Matlab – Lab #10

For this lab, I chose Micah's Grade for CIV100 to be 73 and I chose Chirag's Grade for MAT186 to be 62. The code for this lab is as follows:

```
Micah_APS111=62;
Micah_CIV100=73;
Micah_APS164=71;
Micah_MAT186=80;
Micah_MAT188=83;
Micah_Grades=[Micah_APS111 Micah_CIV100 Micah_APS164 Micah_MAT186
Micah_MAT188];
Micah_GPA=zeros(size(Micah_Grades));
Weight_Of_Courses=[0.5 0.5 0.5 0.5 0.5];

for i=1:length(Micah_Grades)
    if Micah_Grades(i)>=90
         Micah_GPA(i)=4.0;
    elseif Micah_Grades(i)<90 && mgrades(i)>=85
         Micah_GPA(i)=4.0;
    elseif Micah_Grades(i)<85 && mgrades(i)>=80
         Micah_GPA(i)=3.7;
    elseif Micah_Grades(i)<80 && mgrades(i)>=77
         Micah_GPA(i)=3.3;
    elseif Micah_Grades(i)<77 && mgrades(i)>=73
         Micah_GPA(i)=3.0;
    elseif Micah_Grades(i)<73 && mgrades(i)>=70
         Micah_GPA(i)=2.7;
    elseif Micah_Grades(i)<70 && mgrades(i)>=67
         Micah_GPA(i)=2.3;
    elseif Micah_Grades(i)<67 && mgrades(i)>=63
         Micah_GPA(i)=2.0;
    elseif Micah_Grades(i)<63 && mgrades(i)>=60
         Micah_GPA(i)=1.7;
    elseif Micah_Grades(i)<60 && mgrades(i)>=57
         Micah_GPA(i)=1.3;
    elseif Micah_Grades(i)<57 && mgrades(i)>=53
         Micah_GPA(i)=1.0;
    elseif Micah_Grades(i)<53 && mgrades(i)>=50
         Micah_GPA(i)=0.7;
    else
         Micah_GPA(i)=0;
    end
end

Micah_SGPA=sum(Micah_GPA.*Weight_Of_Courses)/sum(Weight_Of_Courses)
if Micah_SGPA>=1.3
    fprintf ('Orange Scholarship eligible for Micah \n')
end
if Micah_SGPA>=2.2
    fprintf ('Blue Scholarship eligible for Micah \n')
end
Micah_yellow=zeros(size(Micah_Grades));
for i=1:length(Micah_Grades)
    if Micah_Grades(i)>=67
        Micah_yellow(i)=1;
```

```
    else
        Micah_yellow(i)=0;
    end
end
Mycah_Yellow_Sum=sum(Micah_yellow);
if Mycah_Yellow_Sum>=3
    fprintf ('Yellow Scholarship eligible for Micah \n')
end

Chirag_APS111=92;
Chirag_CIV100=55;
Chirag_APS164=60;
Chirag_MAT186=62;
Chirag_MAT188=79;
Chirag_Grades=[Chirag_APS111 Chirag_CIV100 Chirag_APS164 Chirag_MAT186
Chirag_MAT188];
Chirag_GPA=zeros(size(Chirag_Grades));

for i=1:length(mgrades)
    if Chirag_Grades(i)>=90
         Chirag_GPA(i)=4.0;
    elseif Chirag_Grades(i)<90 && mgrades(i)>=85
         Chirag_GPA(i)=4.0;
    elseif Chirag_Grades(i)<85 && mgrades(i)>=80
         Chirag_GPA(i)=3.7;
    elseif Chirag_Grades(i)<80 && mgrades(i)>=77
         Chirag_GPA(i)=3.3;
    elseif Chirag_Grades(i)<77 && mgrades(i)>=73
         Chirag_GPA(i)=3.0;
    elseif Chirag_Grades(i)<73 && mgrades(i)>=70
         Chirag_GPA(i)=2.7;
    elseif Chirag_Grades(i)<70 && mgrades(i)>=67
         Chirag_GPA(i)=2.3;
    elseif Chirag_Grades(i)<67 && mgrades(i)>=63
         Chirag_GPA(i)=2.0;
    elseif cgrades(i)<63 && mgrades(i)>=60
         Chirag_GPA(i)=1.7;
    elseif Chirag_Grades(i)<60 && mgrades(i)>=57
         Chirag_GPA(i)=1.3;
    elseif Chirag_Grades(i)<57 && mgrades(i)>=53
         Chirag_GPA(i)=1.0;
    elseif Chirag_Grades(i)<53 && mgrades(i)>=50
         Chirag_GPA(i)=0.7;
    else
         Chirag_GPA(i)=0;
    end
end

Chirag_SGPA=sum(Chirag_GPA.*Weight_Of_Courses)/sum(Weight_Of_Courses)
if Chirag_SGPA>=1.3
    fprintf ('Orange Scholarship eligible for Chirag \n')
end
if Chirag_SGPA>=2.2
    fprintf ('Blue Scholarship eligible for Chirag \n')
end
Chirag_Yellow=zeros(size(Chirag_Grades));
```

```
for i=1:length(Chirag_Grades)
    if Chirag_Grades(i)>=67
        Chirag_Yellow(i)=1;
    else
        Chirag_Yellow(i)=0;
    end
end
Chirag_Yellow_Sum=sum(Chirag_Yellow);
if Chirag_Yellow_Sum>=3
    fprintf ('Yellow Scholarship eligible for Chirag \n')
end
```

For the marks I have decided for Micah and Chirag, the following output is produced:

```
Micah_SGPA =

    2.3600

Orange Scholarship eligible for Micah
Blue Scholarship eligible for Micah
Yellow Scholarship eligible for Micah

Chirag_SGPA =

    3.1600

Orange Scholarship eligible for Chirag
Blue Scholarship eligible for Chirag
```

My thought process consisted of using their marks to find their GPA's and SGPA's, so that I can determine their scholarship eligibility. To do such, firstly, constants were created for Micah's various grades. Those grades are then put into a 1x5 matrix. Another 1x5 matrix is created full of '0' within the matrix for his GPA before it is calculated. Using conditional statements, the percentage of Micah's grades are converted to GPA. After his GPA is calculated, the value can be used to calculate the SGPA by multiplying the GPA value by the weight of the courses and then dividing by the total weight of the courses. Once the SGPA is calculated, I used conditional statements to determine whether Micah was eligible for certain scholarships and prints statements if he is eligible for scholarships. To determine if Micah is eligible for the yellow scholarship, I used a 1x5 matrix of '0's as a method of counting how many courses he received a 67% or higher in, by replacing the '0' for a '1' for every course he received higher than a 67% in. If the number of '1's is greater than 3, then a statement is printed that he is eligible for the yellow scholarship. The same process above is repeated for Chirag and his respective marks.

With the marks chosen, it can be seen Micah is eligible for the Orange, Blue and Yellow Scholarship whereas Chirag is eligible for the Orange and Blue Scholarship