

# Fonksiyonlar II



Suhap SAHİN  
Onur GÖK

# Fonksiyon Prototipi

```
#include <stdio.h>
```

```
int main() {  
    int a, b;  
    printf("iki sayi girin: ");  
    scanf("%d %d", &a, &b);  
  
    return 0;  
}
```

# Fonksiyon Prototipi

```
#include <stdio.h>
```

```
int main() {  
    int a, b;  
    printf("iki sayi girin: ");  
    scanf("%d %d", &a, &b);  
    printf("sayılardan küçük olan: %d\n", min(a, b));  
    printf("sayılardan büyük olan: %d\n", max(a, b));  
    return 0;  
}
```

# Fonksiyon Prototipi

```
#include <stdio.h>
int max(int s1, int s2);
int min(int s1, int s2);
int main() {
    int a, b;
    printf("iki sayi girin: ");
    scanf("%d %d", &a, &b);
    printf("sayılardan küçük olan: %d\n", min(a, b));
    printf("sayılardan büyük olan: %d\n", max(a, b));
    return 0;
}
```

# Fonksiyon Prototipi

```
#include <stdio.h>
int max(int s1, int s2);
int min(int s1, int s2);
int main() {
    int a, b;
    printf("iki sayi girin: ");
    scanf("%d %d", &a, &b);
    printf("sayılardan küçük olan: %d\n", min(a, b));
    printf("sayılardan büyük olan: %d\n", max(a, b));
    return 0;
}
int max(int s1, int s2) {
    if (s1 > s2)
        return s1;
    else
        return s2;
}
```

# Fonksiyon Prototipi

```
#include <stdio.h>
int max(int s1, int s2);
int min(int s1, int s2);
int main() {
    int a, b;
    printf("iki sayi girin: ");
    scanf("%d %d", &a, &b);
    printf("sayilardan kucuk olan: %d\n", min(a, b));
    printf("sayilardan buyuk olan: %d\n", max(a, b));
    return 0;
}
int max(int s1, int s2) {
    if (s1 > s2)
        return s1;
    else
        return s2;
}
int min(int s1, int s2) {
    if (s1 < s2)
        return s1;
    else
        return s2;
}
```

# Palindromik Sayılar

11

121

75257

1234321

# Palindromik Sayılar

```
#include <stdio.h>
```

```
int main() {  
    int sayi;  
    printf("sayi girin:");  
    scanf("%d", &sayi);
```

```
    return 0;  
}
```

11

121

75257

1234321



# Palindromik Sayılar

```
#include <stdio.h>
int tersini_bul(int x);
int main() {
    int sayi;
    printf("sayi girin:");
    scanf("%d", &sayi);

    return 0;
}
```

11

121

75257

1234321

# Palindromik Sayılar

```
#include <stdio.h>
int tersini_bul(int x);
int main() {
    int sayi;
    printf("sayi girin:");
    scanf("%d", &sayi);
    if (sayi == tersini_bul(sayi))
        printf("sayi palindromik sayidir");
    else
        printf("degildir");
    return 0;
}
```

11

121

75257

1234321

# Palindromik Sayılar

```
#include <stdio.h>
int tersini_bul(int x);
int main() {
    int sayi;
    printf("sayi girin:");
    scanf("%d", &sayi);
    if (sayi == tersini_bul(sayi))
        printf("sayi palindromik sayidir");
    else
        printf("degildir");
    return 0;
}
int tersini_bul(int x) {
    }
```

11

121

75257

1234321

# Palindromik Sayılar

S = 0

x = 123

```
int tersini_bul(int x) {  
    int S = 0;
```

```
}
```

# Palindromik Sayılar

S = 0

x = 123

b = 0

```
int tersini_bul(int x) {  
    int S = 0;
```

b = 123 % 10

```
    int b = x % 10;
```

```
}
```

# Palindromik Sayılar

S = 0

x = 123

b = 0

```
int tersini_bul(int x) {  
    int S = 0;
```

b = 123 % 10

```
    int b = x % 10;  
    S = (S * 10) + b;
```

S = 0

x = 123

b = 3

S = 0 \* 10 + 3

```
}
```

# Palindromik Sayılar

S = 0

x = 123

b = 0

```
int tersini_bul(int x) {  
    int S = 0;
```

b = 123 % 10

```
    int b = x % 10;
```

S = 0

x = 123

b = 3

```
    S = (S * 10) + b;
```

S = 0 \* 10 + 3

```
    x /= 10;
```

S = 3

x = 123

b = 3

x /= 10

S = 3

x = 12

b = 3

```
}
```

# Palindromik Sayılar

S = 3

x = 12

b = 3

$b = 12 \% 10$

S = 3

x = 12

b = 2

$S = 3 * 10 + 3$

S = 32

x = 12

b = 2

$x /= 10$

S = 32

x = 1

b = 2

```
int tersini_bul(int x) {
```

```
    int S = 0;
```

```
        int b = x % 10;
```

```
        S = (S * 10) + b;
```

```
        x /= 10;
```

```
    return S;
```

```
}
```



# Palindromik Sayılar

S = 32

x = 1

b = 2

```
int tersini_bul(int x) {
```

```
    int S = 0;
```

```
    while (x > 0) {
```

```
        int b = x % 10;
```

```
        S = (S * 10) + b;
```

```
        x /= 10;
```

```
    }
```

```
    return S;
```

```
}
```

b = 1 % 10

S = 32

x = 1

b = 1

S = 32 \* 10 + 1

S = 321

x = 1

b = 1

x /= 10

S = 321

x = 0.1

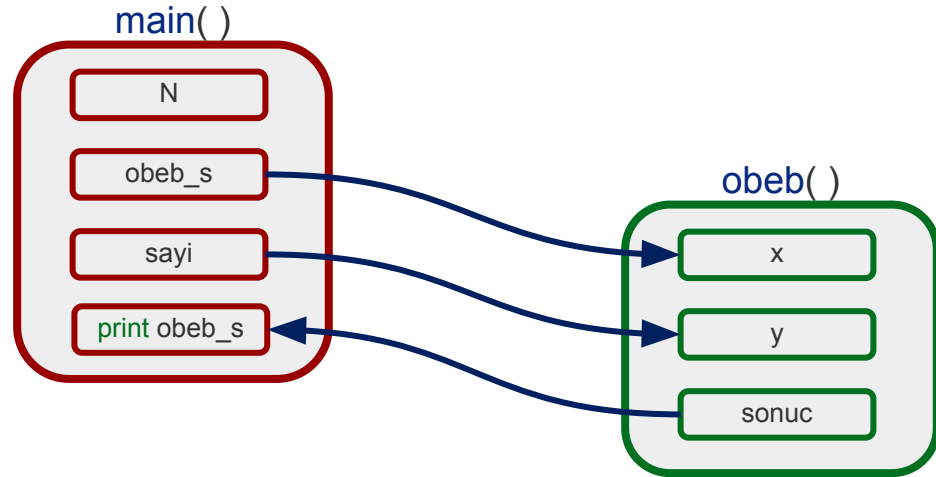
b = 1

# OBEB & OKEK

```
#include <stdio.h>
```

```
int main() {  
    int N, i;  
    int obeb_s; // ebob isleminin sonucu  
    printf("kac sayi gireceksiniz: ");  
    scanf("%d", &N);
```

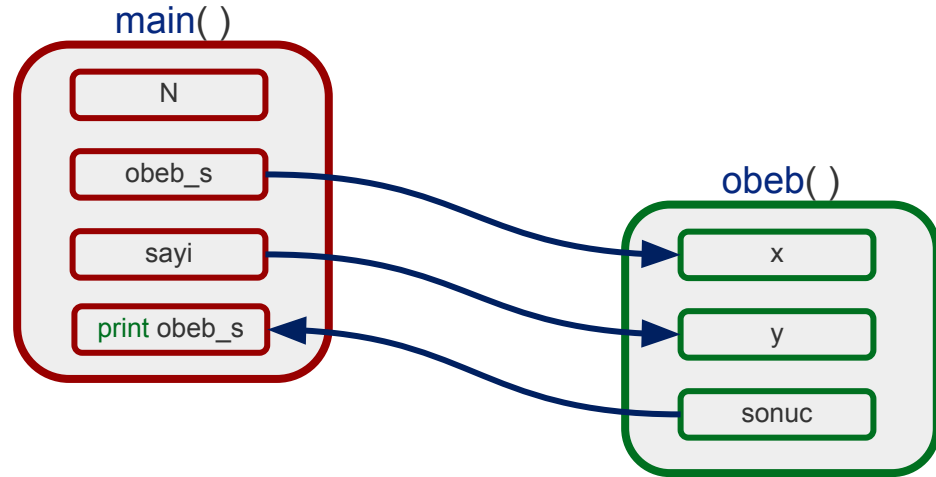
```
}
```



# OBEB & OKEK

```
#include <stdio.h>
```

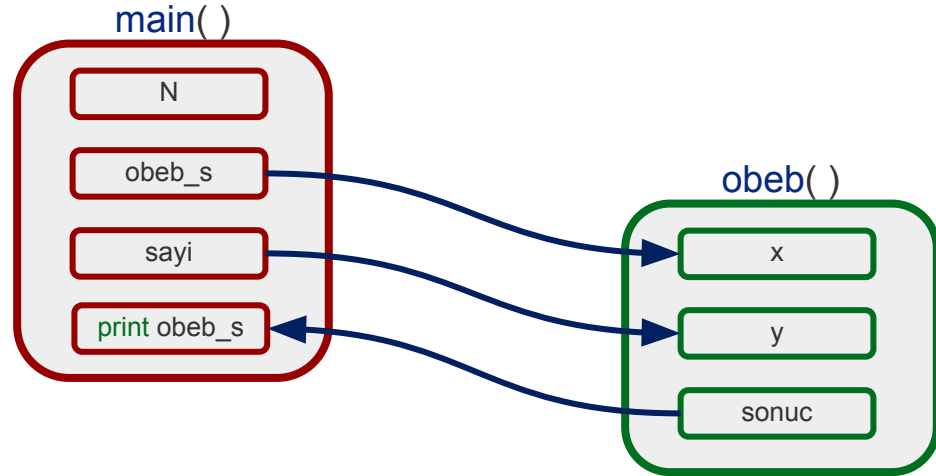
```
int main() {  
    int N, i;  
    int obeb_s; // ebob isleminin sonucu  
    printf("kac sayi gireceksiniz: ");  
    scanf("%d", &N);  
    obeb_s = sayi_oku();  
    printf("yeni obeb: %d\n", obeb_s);  
}
```



# OBEB & OKEK

```
#include <stdio.h>
```

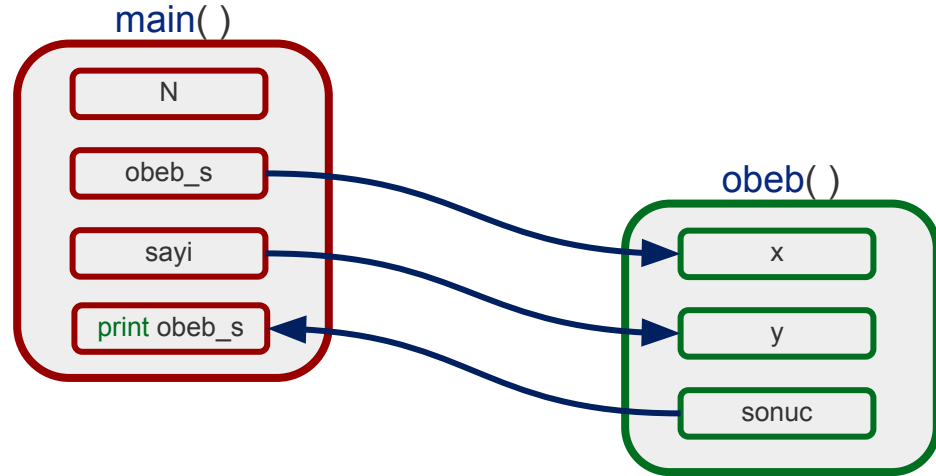
```
int main() {  
    int N, i;  
    int obeb_s; // ebob isleminin sonucu  
    printf("kac sayi gireceksiniz: ");  
    scanf("%d", &N);  
    obeb_s = sayi_oku();  
    printf("yeni obeb: %d\n", obeb_s);  
    for (i = 2 ; i <= N ; i++) {  
        int sayi = sayi_oku();  
    }  
}
```



# OBEB & OKEK

```
#include <stdio.h>
```

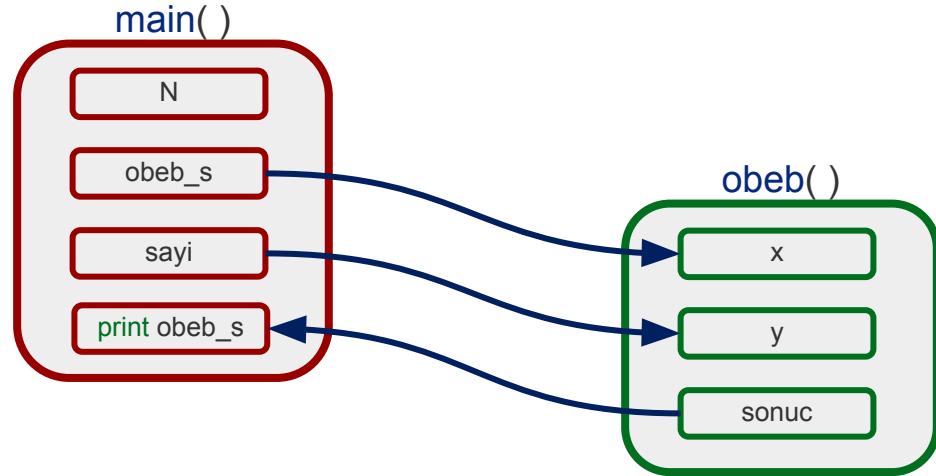
```
int main() {  
    int N, i;  
    int obeb_s; // ebob isleminin sonucu  
    printf("kac sayi gireceksiniz: ");  
    scanf("%d", &N);  
    obeb_s = sayi_oku();  
    printf("yeni obeb: %d\n", obeb_s);  
    for (i = 2 ; i <= N ; i++) {  
        int sayi = sayi_oku();  
        obeb_s = obeb(obeb_s, sayi);  
        printf("yeni obeb: %d\n", obeb_s);  
    }  
}
```



# OBEB & OKEK

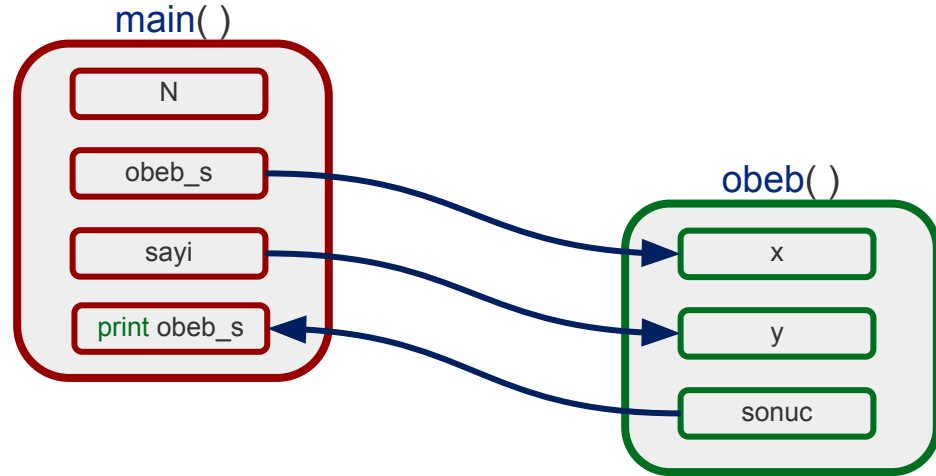
```
#include <stdio.h>
```

```
int main() {  
    int N, i;  
    int obeb_s; // ebob isleminin sonucu  
    printf("kac sayi gireceksiniz: ");  
    scanf("%d", &N);  
    obeb_s = sayi_oku();  
    printf("yeni obeb: %d\n", obeb_s);  
    for (i = 2 ; i <= N ; i++) {  
        int sayi = sayi_oku();  
        obeb_s = obeb(obeb_s, sayi);  
        printf("yeni obeb: %d\n", obeb_s);  
    }  
    printf("sonuc: %d\n", obeb_s);  
    return 0;  
}
```



# OBEB & OKEK

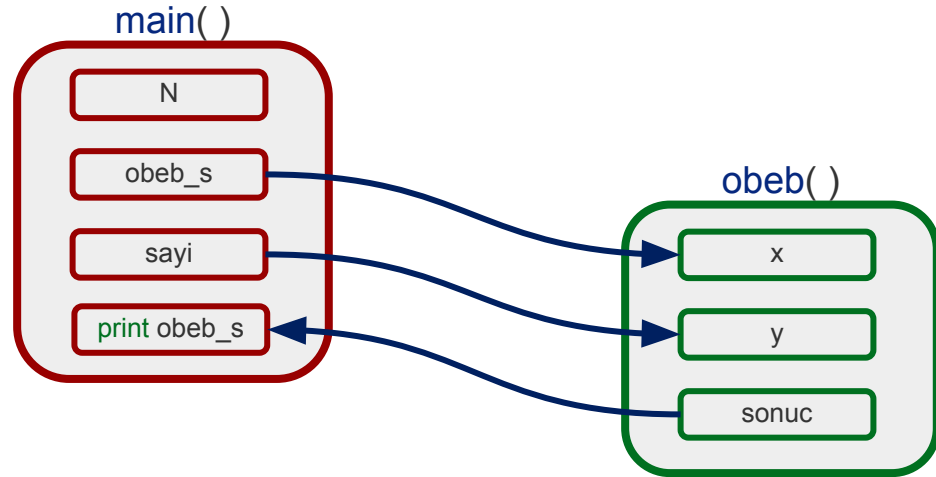
```
#include <stdio.h>
int obeb(int x, int y);
int sayi_oku();
int main() {
    int N, i;
    int obeb_s; // ebob isleminin sonucu
    printf("kac sayi gireceksiniz: ");
    scanf("%d", &N);
    obeb_s = sayi_oku();
    printf("yeni obeb: %d\n", obeb_s);
    for (i = 2 ; i <= N ; i++) {
        int sayi = sayi_oku();
        obeb_s = obeb(obebs_s, sayi);
        printf("yeni obeb: %d\n", obebs_s);
    }
    printf("sonuc: %d\n", obebs_s);
    return 0;
}
```



# OBEB & OKEK

```
#include <stdio.h>
int obeb(int x, int y);
int sayi_oku();
int main() {
    int N, i;
    int obeb_s; // ebob isleminin sonucu
    printf("kac sayi gireceksiniz: ");
    scanf("%d", &N);
    obeb_s = sayi_oku();
    printf("yeni obeb: %d\n", obeb_s);
    for (i = 2 ; i <= N ; i++) {
        int sayi = sayi_oku();
        obeb_s = obeb(obeb_s, sayi);
        printf("yeni obeb: %d\n", obeb_s);
    }
    printf("sonuc: %d\n", obeb_s);
    return 0;
}
int sayi_oku() {

}
int obeb(int x, int y) {
```



```
}
```



# OBEB & OKEK

```
int sayi_oku() {  
    int x;  
    printf("sayi girin: ");  
    scanf("%d", &x);  
    return x;  
}
```

# OBEB & OKEK

```
int sayi_oku() {  
    int x;  
    printf("sayi girin: ");  
    scanf("%d", &x);  
    return x;  
}
```

```
int obeb(int x, int y) {  
    int i;  
    int sonuc = 1;
```

```
    return sonuc;  
}
```

x = 6

y = 9

sonuc = 1

# OBEB & OKEK

```
int sayi_oku() {
```

```
    int x;
```

```
    printf("sayi girin: ");
```

```
    scanf("%d", &x);
```

```
    return x;
```

```
}
```

```
int obeb(int x, int y) {
```

```
    int i;
```

```
    int sonuc = 1;
```

```
    for (i = 2 ; i <= x && i <= y ; i++) {
```

```
        return sonuc;
```

```
}
```

x = 6

y = 9

sonuc = 1

i = 2

# OBEB & OKEK

```
int sayi_oku() {  
    int x;  
    printf("sayi girin: ");  
    scanf("%d", &x);  
    return x;  
}
```

```
int obeb(int x, int y) {  
    int i;  
    int sonuc = 1;  
    for (i = 2 ; i <= x && i <= y ; i++) {  
        if (x % i == 0 && y % i == 0)  
            sonuc = i;  
    }  
    return sonuc;  
}
```

x = 6

y = 9

sonuc = 1

i = 2

6 % 2 == 0

9 % 2 == 1

x = 6

y = 9

sonuc = 1

i = 3

6 % 3 == 0

9 % 3 == 0

x = 6

y = 9

sonuc = 3

i = 4

6 % 4 == 4

9 % 4 == 1

x = 6

y = 9

sonuc = 3

i = 5

6 % 5 == 5

9 % 5 == 4

x = 6

y = 9

sonuc = 3

i = 6

6 % 6 == 0

9 % 6 == 3

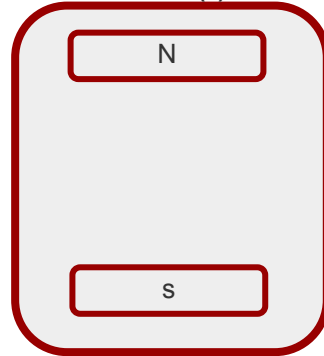
```
#include <stdio.h>
```

```
int main() {  
    int N, i;  
    printf("kac sayi gireceksiniz:");  
    scanf("%d", &N);  
    int s = sayi_oku();
```

```
}
```

# Rakam Sayısı

main( )



```
#include <stdio.h>
```

```
int sayi_oku();
```

```
int main() {
```

```
    int N, i;
```

```
    printf("kac sayi gireceksiniz:");
```

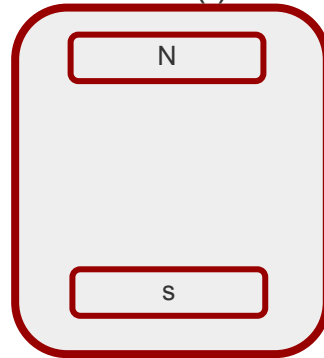
```
    scanf("%d", &N);
```

```
    int s = sayi_oku();
```

```
}
```

# Rakam Sayısı

main( )



```
#include <stdio.h>
```

```
int sayi_oku();
```

```
int main() {
```

```
    int N, i;
```

```
    printf("kac sayi gireceksiniz:");
```

```
    scanf("%d", &N);
```

```
    int s = sayi_oku();
```

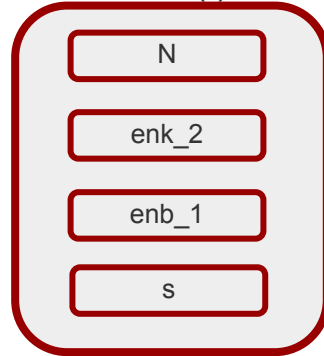
```
    int enk_2 = s;
```

```
    int enb_1 = s;
```

```
}
```

# Rakam Sayısı

main( )



```
#include <stdio.h>
```

```
int sayi_oku();
```

```
int main() {
```

```
    int N, i;
```

```
    printf("kac sayi gireceksiniz:");
```

```
    scanf("%d", &N);
```

```
    int s = sayi_oku();
```

```
    int enk_2 = s;
```

```
    int enb_1 = s;
```

```
    for (i = 1 ; i < N ; i++) {
```

```
        int s = sayi_oku();
```

```
    }
```

```
}
```

# Rakam Sayısı

main( )

N

enk\_2

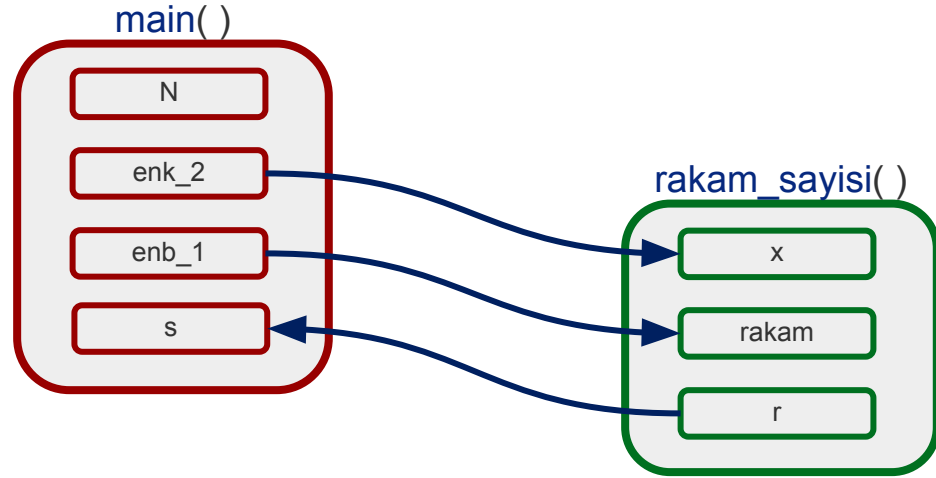
enb\_1

s



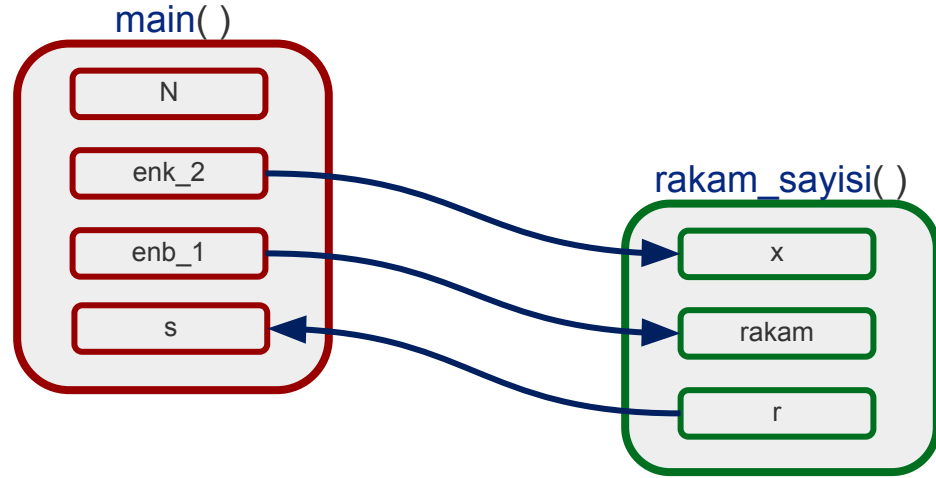
# Rakam Sayısı

```
#include <stdio.h>
int rakam_sayisi(int x, int rakam);
int sayi_oku();
int main() {
    int N, i;
    printf("kac sayi gireceksiniz:");
    scanf("%d", &N);
    int s = sayi_oku();
    int enk_2 = s;
    int enb_1 = s;
    for (i = 1 ; i < N ; i++) {
        int s = sayi_oku();
        if (rakam_sayisi(s, 1) > rakam_sayisi(enb_1, 1))
            enb_1 = s;
        if (rakam_sayisi(s, 2) < rakam_sayisi(enk_2, 2))
            enk_2 = s;
    }
}
```



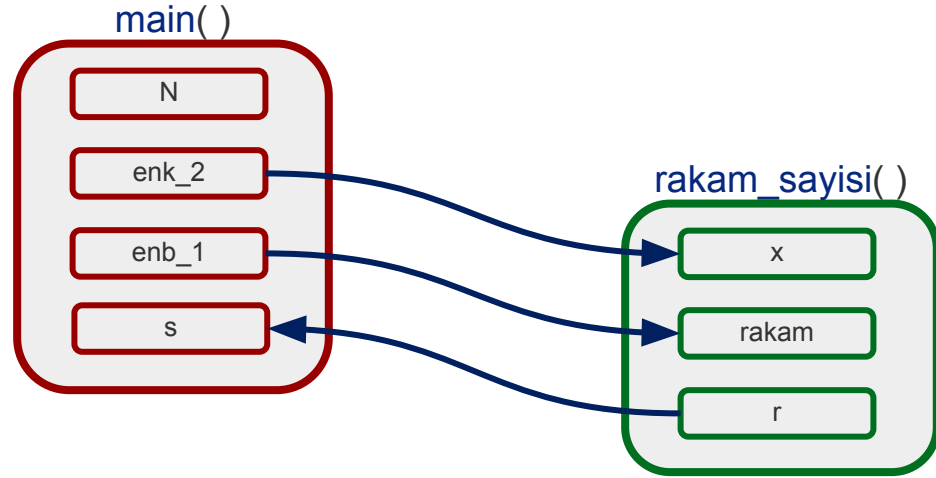
# Rakam Sayısı

```
#include <stdio.h>
int rakam_sayisi(int x, int rakam);
int sayi_oku();
int main() {
    int N, i;
    printf("kac sayi gireceksiniz:");
    scanf("%d", &N);
    int s = sayi_oku();
    int enk_2 = s;
    int enb_1 = s;
    for (i = 1 ; i < N ; i++) {
        int s = sayi_oku();
        if (rakam_sayisi(s, 1) > rakam_sayisi(enb_1, 1))
            enb_1 = s;
        if (rakam_sayisi(s, 2) < rakam_sayisi(enk_2, 2))
            enk_2 = s;
    }
    printf("en fazla 1 olan: %d\n", enb_1);
    printf("en az 2 olan: %d\n", enk_2);
}
```



# Rakam Sayısı

```
#include <stdio.h>
int rakam_sayisi(int x, int rakam);
int sayi_oku();
int main() {
    int N, i;
    printf("kac sayi gireceksiniz:");
    scanf("%d", &N);
    int s = sayi_oku();
    int enk_2 = s;
    int enb_1 = s;
    for (i = 1 ; i < N ; i++) {
        int s = sayi_oku();
        if (rakam_sayisi(s, 1) > rakam_sayisi(enb_1, 1))
            enb_1 = s;
        if (rakam_sayisi(s, 2) < rakam_sayisi(enk_2, 2))
            enk_2 = s;
    }
    printf("en fazla 1 olan: %d\n", enb_1);
    printf("en az 2 olan: %d\n", enk_2);
}
```



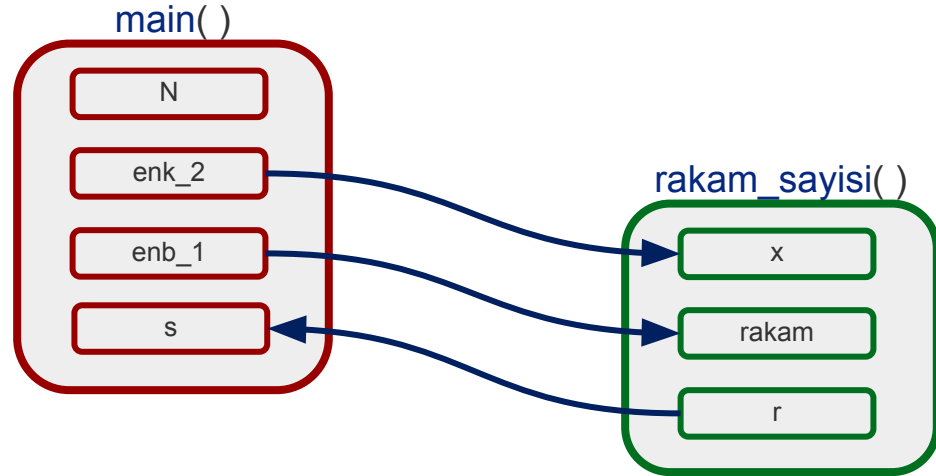
```
int sayi_oku() {
    int r;
    printf("sayi girin:");
    scanf("%d", &r);
    return r;
}
```

# Rakam Sayısı

```
#include <stdio.h>
int rakam_sayisi(int x, int rakam);
int sayi_oku();
int main() {
    int N, i;
    printf("kac sayi gireceksiniz:");
    scanf("%d", &N);
    int s = sayi_oku();
    int enk_2 = s;
    int enb_1 = s;
    for (i = 1 ; i < N ; i++) {
        int s = sayi_oku();
        if (rakam_sayisi(s, 1) > rakam_sayisi(enb_1, 1))
            enb_1 = s;
        if (rakam_sayisi(s, 2) < rakam_sayisi(enk_2, 2))
            enk_2 = s;
    }
    printf("en fazla 1 olan: %d\n", enb_1);
    printf("en az 2 olan: %d\n", enk_2);
}
int rakam_sayisi(int x, int rakam) {

    return r;

}
int sayi_oku() {
    int r;
    printf("sayi girin:");
    scanf("%d", &r);
    return r;
}
```



# Rakam Sayısı

x = 123

rakam = 1

r = 0

```
int rakam_sayisi(int x, int rakam) {  
    int r = 0;
```

```
    return r;  
}
```

# Rakam Sayısı

x = 123

rakam = 1

r = 0

```
int rakam_sayisi(int x, int rakam) {  
    int r = 0;  
    while (x > 0) {  
  
        x /= 10;  
    }  
    return r;  
}
```

123 > 0

x /= 10

# Rakam Sayısı

```
int rakam_sayisi(int x, int rakam) {  
    int r = 0;  
    while (x > 0) {  
        if (x % 10 == rakam)  
            r += 1;  
        x /= 10;  
    }  
    return r;  
}
```

123 > 0

x = 123

rakam = 1

r = 0

123 % 10 == 3

x /= 10

x = 12

rakam = 1

r = 0

12 > 0

12 % 10 == 2

x /= 10

x = 1

rakam = 1

r = 0

1 > 0

1 % 10 == 1

r = 0 + 1

1 /= 10

x = 0.1

rakam = 1

r = 1

0.1 > 0

# Rastgele Sayı Üretme

```
#include <stdio.h>
#include <stdlib.h>
#include <time.h>
int main() {
    int x, i;
    // program her basladiginda sayinin degismesi icin
    srand(time(NULL));
```



```
    return 0;
}
```



# Rastgele Sayı Üretme

```
#include <stdio.h>
#include <stdlib.h>
#include <time.h>
int main() {
    int x, i;
    // program her basladiginda sayinin degismesi icin
    srand(time(NULL));
    x = rand() % 5;           // [0, 5) arasi
    printf("%d\n", x);

    return 0;
}
```



# Rastgele Sayı Üretme

```
#include <stdio.h>
```

```
#include <stdlib.h>
```

```
#include <time.h>
```

```
int main() {
```

```
int x, i;
```

```
// program her basladiginda sayinin degismesi icin
```

```
srand(time(NULL));
```

```
x = rand() % 5;           // [0, 5) arasi
```

```
printf("%d\n", x);
```

```
x = 10 + rand() % 90; // [10, 99] arasi
```

```
printf("%d\n", x);
```

```
return 0;
```

}



# Rastgele Sayı Üretme

```
#include <stdio.h>
#include <stdlib.h>
#include <time.h>
int main() {
    int x, i;
    // program her basladiginda sayinin degismesi icin
    srand(time(NULL));
    x = rand() % 5;           // [0, 5) arasi
    printf("%d\n", x);
    x = 10 + rand() % 90;     // [10, 99] arasi
    printf("%d\n", x);
    for(i=1;i<=5;i++) {      // [1,6] arasi 5 tane sayi uret
        x=1+ rand()%6;
        printf("%d. sayi = %d \n",i,x);
    }
    return 0;
}
```



# Rastgele Sayı Üretme

`rand()`: Üst limit en az 32767'dir.

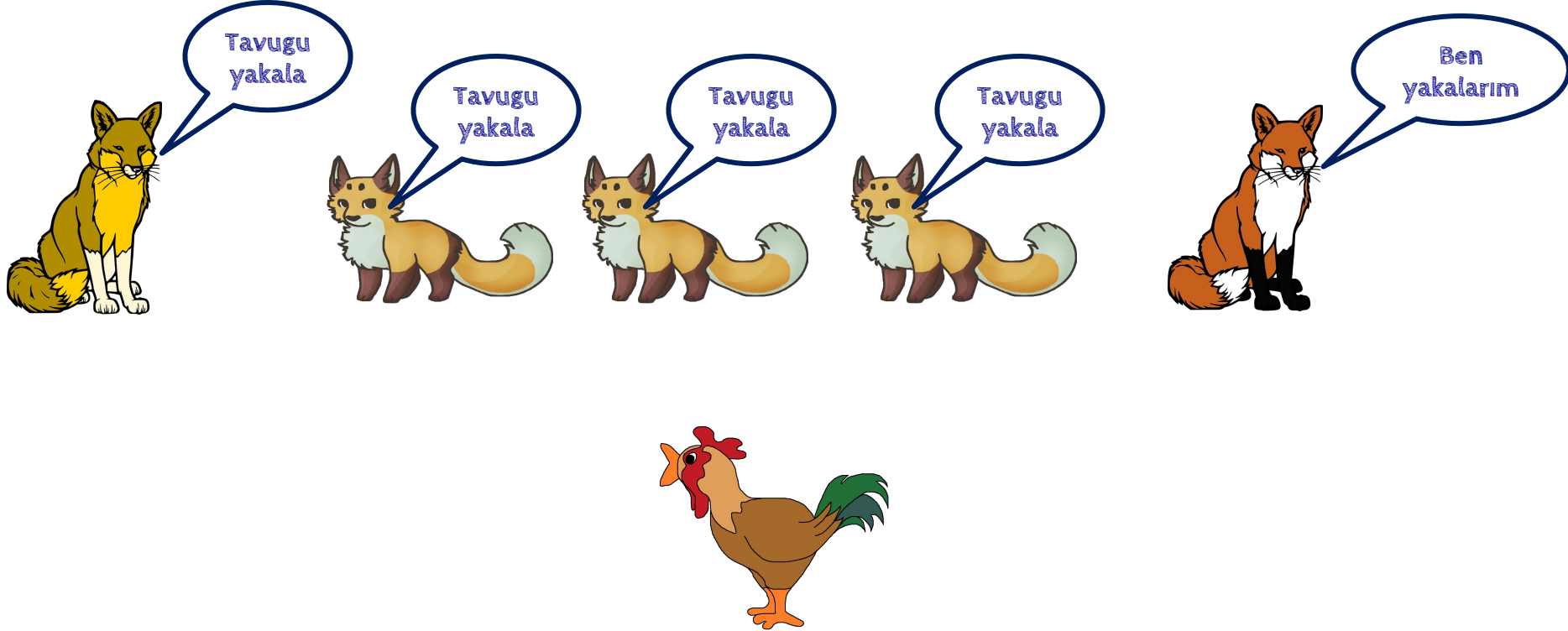
`rand() % N` -> `[0,N)`

`rand() % 10` -> `[0,10)`

`10 + rand() % (100-10)` -> `[10,100)`



# Recursive



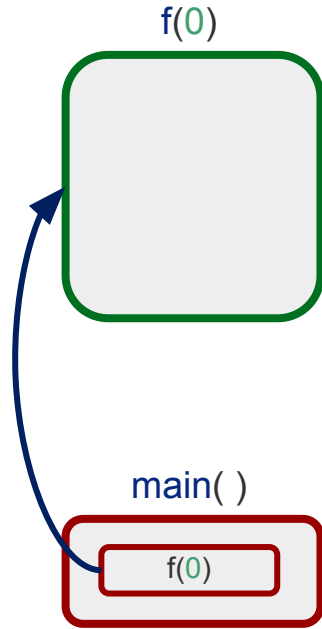
# Recursive



# Recursive

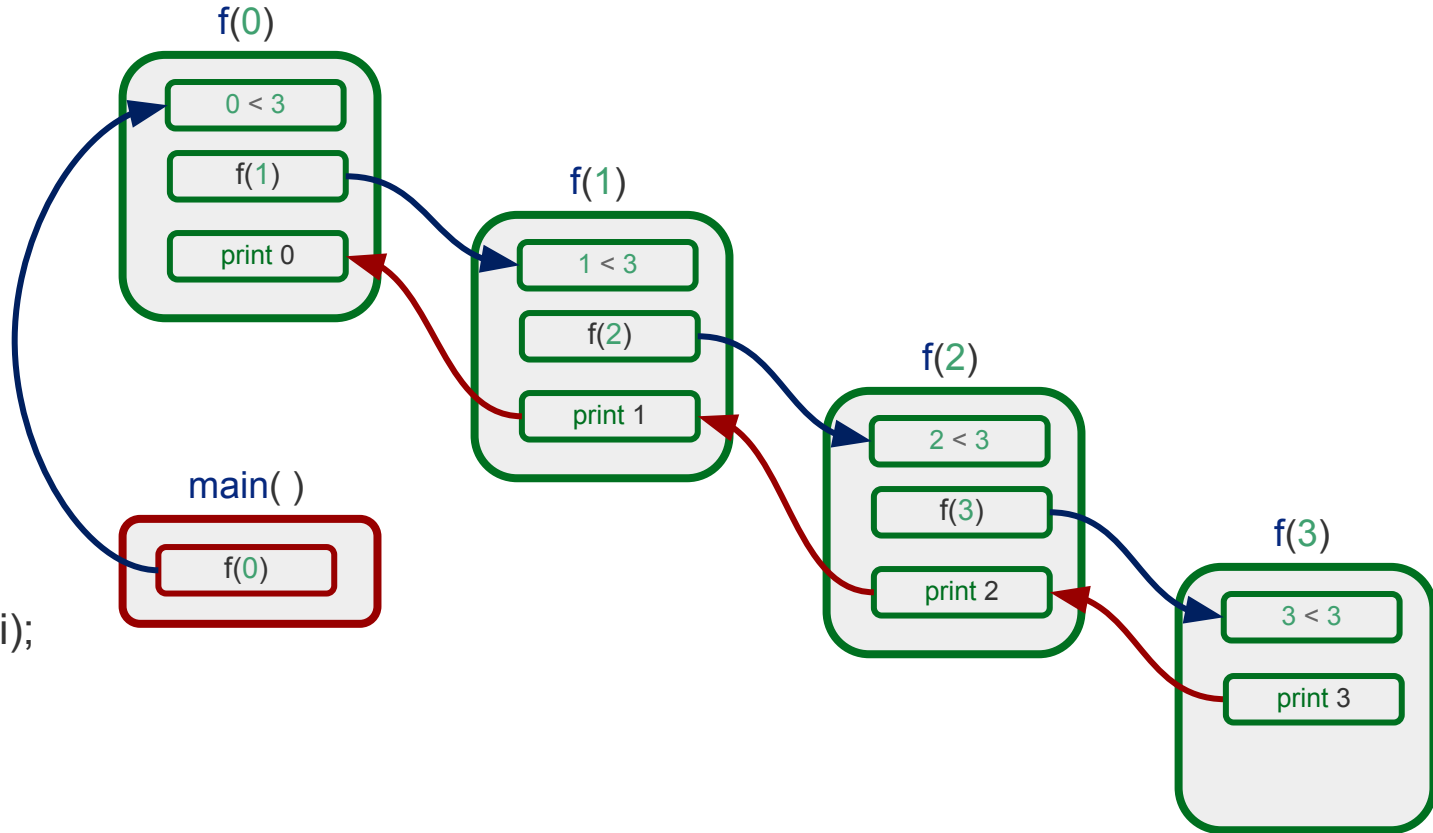
```
#include <stdio.h>
void f(int sayi);
int main() {
    f(0);
    return 0;
}
void f(int sayi) {

}
```



# Recursive

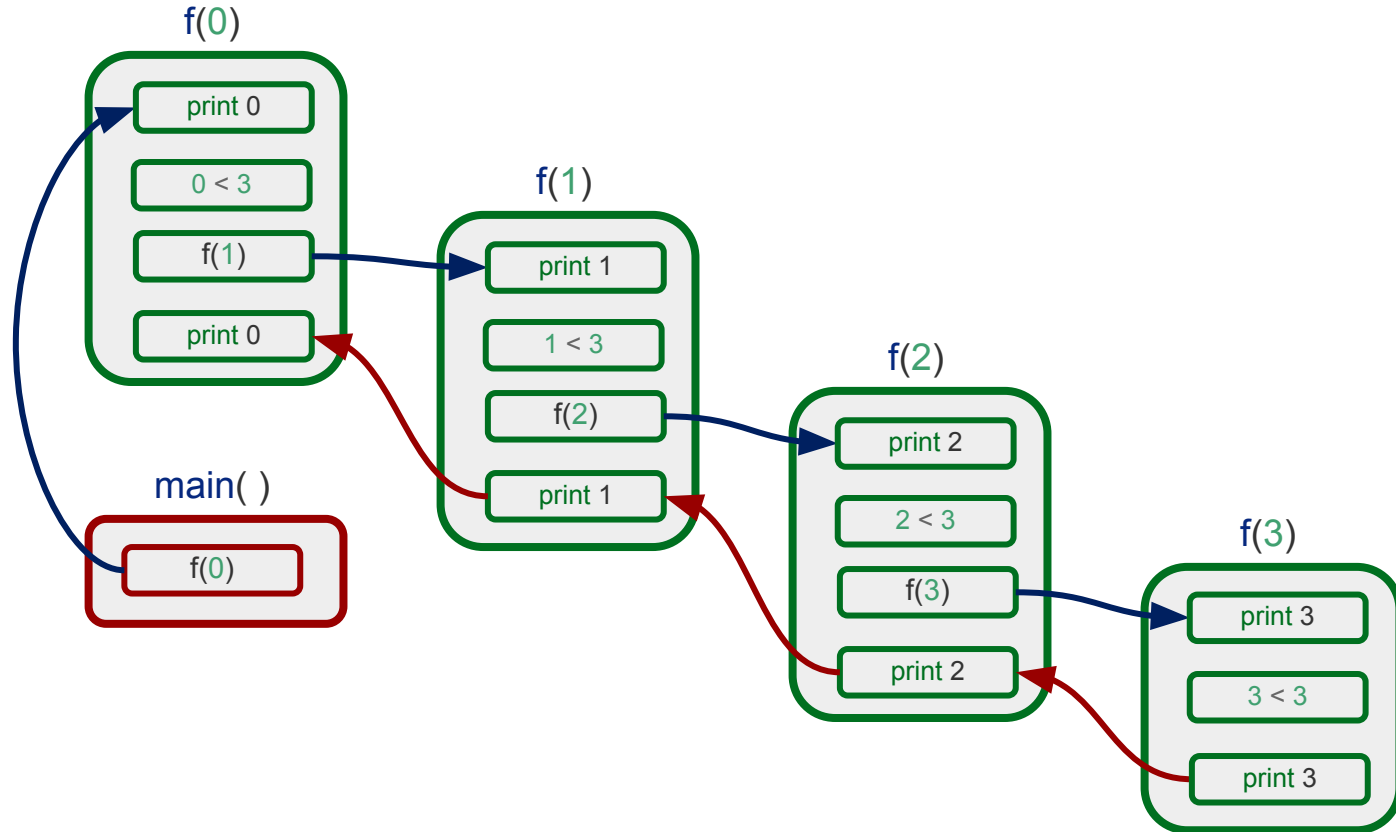
```
#include <stdio.h>
void f(int sayi);
int main() {
    f(0);
    return 0;
}
void f(int sayi) {
    if (sayi < 3)
        f(sayi + 1);
    printf("%d\n", sayi);
}
```





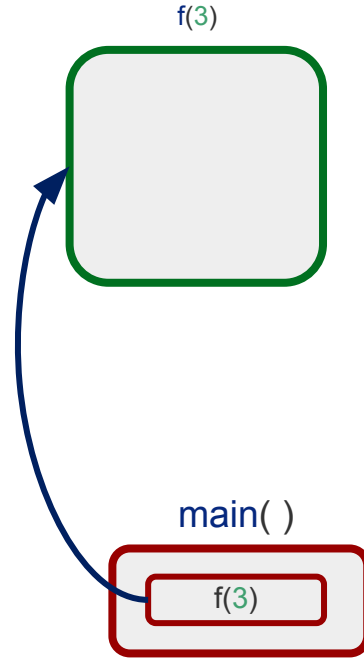
# Recursive

```
#include <stdio.h>
void f(int sayi);
int main() {
    f(0);
    return 0;
}
void f(int sayi) {
    printf("%d\n", sayi);
    if (sayi < 3)
        f(sayi + 1);
    printf("%d\n", sayi);
}
```



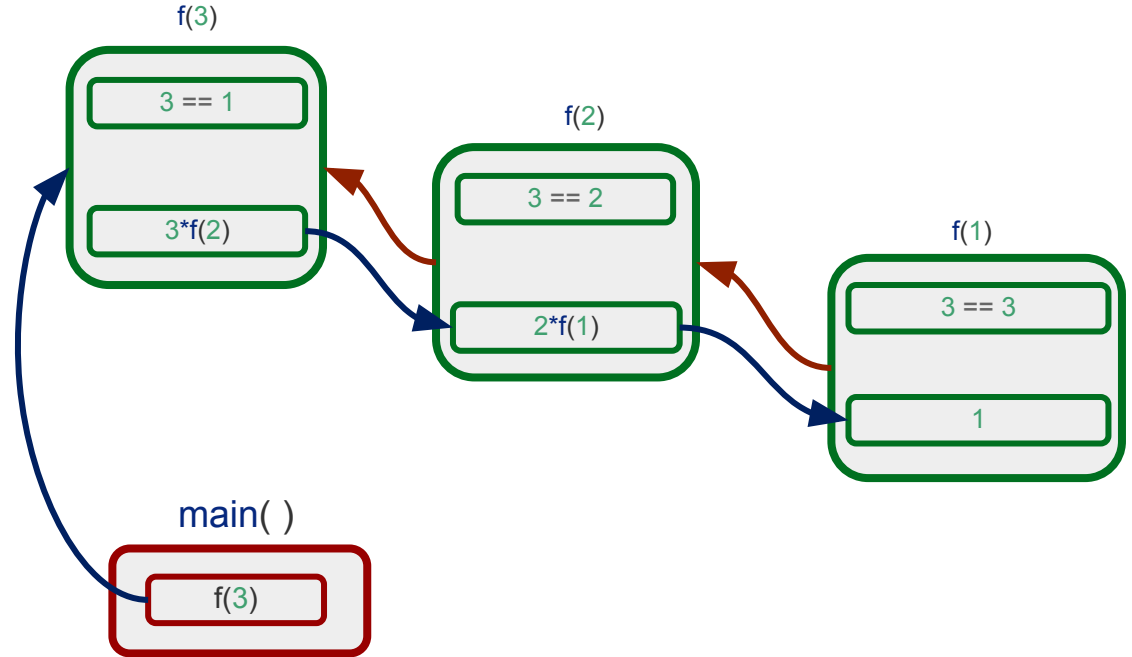
# Faktöriyel

```
#include <stdio.h>
int f(int x);
int main() {
    int sonuc = f(3);
    printf("3! = %d\n", sonuc);
    return 0;
}
int f(int x) {
}
```



# Faktöriyel

```
#include <stdio.h>
int f(int x);
int main() {
    int sonuc = f(3);
    printf("3! = %d\n", sonuc);
    return 0;
}
int f(int x) {
    if (x == 1)
        return 1;
    else
        return x * f(x-1);
}
```



# Sorular

