CALIFORNIA STATE POLYTECHNIC UNIVERSITY
Computer Science Department
CS 2640 (3) ***T. Nguyen/F20***

PROJECT: **4 (Final)**
DUE DATE: **December 2, 2020**

Description:
Write a complete program that prompts the user for the coefficients a, b, and c of a quadratic equation $ax^2 + bx + c = 0$ and prints out the solutions. *discriminant* = $b^2 - 4ac$

Use single precision floating point.

main – prompt the user a, b, and c and call solveqe to solve the equation
solveqe(a, b, c) – solve for solutions, return status in v0:

v0: -1, imaginary,
0, not quadratic,
1, 1 solution, x
2: 2 solutions, x1, x2

Must be a reentrant subprogram and use register usage convention.

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Required I/O:

```
Quadratic Equation Solver by F. Last
¶
Enter values for a? #
Enter values for b? #
Enter values for c? #
¶
```

¶ *is a blank line.* `F. Last` *is your first initial and last name,* `#` *is user input.*

1. If a = 0 && b = 0:

```
Not a quadratic equation.
```

2. If a = 0 and b != 0, linear equation, x = -c / b

```
x = #.#
```

3. If *discriminant* < 0:

```
Roots are imaginary.
```

4. Otherwise

```
x1 = #.#
x2 = #.#
```

`#.#` are replaced with calculated root(s).

Turn in:
1. Submit the source code to:

```
cp qesolver.s /user/tvnguyen7/cs2640-00#/BroncoName-qesolver.s
```

is your section number, 1 or 2. BroncoName is the part preceding @cpp.edu in your email address.

Notes:

1. The following information is required in the beginning of every source file.

```
#
#     Name:         Last, First
#     Project:      #
#     Due:          date
#     Course:       cs-2640-0#-f20
#
#     Description:
#                   A brief description of the project.
#
```

Hints:

solveqe pseudocode:

if a = 0
    if b = 0
        return 0
    else
        x = -c / b
        return 1, x
d = b^2 – 4ac
if (d < 0)
    return -1
else {
    compute x1 and x2
    return 2, x1, x2
}