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RVCE MCA087

Topic: finding the Square root of an Integer

Suppose for example we assume that n=25.

the Square root of 25

$\rightarrow \sqrt{25} = 5$

There are predefined methods are there to find of the square root of an integer.

for ex: math.Sqrt( ) in java

Sqrt( ) in python etc

So here we had choose the binary search for the problem to find square root of an given integer

for example take n as 28

n = 28

then low = 1 high = 28

Mid

find the mid value blw 28 & 1

then $\frac{28+1}{2} = \frac{29}{2} = 14.5 \Rightarrow 14$

low = 1 high = 28

14
Mid

then multiply 14 x 14 which is greater than the 28

Then 14 is not my answer

Surely 15, 16, 17 ..... 28 will not be answer

then we should leave the right side and check for the left side. which is of range 1 - 13.

→ Continue these steps until & unless you get the Square number which is equals to (n) nearer of an given integer as an user parameter to get the Square root of an integer using binary search.

Code:

```
int floorsqrt (int n) {
 int low = 1, high = n ;
 while (low <= high) {
    long long mid = (low + high) / 2 ;
    long long val = mid + mid ;
    if (val <= n) {
        low = mid + 1 ;
      } else {
        high = mid - 1 ;
      }
    }
    return high ; // Correct placement outside the loop

}
```