While Loops (annotation template)

{ P D }

while (B) {

C

}

{ Q D }

While Loops

Prove that the following program satisfies the given triple under partial correctness.

$\{(x \geq 0)\}$

```
y = 1;
z = 0;
while (z != x){
    z = z + 1;
    y = y * z;
}
```

$\{(y = x!)\}$

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While Loops

Prove that the following program satisfies the given triple under partial correctness

$\{ (n \geq 0) \wedge (a \geq 0) \}$

```
s = 1;
i = 0;
while (i < n) {
    s = s * a;
    i = i + 1;
}
```

$\{ s = a^n \}$

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