**Properties (new):**

1.

Precondition:

A random non-prime integer below 15: a

An integer of value 0-7, as power for the controlled U gate: p

Operation:

c\_amod15(a,p)

Output:

assertException(ValueError)

(An exception must be thrown if we do not use a prime number for Shor’s algorithm)

2.

Precondition:

A random prime integer below 15: a

Operation:

qpe\_amod15(a):phase

Output:

assertTrue(phase >=0 && phase <= 1)

(phase must be between 0 or 1 inclusive so we can calculate r)

3.

Precondition:

A random prime integer below 15: a

Operation:

findFactor(a): factors

Output:

assertTrue(‘3’ in factors || ‘5’ in factors)

(one of the factors of 15 should have been found)