

Question :

Find time complexity $T(n)$ for the following code snippet:

```
a = 1;
b = 1;
while(b < n)
{
    a += 1;
    b += a;
    cout<<"Hi";
}
```

Answer:

$O(\sqrt{N})$

b is basically sum of natural numbers summed upto N, which can be represented as $b = N * (N + 1) / 2$

Hence, number of iterations to reach there is $O(\sqrt{N})$

We can also try running the algorithm for $N = 10141014$, the number of operations turns out to be 14142135.