Project 3, Part I: Consider the following statement and its "proof".

The first sentence asserts two things:
① There is a largest positive integer.
② Call that largest positive integer n.
There is no basis for knowing that ① is true. So the rest of the argument is invalid.

In other words, ① is a false assumption.

CLAIM 1. *There is no integer larger than* 1.

Proof. $\boxed{\text{Let } n \text{ be the largest positive integer.}}$ Since every positive integer is greater or equal than 1, we know that $n \geq 1$. Multiplying both sides of this inequality by the positive integer n shows that $n^2 \geq n$. However we also know that $n \geq n^2$ because by assumption n is the largest positive integer. From these two inequalities we conclude that n^2 and n must be equal. Now dividing both sides of the equation $n^2 = n$ by n (which is positive and therefore not equal to 0) we obtain that $n = 1$. So 1 is the largest integer which means that there is no integer larger than 1. □

If the first sentence had instead said:
"Suppose that there is a largest integer n."
Then the rest of the argument would be valid.
Since the conclusion that "there is no integer larger than 1" is false we conclude that the supposition that "there is a largest integer" is false.

Take away: "Assumptions" are not the same as "suppositions". An assumption is assumed to be true; a supposition may or may not be true.