

```
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

```