



Programming Challenge 1 – Temperature convertor (3 points):

Write a Python script that provides the user with two options:

- 1. Converts user input from degrees Fahrenheit to Celsius
- 2. Converts user input from degrees Fahrenheit to Kelvin

If the user picks option 1, allow the user to input a temperature reading in Fahrenheit. Then output the temperature reading in degrees Celsius. If the user picks option 2, allow the user to input a temperature reading in Fahrenheit. Then output the temperature reading in degrees Kelvin.

You may need the following conversion formulas:

$$Celsius = \frac{5}{9} * (Fahrenheit - 32)$$

$$Kelvin = \left(\frac{5}{9} * (Fahrenheit - 32) \right) + 273.15$$

The final line of your output should look like one of the follow:

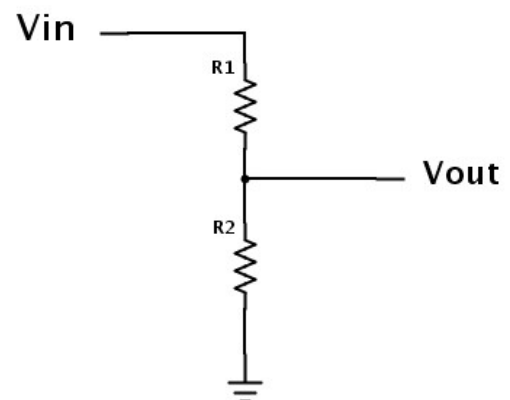
- If the user chose option 1:
 - f Fahrenheit is c Celsius
 - where f is degrees in Fahrenheit (user input) and c is degrees in Celsius (program output)
- If the user chose option 2:
 - f Fahrenheit is k Celsius
 - where f is degrees in Fahrenheit (user input) and k is Kelvin (program output)

Programming Challenge 2 – Voltage division (3 points):

The circuit shown on the right shows a typical voltage divider. The output voltage is given by the following formula:

$$V_{out} = \frac{R_2}{R_1 + R_2} * V_{in}$$

Write a script in python that takes in 3 inputs: the input voltage and two resistors (R_1 and R_2). The output of this script should be the output voltage (V_{out}). Assume standard units for all voltages, and ohms for all impedance.



Programming Challenge 3 – 3&7 Fizz-Buzz (3 points):

Write a Python Script that takes a user input (call it N). Write a loop that iterates from 1 to N. If a number is divisible by 3 but NOT divisible by 7, print “Fizz” followed by the number. If a number is divisible by 7 but NOT 3, print “Buzz” followed by the number. If it is both divisible by 3 and 7, print “FizzBuzz”, followed by the number.

Programming Challenge 4 – Kiosk machine at McBurger Queen (3 points):

You are a software engineer writing code for McBurger Queen’s kiosk machine. Write a script with the following menu options and price options:

1. McWhopper – \$ 6.89
2. Crispy McFish – \$ 4.99
3. Fries
 - a. Small – \$0.99
 - b. Medium – \$1.99
 - c. Large – \$2.99
4. Soda
 - a. Small – \$0.50
 - b. Medium – \$1.50
 - c. Large – \$2.00
5. Happy Meal – \$6.99
6. Family Deal – \$19.99
7. Finish ordering

Everything else is an invalid option and will let the customer pick again.

Your script must keep a running total of the customer’s order until the customer picks option 7 – to complete their order. New York sales tax is current at 8.875%. At the end, display the customer’s total.

Programming Challenge 5 – Day of the Programmer (3 points):

In Russia, the day of the programming is observed on the 256th day of every year from 1700 to 2700 inclusive. In 1918, Russia switched to the Gregorian calendar, thus the day of the programmer that year was September 26th. In all leap years, the day of the programmer is September 12th. If it is not a leap year or the year 1918, the day of the programmer is on September 13th.

Write a script that asks a user to input a year. The script should output one of the following:

If the year is outside the range of 1700 to 2700 inclusive	“Invalid year. Pick another year (between 1700-2700)”
If the year is 1918	“This year, the day of the programmer is 09.26”
If the year is a leap year	“This year, the day of the programmer is 09.12”
In all other years	“This year, the day of the programmer is 09.13”