

## ICN Matlab Course: Practical Exercise 1

Write a function that asks the user for a number between 1 and 6 as an input, then simulates three rolls of a six-sided dice and informs the user after each roll whether it matches their chosen number or not by displaying appropriate text on screen. Make sure the code is well annotated.

For additional kudos, you can also incorporate some or all of the following features...

1. Ask for the user's name and year of birth as additional string and numerical inputs, respectively. If the year of birth means that the user is definitely younger than 18, the function should display the following text on screen:

*Sorry, <name>, you are too young to gamble!*

Otherwise, customise the text output following each dice roll with the user's name:

*Congratulations <name>, you correctly guessed the roll of the dice!*

2. If the number entered by the user is less than 1 or more than 6, get the function to display the following text on screen, without generating any other output:

*ERROR! You must enter a number between 1 and 6*

3. If the number entered by the user is not an integer (i.e. whole number), get the function to display an error message similar to that shown above

4. Define a variable named 'rolls' at the top of the script to specify the number of rolls that will be simulated, and use this variable throughout the rest of the function

5. Define a variable named 'sides' at the top of the script to specify the number of sides on the dice, and use this variable to specify the scale of random numbers generated (i.e. to simulate rolling an 8-, 10- or 12- sided, instead of the standard 6 sided, dice). For additional points, use this variable to control when the 'ERROR!' warning above is triggered, and what text is displayed in that warning

6. Ask the user for a numerical bet as an additional input, then compute the probability of rolling a single number at least once, based on the number of rolls and sides on the dice. Divide the bet by this probability to compute the total winnings if the user is successful, and produce an additional text output at the end of the script that either informs the user how much they have won, if successful on any roll; or informs them how much they have lost, if unsuccessful on all rolls