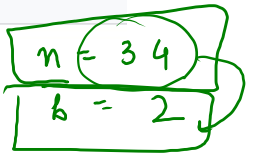
→ 2:00pm

# Decimal To Any Base (17 june)

Problem | Submissions | Leaderboard | Discussions

1. You are given a decimal number n.
2. You are given a base b.
3. You are required to convert the number n into its corresponding value in base b.




**Input Format**

A number n A base b

**Constraints**

0 <= d <= 512 2 <= b <= 10

**Output Format**

A number representing corresponding value of n in number system of base b

**Sample Input 0**

```
34
2
```

## Sample Output 0

```
100010
```

# Decimal to binary

$x = 34$

$b = 28$

| | | |
|---|---|---|
| 8 | 324 | 4 |
| 8 | 40 | 0 |
| 8 | 5 | 5 |
| | 0 | |

$(504)_8$

| | | |
|---|---|---|
| 2 | 34 | 0 |
| 2 | 17 | 1 |
| 2 | 8 | 0 |
| 2 | 4 | 0 |
| 2 | 2 | 0 |
| 2 | 1 | 1 |
| | 0 | |

$(100010)_2$

100010

$(1000\ 1001\ 1)_2$

| | | |
|---|---|---|
| 2 | 275 | 1 |
| 2 | 137 | 1 |
| 2 | 68 | 0 |
| 2 | 34 | 0 |
| 2 | 17 | 1 |
| 2 | 8 | 0 |
| 2 | 4 | 0 |
| 2 | 2 | 0 |
| 2 | 1 | 1 |
| | 0 | |

```
int ans = 0, power = 1
while ( n > 0 ) {
```

→ remainder.

→ m = n % 2 ?

→ ans

→ power

```
}
```

```java
public class Solution {

    public static int decimalToAnyBase(int n, int b){
        int ans=0,power=1;

        while(n>0){
            int rem = n%b;
            ans = ans+(power*rem);
            n/=b;
            power*=10;
        }

        return ans;
    }

    public static void main(String[] args) {
        /* Enter your code here. Read input from STDIN. Print output to STDOUT. Your class should
        Scanner scn = new Scanner(System.in);
        int n = scn.nextInt();
        int b = scn.nextInt();

        System.out.println(decimalToAnyBase(n,b));
    }
}
```

→ Code
→ Dry Run
→ Next Question

n = 34
b = 2

ans = 0
power = ~~10~~ ~~100~~ 100000

2 > 0
rem = 2%2 = 0
ans = 10 + 10000 * 0 = 10
n = 2/2 = 1

1 > 0
rem = 1%2 = 1
ans = 10 + 10 0000 * 1
= 100010
n = 1/2 = 0

ans = 100010

34 > 0
rem = 34%2 = 0
ans = 0 + 1 * 0 = 0
n = 34/2 = 17

17 > 0
rem = 17%2 = 1
ans = 0 + 10 * 1 = 010
n = 17/2 = 8

8 > 0
rem = 8%2 = 0
ans = 10 + 100 * 0 = 10
n = 8/2 = 4

4 > 0
rem = 4%2 = 0
ans = 10 + 1000 * 0 = 10
n = 4/2 = 2

Any

# Any Base To Decimal (17 june)

Problem | Submissions | Leaderboard | Discussions

1. You are given a number n.
2. You are given a base b. n is a number on base b.
3. You are required to convert the number n into its corresponding value in decimal number system.

**Input Format**

A number n A base b

**Constraints**

0 <= d <= 1000000000 2 <= b <= 10

**Output Format**

A decimal number representing corresponding value of n in base b.

**Sample Input 0**

```
111001
2
```

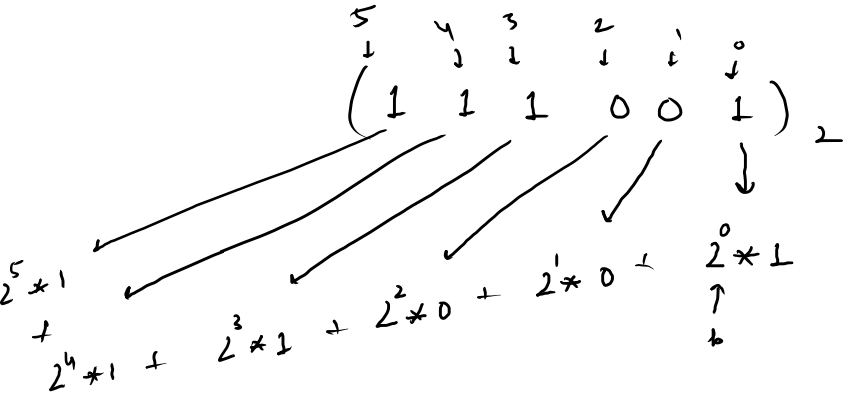
**Sample Output 0**

```
57
```

$n = (111001)_2$

$b = 2$

Decimal



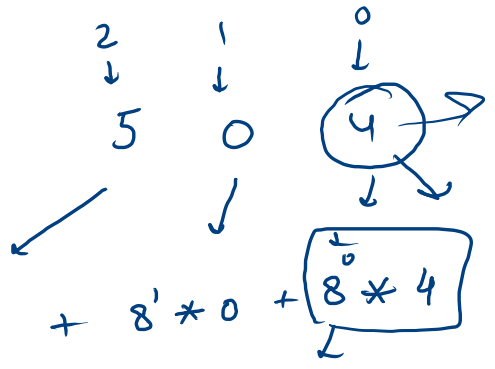

$$\sum (\text{base})^{\text{position}} * \text{digit} +$$

$$\therefore \quad ans = 2^5 * 1 + 2^4 * 1 + 2^3 * 1 + 2^2 * 0 + 2^1 * 0 + 2^0 * 1$$

$$= 32 + 16 + 8 + 0 + 0 + 1$$

$$= \underline{\underline{57}}$$

$(504)_8 = 324$




$64 * 5 + 4$

$\Rightarrow 320 + 4 = 324$

0 1 10

power = 1 * b

$8^0 * 8 = 8^1$

$8^1 * 8 = 8^2$

Language: Java 8 — Open in editor

```java
import java.io.*;
import java.util.*;

public class Solution {

    public static int anyBaseToDecimal(int n,int b){
        int ans = 0,power=1;

        while(n>0){
            int rem = n%10;
            ans = ans + (rem*power);
            n/=10;
            power *=b;
        }

        return ans;
    }

    public static void main(String[] args) {
        /* Enter your code here. Read input from STDIN. Print output to STDOUT. Your class should be named Solution. */
        Scanner scn = new Scanner(System.in);
        int n = scn.nextInt();
        int b = scn.nextInt();

        System.out.println(anyBaseToDecimal(n,b));
    }
}
```

$5 + 5 + 7$

Hint → Any base to any base

Any base to Decimal

$n, b_1 \rightarrow (\quad)_{10} \rightarrow$ Decimal to Any base $(n)_{b_2}$

$(n)_{b_1} \rightarrow (\quad)_{10} \rightarrow (\quad)_{b_2}$

```java
public class Solution {

    public static int anyBasetoDecimal(int n,int b){
        int ans=0, power =1;

        while(n>0){
            int rem = n%10;
            ans = ans+(power*rem);
            n/=10;
            power*=b;
        }

        return ans;

    }

    public static int decimalToAnyBase(int n, int b){
        int ans=0,power = 1;

        while(n>0){
            int rem = n%b;
            ans = ans+(power*rem);
            n/=b;
            power*=10;
        }

        return ans;

    }
```

```java
public static void main(String[] args) {
    /* Enter your code here. Read input from STDIN. Print output to STDOUT. Your class should be name
    Scanner scn = new Scanner(System.in);
    int n = scn.nextInt();
    int b1 = scn.nextInt();
    int b2 = scn.nextInt();

    int ans1 = anyBasetoDecimal(n,b1);
    int finalAnswer = decimalToAnyBase(ans1,b2);
    System.out.println(finalAnswer);
}
```