

# GSET: Programming - Summer 2022

## Lab 3: Basic Input and Output

### Simple Unit Conversions: Temperature

#### Overview :

You will learn to program *user input* and *command window output* in MATLAB, using the *input* function and the *fprintf* function. You will complete a basic, but useful engineering calculation. The inputs are typed into the command window and the program will output the results to the command window. Also, the *character* and *string* data types will be introduced.

#### the *input()* function :

- adds a simple user interface to your program
- you type *command window input*
- the input can be stored as a variable

#### the *fprintf()* function :

- complete control of the *command window output*
- results in a formatted *string*, character level control

#### Temperature Conversions :

The following equations describe conversions from degrees Fahrenheit (F) to Celsius (C) and Celsius (C) to Kelvin (K).

$$^{\circ}C = (^{\circ}F - 32) \times \frac{5}{9} \qquad ^{\circ}K = ^{\circ}C + 273.15$$

**Assignment** : Write a MATLAB program (a script) to do the following.  
Part 2 goes below part 1 *in the same script*:

1. Convert from F to C and K
  - (a) With the *input* function, ask the user to enter a temperature value in units of *Fahrenheit*. Do not show the *default output*.
  - (b) Convert the value to units of *Celsius*. Do not show the *default output*.
  - (c) Convert the value to units of *Kelvin* . Do not show the *default output*.
  - (d) With the *fprintf* function, show all three values with the proper units. Include 2 decimal places.
  
2. Convert from K to C and F
  - (a) With the *input* function, ask the user to enter a temperature value in units of *Kelvin*. Do not show the *default output*.
  - (b) Convert the value to units of *Celsius*. Do not show the *default output*.
  - (c) Convert the value to units of *Fahrenheit* . Do not show the *default output*.
  - (d) With the *fprintf* function, show all three values with the proper units. Include 2 decimal places.

**Submission** :

- Your program needs a proper *Header* or title block on it. Please see this discussion in the notes for details.
  
- Your script file needs to be named properly. Please see the *naming convention* document on ilearn.