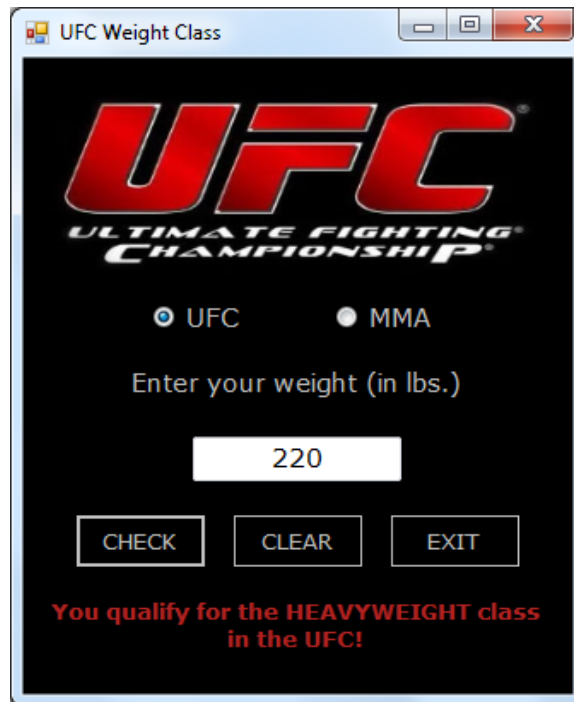


HANDLING EXCEPTIONS: PROGRAMMING EXERCISES

1. Create a program that prompts users for the weight and then determines which weight class they would be in if they were in the UFC (Ultimate Fighting Championship) or MMA (Mixed Martial Arts) and outputs the weight class in a label as follows:

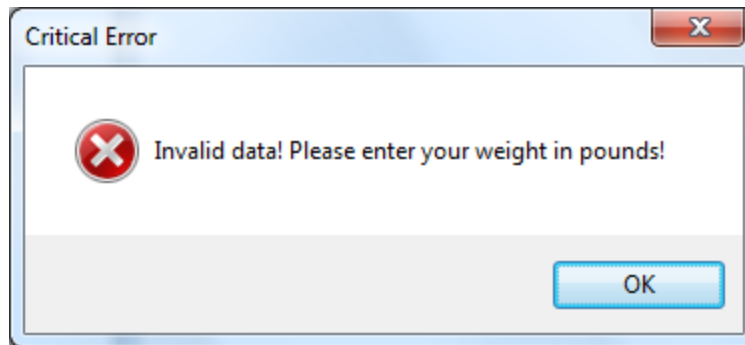


The UFC and MMA currently use the following weight classes:

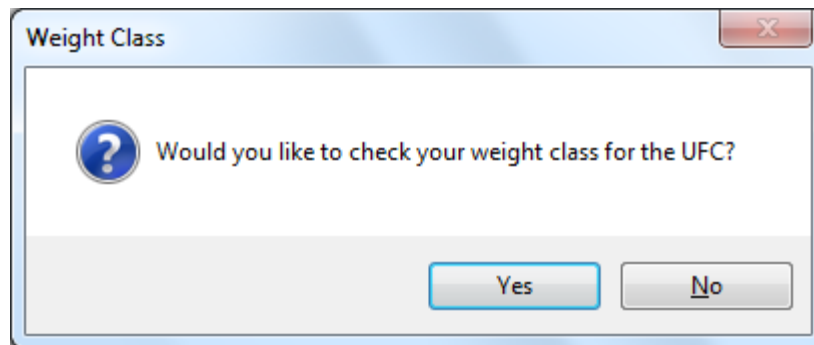
UFC	
WEIGHT CLASS	WEIGHT
Bantamweight	126-135 lbs.
Featherweight	136-145 lbs.
Lightweight	146-155 lbs.
Welterweight	156-170 lbs.
Middleweight	171-185 lbs.
Light Heavyweight	186-205 lbs.
Heavyweight	206-265 lbs.

MMA	
WEIGHT CLASS	WEIGHT
Flyweight	< 126 lbs.
Bantamweight	< 136 lbs.
Featherweight	< 146 lbs.
Lightweight	< 156 lbs.
Welterweight	< 171 lbs.
Middleweight	< 186 lbs.
Light Heavyweight	< 206 lbs.
Heavyweight	< 266 lbs.
Super Heavyweight	> 265

Your program will need to include a **Try-Catch** statement in the event that the user does not enter a number in the text box. If the user does not enter a number in the text box, the following error message should appear before the focus is reset to the text box:



If the user enters a valid weight, but does not select any of the radio buttons, the following message should appear:



If the user selects **YES**, the program should output the user's weight class for the UFC. If the user selects **NO**, the program should output the user's weight class for MMA.

Save the project as **Weight Class** in your UNIT 3 folder.

2. Create a **GPA Calculator** program that converts a percentage grade to a GPA and converts a GPA to a percentage grade.



Although there is no universal way to calculate a GPA (the calculation methods vary by country and by institution), we are going to calculate it using one of the more common calculation methods.

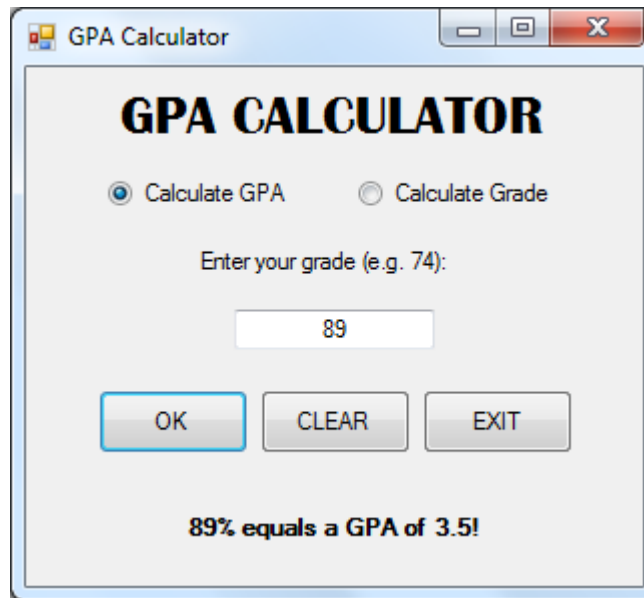
To convert a percentage grade to a GPA, you will use the following formula:

$$\text{gpa} = (\text{percentage} / 20) - 1$$

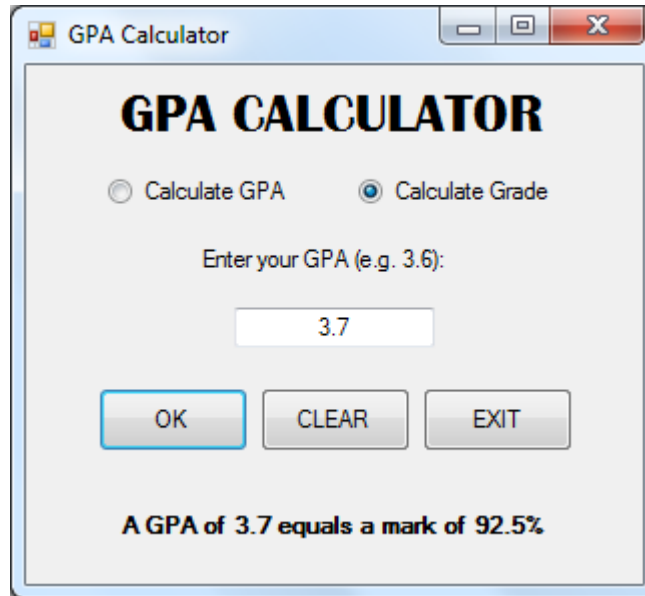
To convert a GPA to a percentage grade, you will use this formula:

$$\text{grade} = (\text{gpa} / 4) * 100$$

When the program starts the **Calculate GPA** radio button should be selected by default and the label should prompt users to enter their grade. When the user enters a grade and selects **OK**, the grade should be converted into the GPA and outputted to the user.



When the users select the **Calculate Grade** radio button the label should prompt them to enter their GPA (you will need to write the code that changes the text in the label in the **CheckedChanged** event procedure of the radio button). When the user enters a GPA and selects **OK**, the GPA should be converted to a numeric grade and outputted to the user.



Be sure to include a **Try-Catch** statement so that the program does not crash when the user does not enter a number in the text box.

Also, if users do not enter a number greater than 0 and less than or equal to 4 when calculating grade or users do not enter a number greater than or equal to 0 and less than or equal to 100, an error message should appear prompting the user to enter a valid number.

Save the project as **GPA Calculator** in your UNIT 3 folder.

3. Create a **BMI Calculator** program that calculates people's body mass index. Body mass index is a measure of body fat based on height and weight that applies to men and women. When the program launches, users have the option to enter their body weight and height in imperial (lbs and inches) or metric units (kg and metres).

The formula for calculating BMI is as follows:

IMPERIAL FORMULA: $(\text{weight} / (\text{height} ^ 2)) * 703$
METRIC FORMULA: $(\text{weight} / (\text{height} ^ 2))$

So if users choose to enter their weight in pounds, they must enter their height in inches. If they enter their weight in kilograms, they must enter their height in metres.

Once the user enters the required information, the program should calculate and output the user's BMI as well as the category they fall under. The categories for BMI are as follows:



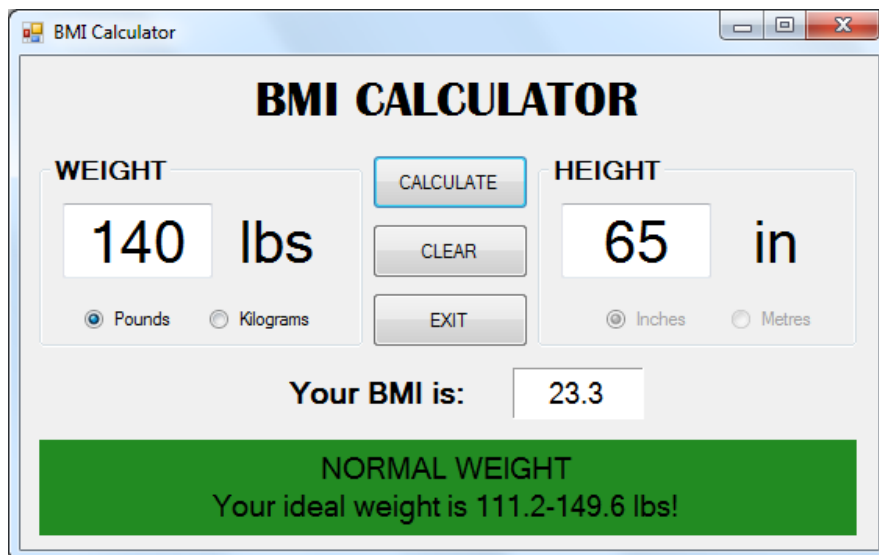
BMI	CATEGORY
< 18.5	Underweight
18.5 – 24.9	Normal Weight
25.0 – 29.9	Overweight
30.0 – 34.9	Obese
35.0 – 38.9	Very Obese
>= 39	Morbidly Obese

Your program must also calculate what the user's ideal weight should be given their height. To calculate a person's ideal weight, you will need to use the following formula:

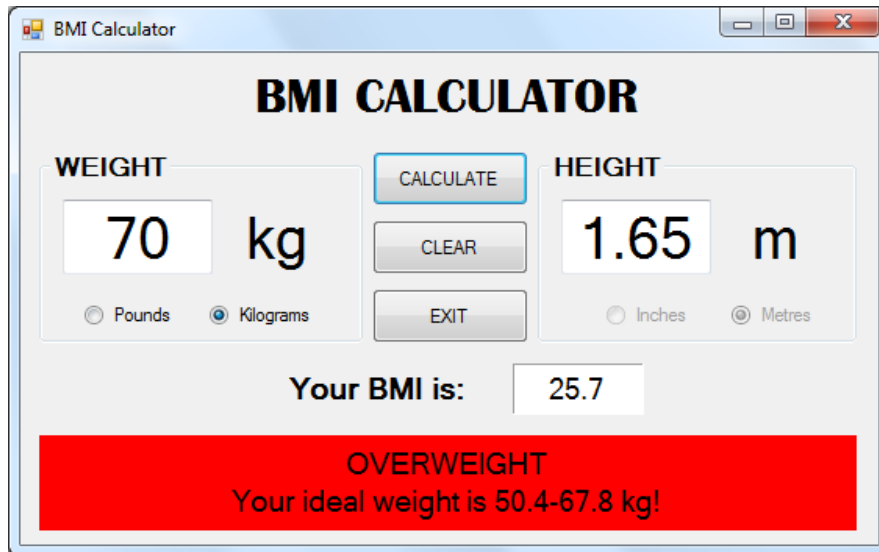
IMPERIAL FORMULA: $\text{minimumWeight} = (18.5 * (\text{height} ^ 2)) / 703$
 $\text{maximumWeight} = (24.9 * (\text{height} ^ 2)) / 703$

METRIC FORMULA: $\text{minimumWeight} = (18.5 * (\text{height} ^ 2))$
 $\text{maximumWeight} = (24.9 * (\text{height} ^ 2))$

Your program output should look something like this when the user chooses to enter their weight in pounds.



Your program output should look something like this when the user chooses to enter their weight in kilograms.



Be sure to include a **Try-Catch** statement to account for any data the user enters that may cause the program to crash.

Save the program as **BMI Calculator** in your UNIT 3 folder.