1. Write a program that solves quadratic equations of the form \( ax^2 + bx + c = 0 \). It prompts the user for \( a \), \( b \) and \( c \). If the equation does not have a real root, it should say so, otherwise print out the roots. Recall the formula
\[
\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}
\]

2. Write a program that calculates an estimate for \( \pi \) using the dartboard method. The program 1000 times generates a random point with \( x \)- and \( y \)-coordinate in the range 0 to 1. It calculates what proportion lies within distance 1 of the origin. That proportion should be \( \pi/4 \).
(Note that if you #include<stdio.h>, then the function rand() produces a random integer. To get a random real between 0 and 1, you can mod the rand() value by a million and then divide it by a million.)

3. Write a program that calculates the sum of the first so many cubes. The program prompts the user for \( N \). It then calculates \( 1^3 + 2^3 + \ldots + N^3 \) and prints this out.

4. Write a program that allows the user to guess a number. The program chooses a random number between 0 and 100. It then repeatedly gets the user to guess a number, replying with “Higher”, “Lower” or “Well Done” until the user guesses the number.

5. Write a program to print out a crude T. The user specifies the total number of rows & columns to use, and the program prints out stars to form a T where the horizontal part uses up 1/4 of the rows, and the vertical part uses up 1/3 of the columns. Here is one where the user specified 8 rows and 6 columns.

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