

Assignment 1

1) $i = 1$
 while $i < n$:
 $i = 2 \times i$
 $i = 3 \times i$ } $i = 6 \times i$

$$n = 72$$

$$1 < 72$$

$$i = 6 \times i$$

$$i = 6$$

$$6 < 72 \text{ (T)}$$

$$i = 6 \times 6$$

$$i = 36$$

$$36 < 72$$

$$i = 6 \times 36 = 216$$

$$216 < 72$$

False

$$\Rightarrow \log_6^n \Rightarrow \log_6^{72} \Rightarrow \log_6^{6^3}$$

3 // Times

$$O(\log_6^n)$$

2) $i = 29$
 while $i < n$:
 $i = i^2$

We need find the stopping iteration

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

$$23^k \log_n (29) = 1$$

$$\log_n (29) = \frac{1}{23^k}$$

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

$$(29)^{23^1}$$

$$(29)^{23^2}$$

$$(29)^{23^3}$$

$\therefore k$ times

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



B) $i = n$

while $i > 2$:

$i = i / 25$

Print(i)

$$\log_2 n^{1/25^K} = \log_2 1$$

$$\frac{1}{25^K} \log_2 n = 1$$

$$\log_2 n = 25^K$$

$$\log_{25}(\log_2 n) = K \cdot \log_{25} 25$$

$$K = \log_{25}(\log_2 n) //$$

$i = n$

$$n^{1/25}$$

$$n^{1/25^2}$$

$$n^{1/25^3}$$

$\therefore K \text{ times}$

$$n^{1/25^K} = 2$$