|  |
| --- |
| using System; |
|  |  |
|  | namespace Quadratic |
|  | { |
|  | class Program |
|  | { |
|  | static void Main(string[] args) |
|  | { |
|  | //input that results in real numbers: a = 5, b = 9, c = 4 |
|  | Console.WriteLine("This application solves quadratic equations."); |
|  | Console.WriteLine("Given ax^2 + bx + c = 0"); |
|  | double a = GetInput("a"); |
|  | double b = GetInput("b"); |
|  | double c = GetInput("c"); |
|  | double inner = b \* b - 4 \* a \* c; |
|  | if (inner>=0) |
|  | { |
|  | Quadratic(a, b, inner); |
|  | } |
|  | else |
|  | { |
|  | Console.WriteLine("There is no valid solution."); |
|  | //The below code solves for imaginary numbers |
|  | //Complex(a, b, inner); |
|  | } |
|  | } |
|  | private static void Quadratic(double a, double b, double inner) |
|  | { |
|  | double ans1 = ((-1 \* b) + Math.Sqrt(inner)) / (2 \* a); |
|  | double ans2 = ((-1 \* b) - Math.Sqrt(inner)) / (2 \* a); |
|  | Console.WriteLine($"The solution is: ({ans1:#.##}, {ans2:#.##})"); |
|  | } |
|  | private static void Complex(double a, double b, double inner) |
|  | { |
|  | double ans1 = (-1 \* b) / (2 \* a); |
|  | double ans2 = Math.Sqrt(-inner) / (2 \* a); |
|  | Console.WriteLine($"The solution is: ({ans1:#.##} + i{ans2:#.##}, {ans1:#.##} - i{ans2:#.##})"); |
|  | } |
|  | private static double GetInput(string s) |
|  | { |
|  | do |
|  | { |
|  | Console.Write($"Enter a value for {s}: "); |
|  | try |
|  | { |
|  | double value = double.Parse(Console.ReadLine()); |
|  | return value; |
|  | } |
|  | catch (Exception) |
|  | { |
|  | Console.WriteLine("Please use only numbers."); |
|  | } |
|  | } while (true); |
|  | } |
|  | } |
|  | } |