**Q:6 Generate a model to represent a mathematical equation, write a program to parse the equation, and ask for input for each parameter.**

**CODE:**



`import re` in Python is used to import the regular expressions (regex) module, which allows you to search, match, and manipulate strings based on specific patterns. It's commonly used for tasks like pattern matching, text parsing, and validation.

A screenshot of a computer code

Description automatically generated

The function `parse\_equation` extracts the coefficients from a quadratic equation in the form `ax^2 + bx + c = 0`. It uses a regular expression to identify and capture the values of `a`, `b`, and `c`. If the equation format is incorrect, it raises a `ValueError`. If parts of the equation are missing, it defaults missing coefficients to `1.0` for `a` and `0.0` for `b` and `c`.

A close-up of a math problem

Description automatically generated

The `evaluate\_quadratic` function calculates the value of the quadratic equation \( ax^2 + bx + c \) for a given \( x \).

A screenshot of a computer program

Description automatically generated

The `main` function prompts the user to enter a quadratic equation and a value for `x`, then parses the equation to get coefficients, evaluates the quadratic expression, and prints the result. It handles errors if the equation format is incorrect.

A white rectangular object with blue and red lines

Description automatically generated

The line `if \_\_name\_\_ == "\_\_main\_\_": main()` ensures that the `main()` function is called only when the script is run directly, not when it is imported as a module in another script. It serves as the entry point for executing the script.

**OUTPUT:**

A math equation with black text

Description automatically generated with medium confidence