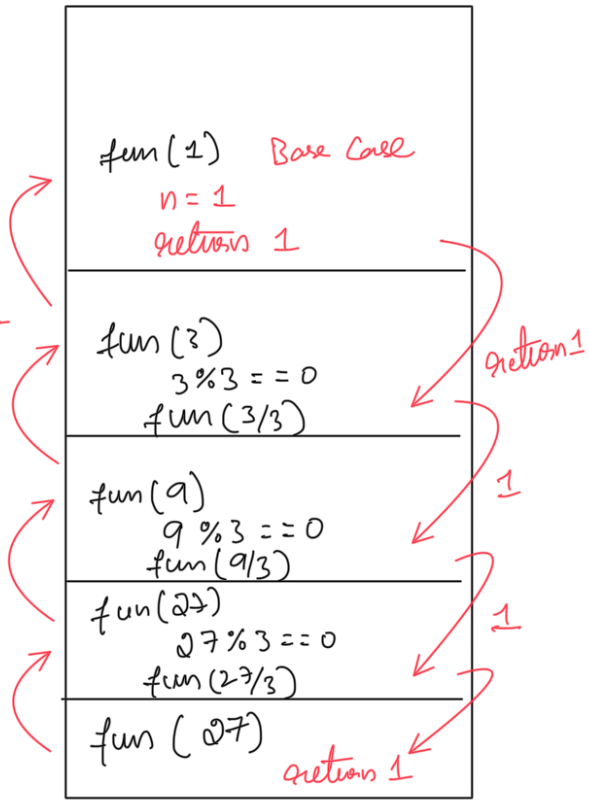
Recursion Tracing part II

Day 22
1/08/2025

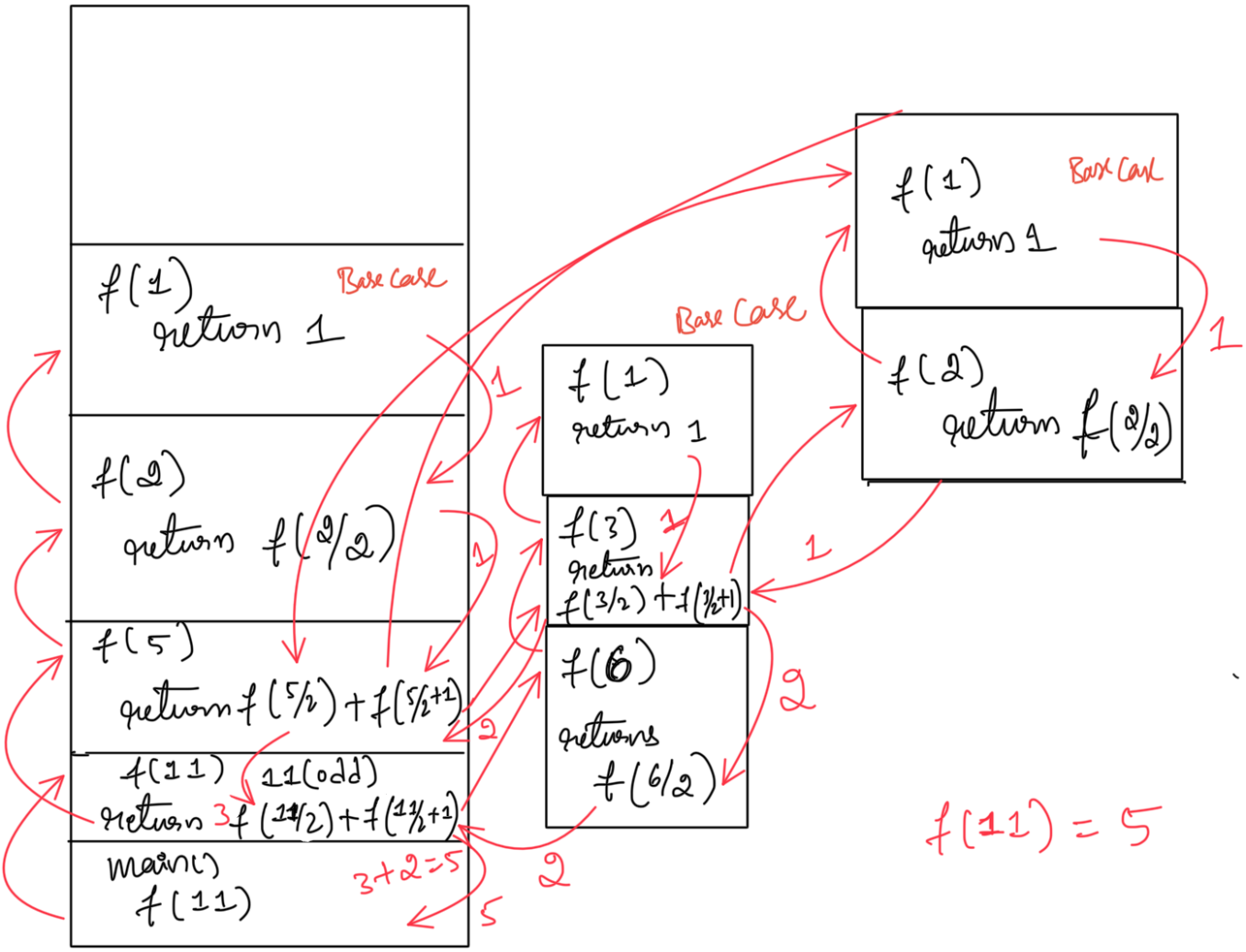
Question No 7

```
int fun(unsigned int n)
{
    if (n==0 || n==1)
        return n;

    if (n%3 != 0)
        return 0;

    return fun(n/3);
}
```



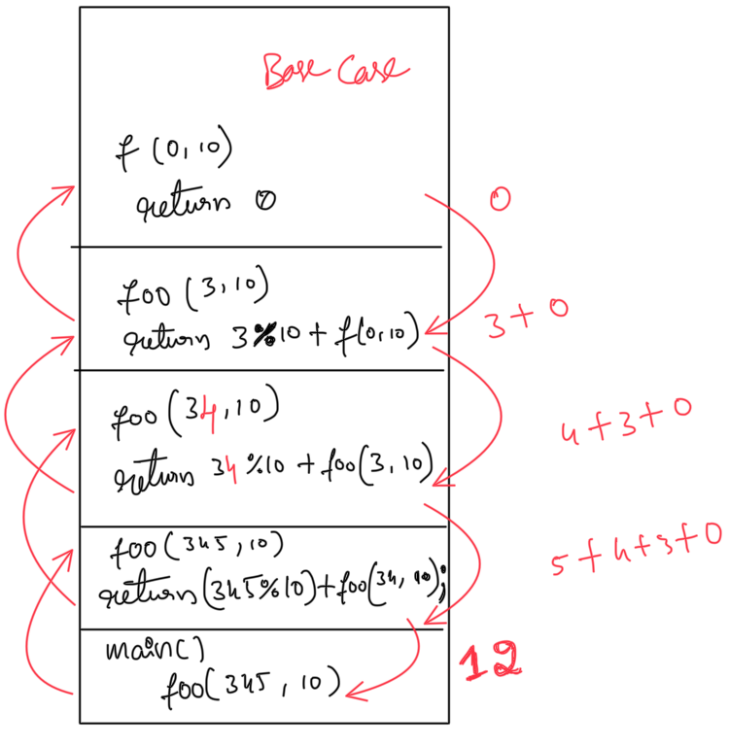
Question No 8

```
#include <stdio.h>
int f(int n) {
    if (n <= 1)
        return 1;
    if (n%2 == 0)
        return f(n/2);
    return f(n/2) + f(n/2 + 1);
}
int main()
{
    printf("%d", f(11));
    return 0;
}
```



Question No 9

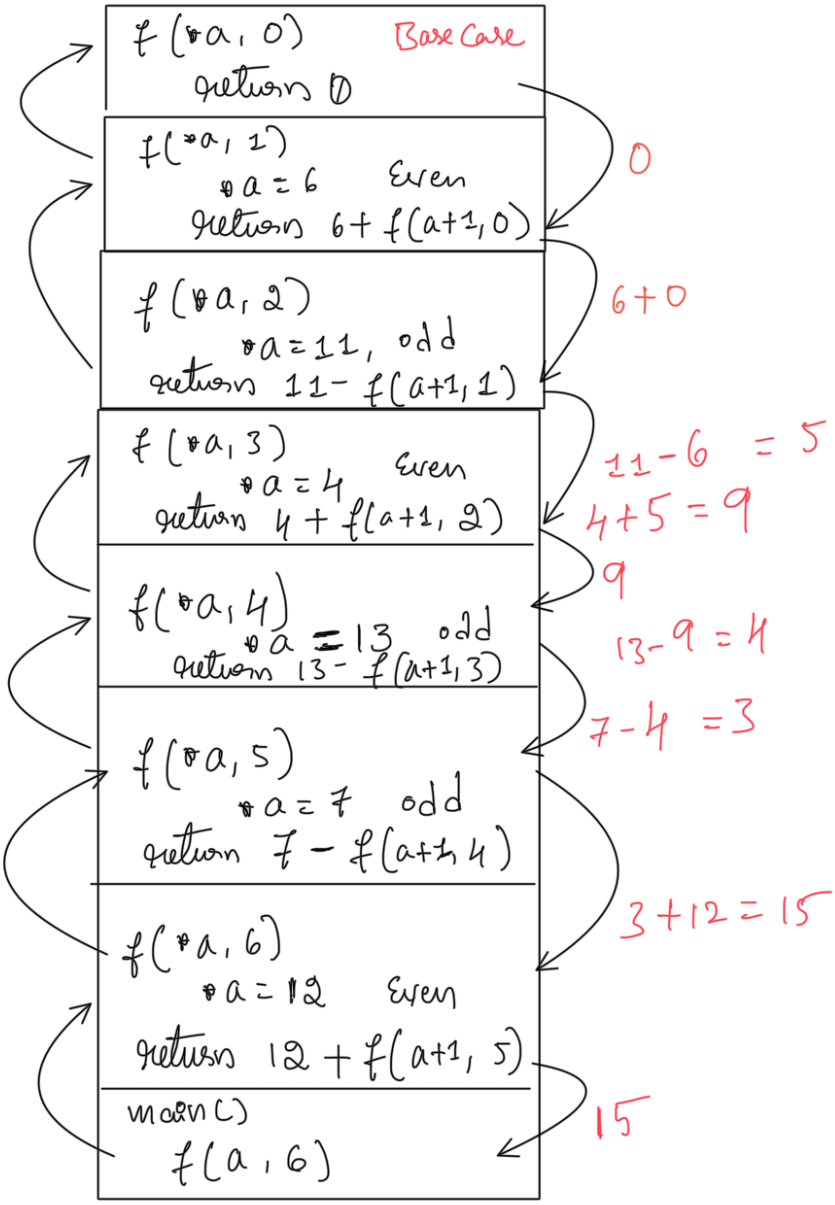
```
unsigned int foo(unsigned int n, unsigned int x){
    if(n>0) return (n%x + foo(n/x, x));
    else return 0;
}

int main(){
printf("%d",foo(345, 10));
}
```



Question no 10

```
#include <stdio.h>
 int f( int *a , int n)
 {
    if (n<=0) return 0 ;
    else if (*a %2 ==0 ) return *a + f(a+1, n-1);
    else return  *a - f(a+1, n-1);
 }

 int main() {
    int a[] = {12, 7, 13, 4, 11, 6};
    printf ("%d", f(a,6));

    return 0;
 }
```

arr	12	7	13	4	11	6
index	0	1	2	3	4	5



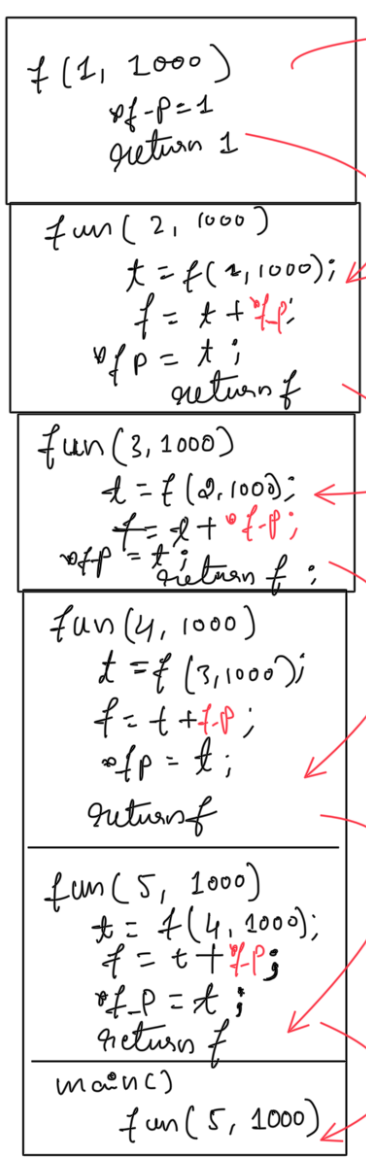
Question No 11

```
#include <stdio.h>
int fun(int n, int *f_p)
{
    int t, f;
    if(n<=1){
        *f_p = 1;
        return 1;
    }
    t = fun(n-1, f_p);
    f = t + *f_p;
    *f_p = t;
    return f;
}
```

```
int main()
{
    int x = 15;
    printf("%d", fun(5, &x));
    return 0;
}
```

let x = 5

&x = 1000 ← Address



Base case

$f = 1$ $*f\_p = 1$

$*f\_p = 1$ $t = 1$

$f = 1 + 1 = 2$ $f = 2$

$*f\_p = 1$

$t = 2$ $*f\_p = 1$

$f = 2 + 1$ $f = 3$

$*f\_p = 2$

$t = 3$ $*f\_p = 2$

$f = 3 + 2 = 5$

$*fp = 3$

$t = 5$ $*f\_p = 3$

$f = 5 + 3$

$*f\_p = 5$

$f = 8$

This function calculates Nth Fibonacci number.