

Hunter Poole
CSCI 155 HW4, Problem 1

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 $GPA = \text{Total Points} / \text{Total Number of Credits}$
 - 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]	$GPA = ((\text{Grade1} * \text{Credits1}) + (\text{Grade2} * \text{Credits2})) / (\text{Credits1} + \text{Credits2})$
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

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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;

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```
        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

```
1  /*
2  Name: Hunter Poole
3  Date: 2/20/25
4  HW #: 4
5  Problem #: 1
6  Source Code: Problem1.java
7  Action: For the grade and credit hours of two classes, provides a GPA and a status message.
8  */
9
10 import java.util.Scanner;
11
12 public class Problem1 {
13     public static void main(String[] args)
14     {
15         final float A = 4.0f, B = 3.0f, C = 2.0f, D = 1.0f, F = 0.0f;
16         float Grade1_Float = F, Grade2_Float = F, GPA;
17         char Grade1_Ch, Grade2_Ch;
18         int Credits1, Credits2;
19
20         Scanner Input = new Scanner(System.in);
21         System.out.print("Enter letter grade for first class --> ");
22         Grade1_Ch = Input.next().charAt(0);
23
24         System.out.print("Enter number of credit hours for first class --> ");
25         Credits1 = Input.nextInt();
26
27         System.out.println();
28
29         System.out.print("Enter letter grade for second class --> ");
30         Grade2_Ch = Input.next().charAt(0);
31
32         System.out.print("Enter number of credit hours for second class --> ");
33         Credits2 = Input.nextInt();
34
35         System.out.println();
36
37         switch (Grade1_Ch)
38         {
39             case 'A':
40                 Grade1_Float = A;
41                 break;
42             case 'B':
43                 Grade1_Float = B;
44                 break;
45             case 'C':
46                 Grade1_Float = C;
47                 break;
```

```
48         case 'D':
49             Grade1_Float = D;
50             break;
51         case 'F':
52             Grade1_Float = F;
53             break;
54     }
55
56     switch (Grade2_Ch)
57     {
58         case 'A':
59             Grade2_Float = A;
60             break;
61         case 'B':
62             Grade2_Float = B;
63             break;
64         case 'C':
65             Grade2_Float = C;
66             break;
67         case 'D':
68             Grade2_Float = D;
69             break;
70         case 'F':
71             Grade2_Float = F;
72             break;
73     }
74
75     GPA = ((Grade1_Float * Credits1) + (Grade2_Float * Credits2)) / (Credits1 +
Credits2);
76
77     System.out.printf("%s %3d %n", Grade1_Ch, Credits1);
78     System.out.printf("%s %3d %n", Grade2_Ch, Credits2);
79     System.out.printf("%s %.5f %n", "Your GPA = ", GPA);
80
81     if (GPA >= 3.5)
82     {
83         System.out.print("Congratulations, doing good");
84     }
85
86     if (GPA < 2.0)
87     {
88         System.out.print("You are doing poorly");
89     }
90 }
91 }
92
93 /*
94 Enter letter grade for first class --> B
95 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 */
```

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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	$((\text{GramsAlcohol}) / ((\text{WeightGrams}) * \text{Gender})) * 100) - (\text{MetabolicRate}) = \text{BAC}$
Hours of drinking	"You are just fine"	If (Gender == "Male") $\text{BAC} = ((\text{GramsAlcohol}) / (\text{WeightGrams} * \text{MALE}) * 100) - (\text{MetabolicRate});$ end if
Gender	"Slurring Speech, loss of balance"	If (Gender == "Female") $\text{BAC} = ((\text{GramsAlcohol}) / (\text{WeightGrams} * \text{FEMALE}) * 100) - (\text{MetabolicRate});$ end if
Weight	"Alcohol poisoning. Loss of Consciousness"	$\text{MetabolicRate} = \text{HoursDrinking} * 0.015;$ $\text{GramsAlcohol} = \text{NumDrinks} * 14;$ $\text{WeightGrams} = \text{WeightPounds} * 454;$
	"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.

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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

```
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, HoursDrinking, WeightPounds, WeightGrams, GramsAlcohol,
18  MetabolicRate, BAC = 0;
19          String Gender = "";
20
21          Scanner Input = new Scanner(System.in);
22          System.out.print("Male or Female? ");
23          Gender = Input.next();
24
25          System.out.print("What is your body weight in pounds? ");
26          WeightPounds = Input.nextFloat();
27
28          System.out.print("How many drinks have you had? ");
29          NumDrinks = Input.nextFloat();
30
31          System.out.print("How many hours have you been drinking? ");
32          HoursDrinking = Input.nextFloat();
33
34          MetabolicRate = HoursDrinking * 0.015f;
35          GramsAlcohol = NumDrinks * 14f;
36          WeightGrams = WeightPounds * 454f;
37
38          if (Gender.equals("Male") || Gender.equals("M"))
39          {
40              BAC = ((GramsAlcohol) / (WeightGrams * MALE) * 100) - (MetabolicRate);
41          }
42          if (Gender.equals("Female") || Gender.equals("F"))
43          {
44              BAC = ((GramsAlcohol) / (WeightGrams * FEMALE) * 100) - (MetabolicRate);
45          }
46
47          if (BAC == 0)
```

```
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
80    it.
81    */
82
83 /*
84 Male or Female? M
85 What is your body weight in pounds? 180
86 How many drinks have you had? 4
87 How many hours have you been drinking? 2
88 BAC = 0.071, Slurring speech, loss of balance
89
90 Male or Female? M
91 What is your body weight in pounds? 165
92 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

```
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");
```

```
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 */
```