Sqrt (x)

```
class Solution {
public:
    int mySqrt (int x) {
        long low = 0;
        long high = x;
        long long mid, ans;
        while ( low <= high) {
            mid = low + (high-low)/2;
            if (mid * mid == x)
                return mid;
            else if (mid * mid > x) {
                high = mid - 1;
            } else {
                low = mid + 1;
                ans = mid;
            }
        }
        return ans;
    }
};
```

Logic (sqrt (x))

1 2 3 4 5 6 7 8 9 10 11 12 $\boxed{13}$ 14 15 16

l   m   h

1 2 3 4 5 6 7 8 $m^2 > 13$

L   m   h

1 2 3 4 $m^2 < 13$

L m   h

ans ← $\boxed{3}$ 4 $m^2 < 13$

      L   h

      m

      4

      L $m^2 > 13$

      h

      m