Software Engineering Principles

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Mandatory Exercise 4

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Verification

Problems

(1) What kind of verification is best suited for the microwave oven?

(2) The following program fragment occurs in the software of the microwave oven:

```
{
  assert m == m0;
  int i;
  for(i=0; i<k; i++) {
    m = m + x;
  }
  assert m == m0 + (x * k);
}
```

(a) Verify the program.

(b) Will the program always work correctly?
If not, provide a counterexample.

(c) Use the assertions to generate a unit test case
for the "inner program":

```
{
  int i;
  for(i=0; i<k; i++) {
    m = m + x;
  }
}
```

(d) What could be gained by combined testing and proving?