EXSET Employment Test #3: Automated Testing

The bogus dynamic library

In the attachment you can find a file named `quadratic.dll`. This is a dynamic link library designed to solve quadratic equations.

It has the following interface:

```
void setA(const double a);
```
sets the coefficient “a” of the equation

```
void setB(const double b);
```
sets the coefficient “b” of the equation

```
void setC(const double c);
```
sets the coefficient “c” of the equation

```
int getSolution(double * px1, double * px2);
```
calculates the solutions of the equation a*x*x + b*x + c = 0.

The return values of `getSolution` are defined by the following `enum`:

```
enum  {
    SOLUTION_OK             =  0,
    ERROR_A_IS_ZERO         =  1,
    ERROR_NO_REAL_ROOTS     =  2
};
```

For example, if we call `setA(1.0), setB(0), setC(-4.0)`, then `getSolution` will calculate `x1 = -2, x2 = 2` and return `SOLUTION_OK`.

Note that the `quadratic.dll` is highly unstable and sometimes delivers wrong results.

Perform manual and automated testing of this dynamic-link library. Find and describe as many bugs in it as possible. For automated testing scripts use Python or Ruby.

Provide the list of bugs found and the test script used.

Please feel free to ask questions on this test, if any.