Problem recap skipped due to length of problem.

Three Step Analysis:

A. From the letter grades of two classes and their associated credit hours, provide a GPA and a status message for the student if GPA < 2.0 or GPA > 3.5.
   a. Use GPA = Total Points / Total Number of Credits
   b. Letter grades of following value:
      i. A = 4.0, B = 3.0, C = 2.0, D = 1.0, F = 0.0

INPUT	OUTPUT	EQUATIONS

Grade 1	[Grade 1] [Credits 1]	**switch** (Grade1)
		    case A:
		        Grade1 = 4.0;
		        break;
		    case B:
		        Grade1 = 3.0;
		        break;
		[ETC down to F (0.0)]

Credits 1	[Grade 2] [Credits 2]	**switch** (Grade2)
		    case A:
		        Grade2 = 4.0;
		        break;
		    case B:
		        Grade2 = 3.0;
		        break;
		[ETC…]

Grade 2	Your GPA = [GPA]	GPA = ((Grade1 * Credits1) + (Grade2 * Credits2)) / (Credits1 + Credits2)
Credits 2	"You are doing poorly" "Congratulations, doing good"	**if** (GPA >= 3.5) **write** "Congratulations, doing good" **end if**
		If (GPA < 2.5) **write** "You are doing poorly" **end if**

B. Limits / Constraints:
   a. Output must match example.
   b. GPA Should be an have format: 1.23456

final A = 4.0, B = 3.0, C = 2.0, D = 1.0, F = 0.0

write "Enter letter grade for first class --> "
read Grade1

write "Enter number of credit hours for first class --> "
read Credits1

write "Enter letter grade for second class --> "
read Grade2

write "Enter number of credit hours for second class --> "
read Credits2

switch (Grade1)
   case "A":
     Grade1 = A;
     break;
   case "B":
     Grade1 = B;
     break;
   case "C":
     Grade1 = C;
     break;
   case "D":
     Grade1 = D;
     break;
   case "F":
     Grade1 = F;
     break;
end switch

switch (Grade2)
   case "A":
     Grade2 = A;
     break;
   case "B":
     Grade2 = B;
     break;
   case "C":
     Grade2 = C;
     break;
   case "D":
     Grade2 = D;

```
      break;
   case "F":
      Grade2 = F;
      break;
```
end switch

GPA = ((Grade1 * Credits1) + (Grade2 * Credits2)) / (Credits1 + Credits2)

write Grade1, Credits1
write Grade2, Credits2
write "Your GPA= " + GPA

if (GPA >= 3.5)
   write "Congratulations, doing good"
end if

if (GPA < 2.5)
   write "You are doing poorly"
end if

src\Problem1.java

```java
/*
Name: Hunter Poole
Date: 2/20/25
HW #: 4
Problem #: 1
Source Code: Problem1.java
Action: For the grade and credit hours of two classes, provides a GPA and a status message.
 */

import java.util.Scanner;

public class Problem1 {
    public static void main(String[] args)
    {
        final float A = 4.0f, B = 3.0f, C = 2.0f, D = 1.0f, F = 0.0f;
        float Grade1_Float = F, Grade2_Float = F, GPA = 0.0f;
        String Grade1_String = "F", Grade2_String = "F";
        int Credits1 = 0, Credits2 = 0;

        Scanner Input = new Scanner(System.in);
        System.out.print("Enter letter grade for first class --> ");
        Grade1_String = Input.next();

        System.out.print("Enter number of credit hours for first class --> ");
        Credits1 = Input.nextInt();

        System.out.println();

        System.out.print("Enter letter grade for second class --> ");
        Grade2_String = Input.next();

        System.out.print("Enter number of credit hours for second class --> ");
        Credits2 = Input.nextInt();

        System.out.println();

        switch (Grade1_String)
        {
            case "A":
                Grade1_Float = A;
                break;
            case "B":
                Grade1_Float = B;
                break;
            case "C":
                Grade1_Float = C;
                break;
```

```java
              case "D":
                  Grade1_Float = D;
                  break;
              case "F":
                  Grade1_Float = F;
                  break;
          }

          switch (Grade2_String)
          {
              case "A":
                  Grade2_Float = A;
                  break;
              case "B":
                  Grade2_Float = B;
                  break;
              case "C":
                  Grade2_Float = C;
                  break;
              case "D":
                  Grade2_Float = D;
                  break;
              case "F":
                  Grade2_Float = F;
                  break;
          }

          GPA = ((Grade1_Float * Credits1) + (Grade2_Float * Credits2)) / (Credits1 +
  Credits2);

          System.out.printf("%s %3d %n", Grade1_String, Credits1);
          System.out.printf("%s %3d %n", Grade2_String, Credits2);
          System.out.printf("%s %.5f %n", "Your GPA = ", GPA);

          if (GPA >= 3.5)
          {
              System.out.print("Congratulations, doing good");
          }

          if (GPA < 2.0)
          {
              System.out.print("You are doing poorly");
          }
      }
}

/*
Enter letter grade for first class --> B
Enter number of credit hours for first class --> 3
```

```
 96
 97   Enter letter grade for second class --> C
 98   Enter number of credit hours for second class --> 4
 99
100   B    3
101   C    4
102   Your GPA =   2.42857
103
104   Enter letter grade for first class --> B
105   Enter number of credit hours for first class --> 3
106
107   Enter letter grade for second class --> A
108   Enter number of credit hours for second class --> 4
109
110   B    3
111   A    4
112   Your GPA =   3.57143
113   Congratulations, doing good
114
115   Enter letter grade for first class --> D
116   Enter number of credit hours for first class --> 3
117
118   Enter letter grade for second class --> C
119   Enter number of credit hours for second class --> 3
120
121   D    3
122   C    3
123   Your GPA =   1.50000
124   You are doing poorly
125
126       // Additional cases //
127       // Test for F, not included above //
128
129   Enter letter grade for first class --> A
130   Enter number of credit hours for first class --> 5
131
132   Enter letter grade for second class --> F
133   Enter number of credit hours for second class --> 3
134
135   A    5
136   F    3
137   Your GPA =   2.50000
138   */
```

Three Step Analysis:

A. Take the number of drinks, hours drinking, body weight in pounds, and gender. Provide Blood Alcohol Content and status message to 3 decimal places.

   a.

INPUT	OUTPUT	EQUATIONS
Drink quantity	[BAC #] 0.000	((GramsAlcohol) / ((WeightGrams) * Gender)) * 100) - (MetabolicRate) = BAC
Hours of drinking	"You are just fine"	**If** (Gender == "Male") BAC = ((GramsAlcohol) / (WeightGrams * MALE) * 100) - (MetabolicRate); **end if**
Gender	"Slurring Speech, loss of balance"	**If** (Gender == "Female") BAC = ((GramsAlcohol) / (WeightGrams * FEMALE) * 100) - (MetabolicRate); **end if**
Weight	"Alcohol poisoning. Loss of Consciousness"	MetabolicRate = HoursDrinking * 0.015; GramsAlcohol = NumDrinks * 14; WeightGrams = WeightPounds * 454;
	"Needs assistance in walking; total mental confusion"	**If** (BAC == 0) **write** "You are just fine" **end if**
	"Feeling good"	[As above, etc for each status message] [> 0 && <= 0. 5] [> 0.05 && <= 0.2] [ETC]
	"Onset of coma, possible death due to respiratory arrest"	

B. Limits / Constraints:

   a. Order of inputs: gender, body weight, drinks, hours.
   b. Then output.

final MALE = 0.68, FEMALE = 0.55

write "Male or Female?"
read Gender

write "What is your body weight in pounds?"
read WeightPounds

write "How many drinks have you had?"
read NumDrinks

write "How many hours have you been drinking?"
read HoursDrinking

MetabolicRate = HoursDrinking * 0.015;
GramsAlcohol = NumDrinks * 14;
WeightGrams = WeightPounds * 454;

if (Gender == "Male")
        BAC = ((GramsAlcohol) / (WeightGrams * MALE) * 100) - (MetabolicRate);
end if

if (Gender == "Female")
        BAC = ((GramsAlcohol) / (WeightGrams * FEMALE) * 100) - (MetabolicRate);
end if

If (BAC == 0)
        write "BAC = " + BAC + "You are just fine"
end if

if (BAC > 0 && BAC <= 0.05)
        write "BAC = " + BAC + "Feeling good"
end if

if (BAC > 0.05 && BAC <= 0.2)
        write "BAC = " + BAC + "Slurring speech, loss of balance"
end if

if (BAC > 0.2 && BAC <= 0.249)
        write "BAC = " + BAC + "Needs assistance in walking; total mental confusion"
end if

if (BAC > 0.249 && BAC <= 0.399)
        write "BAC = " + BAC + "Alcohol poisoning. Loss of consciousness"
end if

if (BAC > 0.399)
        write "BAC = " + BAC + "Onset of coma, possible death due to respiratory arrest."
end if

src\Problem2.java

```java
1  /*
2  Name: Hunter Poole
3  Date: 2/20/25
4  HW #: 4
5  Problem #: 2
6  Source Code: Problem2.java
7  Action: Given Gender, body weight in pounds, # of drinks consumed,
8          and # of hours drinking, returns BAC and status message.
9   */
10
11   import java.util.Scanner;
12
13  public class Problem2 {
14      public static void main(String[] args)
15      {
16          final float MALE = 0.68f, FEMALE = 0.55f;
17          float NumDrinks = 0, HoursDrinking = 0, WeightPounds = 0, WeightGrams = 0,
     GramsAlcohol = 0, MetabolicRate = 0, BAC = 0;
18          String Gender = "";
19
20          Scanner Input = new Scanner(System.in);
21          System.out.print("Male or Female? ");
22          Gender = Input.next();
23
24          System.out.print("What is your body weight in pounds? ");
25          WeightPounds = Input.nextFloat();
26
27          System.out.print("How many drinks have you had? ");
28          NumDrinks = Input.nextFloat();
29
30          System.out.print("How many hours have you been drinking? ");
31          HoursDrinking = Input.nextFloat();
32
33          MetabolicRate = HoursDrinking * 0.015f;
34          GramsAlcohol = NumDrinks * 14f;
35          WeightGrams = WeightPounds * 454f;
36
37          if (Gender.equals("Male") || Gender.equals("M"))
38          {
39              BAC = ((GramsAlcohol) / (WeightGrams * MALE) * 100) - (MetabolicRate);
40          }
41          if (Gender.equals("Female") || Gender.equals("F"))
42          {
43              BAC = ((GramsAlcohol) / (WeightGrams * FEMALE) * 100) - (MetabolicRate);
44          }
45
46          if (BAC == 0)
```

```java
47              {
48                  System.out.printf("%s %.3f, %s", "BAC =", BAC, "You are just fine");
49              }
50
51          if (BAC > 0 && BAC <= 0.05)
52              {
53                  System.out.printf("%s %.3f, %s", "BAC =", BAC, "Feeling good");
54              }
55
56          if (BAC > 0.05 && BAC <= 0.2)
57              {
58                  System.out.printf("%s %.3f, %s", "BAC =", BAC, "Slurring speech, loss of
    balance");
59              }
60
61          if (BAC > 0.2 && BAC <= 0.249)
62              {
63                  System.out.printf("%s %.3f, %s", "BAC =", BAC, "Needs assistance in walking;
    total mental confusion");
64              }
65
66          if (BAC > 0.249 && BAC <= 0.399)
67              {
68                  System.out.printf("%s %.3f, %s", "BAC =", BAC, "Alcohol poisoning. Loss of
    consciousness");
69              }
70
71          if (BAC > 0.399)
72              {
73                  System.out.printf("%s %.3f, %s", "BAC =", BAC, "Onset of coma, possible death due
    to respiratory arrest.");
74              }
75          }
76  }
77
78  /* P.S., I'm not a big fan of these stacked if statements for each BAC bucket.
79      Is there a better (simpler) way to do this? Didn't work w/switch statement when I tried
    it.
80  */
81
82  /*
83  Male or Female? M
84  What is your body weight in pounds? 180
85  How many drinks have you had? 4
86  How many hours have you been drinking? 2
87  BAC = 0.071, Slurring speech, loss of balance
88
89  Male or Female? M
90  What is your body weight in pounds? 165
91  How many drinks have you had? 2
```

```
 92  How many hours have you been drinking? 3
 93  BAC = 0.010, Feeling good
 94
 95  Male or Female? F
 96  What is your body weight in pounds? 120
 97  How many drinks have you had? 8
 98  How many hours have you been drinking? 2
 99  BAC = 0.344, Alcohol poisoning. Loss of consciousness
100
101  Male or Female? M
102  What is your body weight in pounds? 210
103  How many drinks have you had? 6
104  How many hours have you been drinking? 3
105  BAC = 0.085, Slurring speech, loss of balance
106
107      // Additional cases //
108      // To cover all status messages //
109
110  Male or Female? M
111  What is your body weight in pounds? 172
112  How many drinks have you had? 10
113  How many hours have you been drinking? 2
114  BAC = 0.234, Needs assistance in walking; total mental confusion
115
116  Male or Female? F
117  What is your body weight in pounds? 135
118  How many drinks have you had? 15
119  How many hours have you been drinking? 1
120  BAC = 0.608, Onset of coma, possible death due to respiratory arrest.
121
122  Male or Female? F
123  What is your body weight in pounds? 94
124  How many drinks have you had? 0
125  How many hours have you been drinking? 0
126  BAC = 0.000, You are just fine
127   */
```

src\Problem3.java

```java
 1  /*
 2  Name: Hunter Poole
 3  Date: 2/20/25
 4  HW #: 4
 5  Problem #: 3
 6  Source Code: Problem3.java
 7  Action: Given a number 1 - 7, returns the current day for that number.
 8          Sunday is 1.
 9          Display error message and exit if number is not in range (1, 7)
10   */
11
12  import java.util.Scanner;
13
14  public class Problem3 {
15      public static void main(String[] args)
16      {
17          int Day = 0;
18
19          Scanner Input = new Scanner(System.in);
20          System.out.print("Enter a number ");
21          Day = Input.nextInt();
22
23          if (Day < 1 || Day > 7)
24          {
25              System.out.println("Error: Please enter a number 1 - 7");
26              System.exit(0);
27          }
28
29          switch (Day)
30          {
31              case 1:
32                  System.out.println("Today is Sunday");
33                  break;
34              case 2:
35                  System.out.println("Today is Monday");
36                  break;
37              case 3:
38                  System.out.println("Today is Tuesday");
39                  break;
40              case 4:
41                  System.out.println("Today is Wednesday");
42                  break;
43              case 5:
44                  System.out.println("Today is Thursday");
45                  break;
46              case 6:
47                  System.out.println("Today is Friday");
```

```java
48                    break;
49                case 7:
50                    System.out.println("Today is Saturday");
51                    break;
52          }
53      }
54 }
55
56 /*
57 Enter a number 1
58 Today is Sunday
59
60 Enter a number 2
61 Today is Monday
62
63 Enter a number 3
64 Today is Tuesday
65
66 Enter a number 4
67 Today is Wednesday
68
69 Enter a number 5
70 Today is Thursday
71
72 Enter a number 6
73 Today is Friday
74
75 Enter a number 7
76 Today is Saturday
77
78      // Additional cases //
79      // For error and exit //
80
81 Enter a number 0
82 Error: Please enter a number 1 - 7
83
84 Enter a number 8
85 Error: Please enter a number 1 - 7
86 */
```