpa(float cgpa) {
62        if (cgpa >= 0 && cgpa <= 4) {
63            this.cgpa = cgpa;
64        } else {
65            System.out.println("Invalid CGPA");
66        }
67    }
68
69    // Getter method for cgpa
```

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70     public float getCgpa() {
71         return cgpa;
72     }
73
74     // Method to display student details
75     public void showDetails() {
76         System.out.println("-----");
77         System.out.println("ID: " + id);
78         System.out.println("Name: " + name);
79         System.out.println("Age: " + age);
80         System.out.println("CGPA: " + cgpa);
81         System.out.println("-----");
82     }
83 }
84
85
86 //Code for Start.java file
87 // Define a class named Start
88 public class Start {
89
90     // Main method, the entry point of the program
91     public static void main(String[] args) {
92
93         // Create an instance of the Student class using the parameterized constructor
94         Student s1 = new Student("KARIM", "XX-XXXX-X", 20, 3.5f);
95         // Display the details of the first student
96         s1.showDetails();
97
98         // Create another instance of the Student class using the default constructor
99         Student s2 = new Student();
100        // Set values for the second student using setter methods
101        s2.setName("KAMAL");
102        s2.setId("XX-XXXXX-Y");
103        s2.setAge(20);
104        // Attempt to set an invalid age (negative value)
105        s2.setAge(-20);
106        // Set a valid CGPA for the second student
107        s2.setCgpa(3.5f);
108        // Attempt to set an invalid CGPA (value greater than 4)
109        s2.setCgpa(7.5f);
110
111        // Display the details of the second student
112        s2.showDetails();
113    }
114 }
115 }
```