

Apriori Analysis

1/1

① $i = n$

while $i > 2$:
 $i = i/2$
print i

Ans: $i = n$

$i = n^{1/2}$
 $n^{1/4}$
 $n^{1/8}$
!
 $n^{1/2^k} = 2$

② $i = 29$

while $i < n$:
 $i = i^{23}$

$n^{1/23^k} = 2$
 $\log_2 n^{1/23^k} = \log_2 2$

③ $i = 1$

while $i < n$:
 $i = 2 \times i$
 $i = 3 \times i$

$\frac{1}{25} k \log_2 n = 1$

$\log_2 n = 25^k$

$k \log_{25} 25 = \log_{25} (\log_2 n)$

② Ans:

$i = i^{23}$

$i.e. (29)^{23}$

$(29)^{23^2}$

$(29)^{23^3}$

\uparrow
 $(29)^k$

$(29)^{23^k} = n$

$23^k \log_{29} 29 = \log_{29} n$

$23^k = \log_{29} n$

$k \log_{23} 23 = \log_{23} (\log_{29} n)$

$k = \log_{23} (\log_{29} n)$

$i.e. O(\log_{23} (\log_{29} n))$ or $O(\log(\log n))$

Continue

Q1 Ans: 1. 1

while $i < n$

$i = 2 \times i$
 $i = 3 \times i$ } $6 \times i$

$n = 60$

$6 \times 1 = 6$

$6 \times 6 = 36$

$6 \times 36 = \dots$

$\log_6 36$

$\log_6 6^2 = 2$

i.e. $O(\log_6 n)$

$i = 2 \times i = \log_2 n$

$i = 3 \times i = \log_3 n$