B. D. Public School

Buddha Colony, Patna – 800001

Computer Science Project 2022-2023

Graphical Quadratic Calculator

Submitted By Group:

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Roll No - 03

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Roll No - 30

Class – 11th 'A'

Session – 2022- 2023

Certificate

Certified that Kumar Aditya & Hiral Kumar of Class – 11th 'A' have completed the Computer Science Project "Graphical Quadratic Calculator".

Under the guidance of Mr. Pankaj Kumar Gupta.

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Acknowledgement

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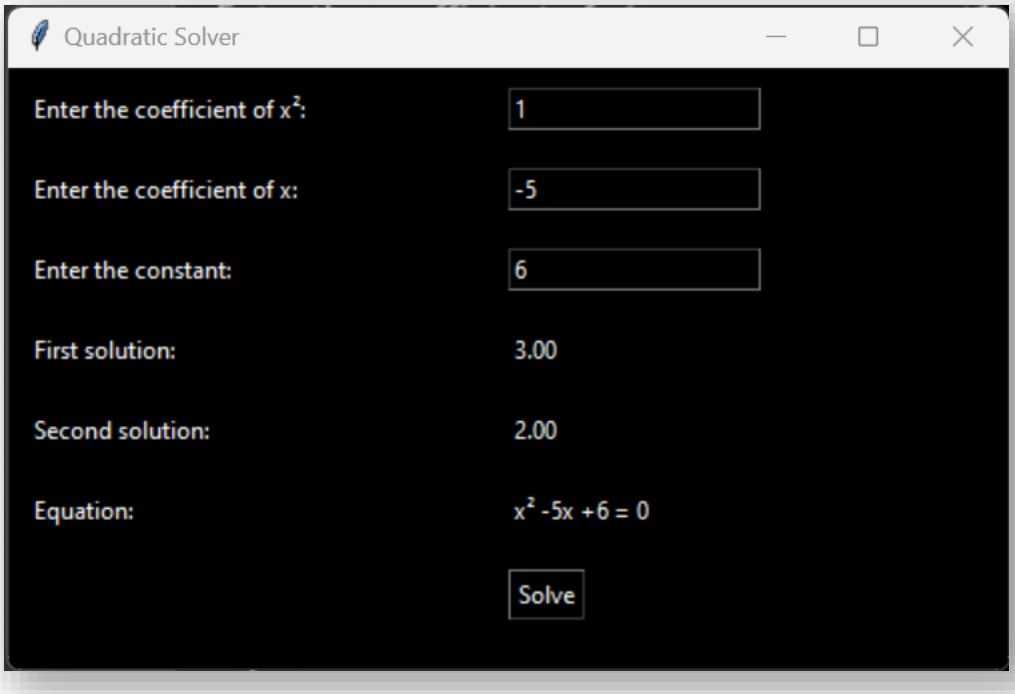
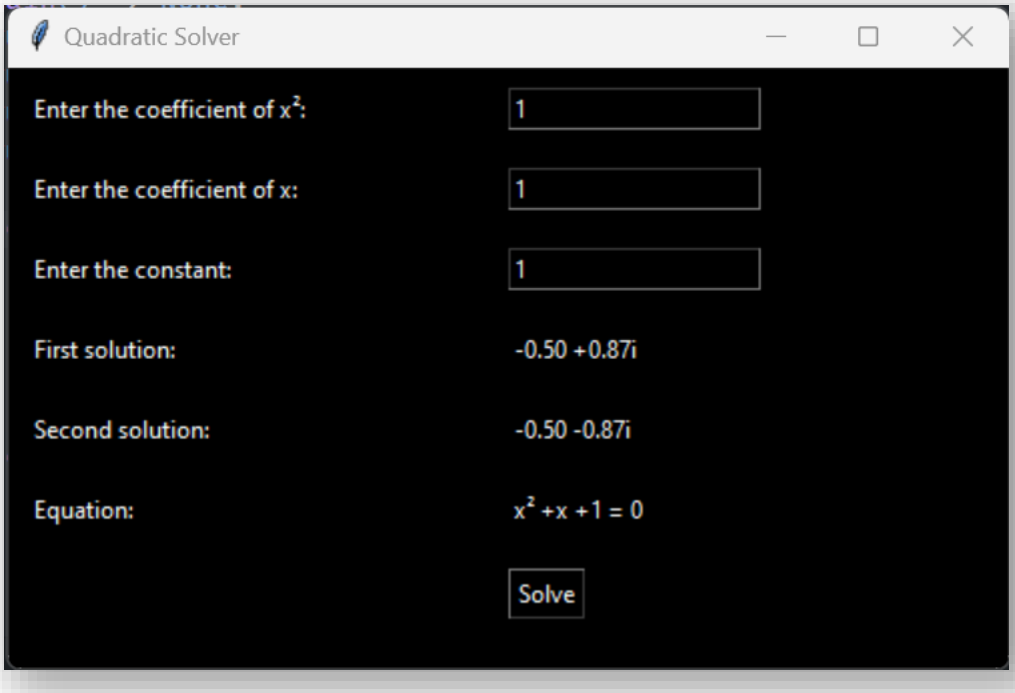
Source Code:

```
from tkinter import *


def main() -> None:
    gui = Tk()
    gui.title("Quadratic Solver")
    gui.configure(bg="#000000")
    gui.geometry("500x300")

    def coefficient(x: float) -> float:
        if x.is_integer():
            return int(x)
        else:
            return x

    def answer() -> None:
        a = float(e1.get())
        b = float(e2.get())
        c = float(e3.get())

        if a == 1:
            eq = "x\N{SUPERSCRIPT TWO} "
        elif a == -1:
            eq = "-x\N{SUPERSCRIPT TWO} "
        else:
            eq = f"{coefficient(a)}x\N{SUPERSCRIPT TWO} "
        if b == 1:
            eq += "+x "
        elif b == -1:
            eq += "-x "
        else:
            eq += f"{coefficient(b):+}x "

        eq += f"{coefficient(c):+} = 0"

        pans = (-b + (b**2 - 4 * a * c) ** (1 / 2)) / (2 * a)
        nans = (-b - (b**2 - 4 * a * c) ** (1 / 2)) / (2 * a)
        if pans.imag:
            pans = f"{pans.real:.2f} {pans.imag:+.2f}i"
        else:
            pans = f"{pans.real:.2f}"
        if nans.imag:
            nans = f"{nans.real:.2f} {nans.imag:+.2f}i"
        else:
            nans = f"{nans.real:.2f}"
        equation.set(eq)
        ansp.set(pans)
        ansn.set(nans)

    ansp = DoubleVar()
    ansn = DoubleVar()
    equation = StringVar()
    l1 = Label(
        gui,
        text="Enter the coefficient of x\N{SUPERSCRIPT TWO}: ",
        bg="#000000",
```

```
57.         fg="#FFFFFF",
58.     )
59.     l1.place(x=10, y=10)
60.     e1 = Entry(gui, bd=2, bg="#000000", fg="#FFFFFF")
61.     e1.place(x=250, y=10)
62.
63.     l2 = Label(gui, text="Enter the coefficient of x: ", bg="#000000",
    fg="#FFFFFF")
64.     l2.place(x=10, y=50)
65.     e2 = Entry(gui, bd=2, bg="#000000", fg="#FFFFFF")
66.     e2.place(x=250, y=50)
67.
68.     l3 = Label(gui, text="Enter the constant: ", bg="#000000", fg="#FFFFFF")
69.     l3.place(x=10, y=90)
70.     e3 = Entry(gui, bd=2, bg="#000000", fg="#FFFFFF")
71.     e3.place(x=250, y=90)
72.
73.     l4 = Label(gui, text="First solution: ", bg="#000000", fg="#FFFFFF")
74.     l4.place(x=10, y=130)
75.     e4 = Label(gui, bd=2, textvariable=ansp, bg="#000000", fg="#FFFFFF")
76.     e4.place(x=250, y=130)
77.
78.     l5 = Label(gui, text="Second solution: ", bg="#000000", fg="#FFFFFF")
79.     l5.place(x=10, y=170)
80.     e5 = Label(gui, bd=2, textvariable=ansn, bg="#000000", fg="#FFFFFF")
81.     e5.place(x=250, y=170)
82.
83.     l6 = Label(gui, text="Equation:", bg="#000000", fg="#FFFFFF")
84.     l6.place(x=10, y=210)
85.     e6 = Label(gui, textvariable=equation, bg="#000000", fg="#FFFFFF")
86.     e6.place(x=250, y=210)
87.
88.     button = Button(gui, text="Solve", command=answer, bg="#000000",
    fg="#FFFFFF")
89.     button.place(x=250, y=250)
90.     gui.mainloop()
91.
92.
93. if __name__ == "__main__":
94.     main()
```

Output


Quadratic Solver
Enter the coefficient of x²:
1
Enter the coefficient of x:
-5
Enter the constant:
6
First solution:
3.00
Second solution:
2.00
Equation:
x² -5x +6 = 0
Solve


Quadratic Solver
Enter the coefficient of x²:
1
Enter the coefficient of x:
1
Enter the constant:
1
First solution:
-0.50 +0.87i
Second solution:
-0.50 -0.87i
Equation:
x² +x +1 = 0
Solve