CSE 331 – Section 1 – Code Reasoning

1. Fill in the blanks using **forward** reasoning.

```
// {x >= 0, y >= 0}
y = 16;
//_____
x = x + y
//_____
x = sqrt(x)
//_____
y = y - x
//_____
```

2. Fill in the blanks using **forward** reasoning.

```
// {true}
if (x>0) {
        //_____
        abs = x
        //_____
}
else {
        //_____
        abs = -x
        //_____
}
//_____
//_____
```

3. Fill in the blanks using **backwards** reasoning.

```
//_____
a = x + b;
//_____
c = 2 * b - 4
//_____
x = a + c
// {x > 0}
```

4. Fill in the blanks using **backwards** reasoning.

```
//_____
if (y > 5) {
        //_____
        x = y + 2
        //_____
}
else {
        //_____
        x = y + z;
        //_____
}
//{x > 17}
```

5. Additional practice **backward** reasoning practice problems.

   a.
   ```
   //_____
   x = x - 2;
   //_____
   z = x + 1;
   //{ z != 0 }
   ```

   b.
   ```
   //_____
   x = 2 * y;
   //_____
   z = x + y;
   //{ z > 0 }
   ```

   c.
   ```
   //_____
   w = 2 * w;
   //_____
   z = -w;
   //_____
   y = v + 1;
   //_____
   x = min(y, z);
   //{ x < 0 }
   ```

6. For each pair of statements, circle the **strongest** option.

   a. "I attend CSE331 sections."   "I attend CSE331 sections on Thursdays."
   b. "y > 23"   "y >= 23"
   c. "y = 23"   "y >= 23"
   d. "y < 0.00023"   "y < 0.23"
   e. "y is prime"   "y <= 17"